Astronautics Tactical Mission System

Helicopter Mission System

What is Tactix?

Tactix is a tactical mission system for helicopters and transporters, featuring situational awareness, information sharing (data, images & video streaming) between forces (C4I), mission management and more. Tactics support information sharing among crew-members in modern onboard network architecture, with quick and easy access to any information the pilots may required to effectively performing their mission.

Who needs Tactix?

- Helicopter Operators (Military/Para-Military/Search & Rescue)
- Transporters & Mission Aircraft (Command & Control, C4I, Reconnaissance aircraft, tactical aircraft)
- Homeland Security (HLS) forces (Ground-Airborne combined ad-hoc missions and events handling)

Who will benefit the most installing Tactix?

- Helicopter Operators seeking cost-effective, affordable modernization of their fleet
- Operators of air/ground ad-hoc events handling, with improved command & control, as well as effective real-time events management (HLS, SAR etc.)
- Legacy platforms installing TACTIX will feature a quick and cost-effective solution, avoiding costly avionics modernization. TACTIX may bring to the cockpit most of the basic avionics benefits, at a fraction of a cost of a full avionics modernization.
- Operators who seek good C4I-connected cockpit solutions.
- Users interested in add on C4I & modern mission capabilities to an existing modern avionics (data & images sharing, video streaming to/from airborne vehicles, data center and more).

Tactix installation & features

Tactix is based on an onboard installed modern computers network, with a touch sensitive display to each crew member (Pilot, Copilot, mission specialist), and interface to onboard sensors and system (if exist). As a minimum, the system is based on GPS information and pilot's entered flight plan. Expansion options are available, incorporating AHRS, Optical/IR sensors and more. If any of the above exists onboard, Astronautics will integrate it into TACTIX system. Astronautics' provides a full turnkey solution – including hardware supply, installation, training & support.

Get all the benefits recognized by the Israeli Air Force and the USAF, in an affordable Tactical Mission System for your fleet today.

TACTIX system is modular and may be easily tailored to the required needs. The Basic TACTIX supports single or dual crew-members, with baseline functionality. The basic TACTIX solution architecture shall be as follows:
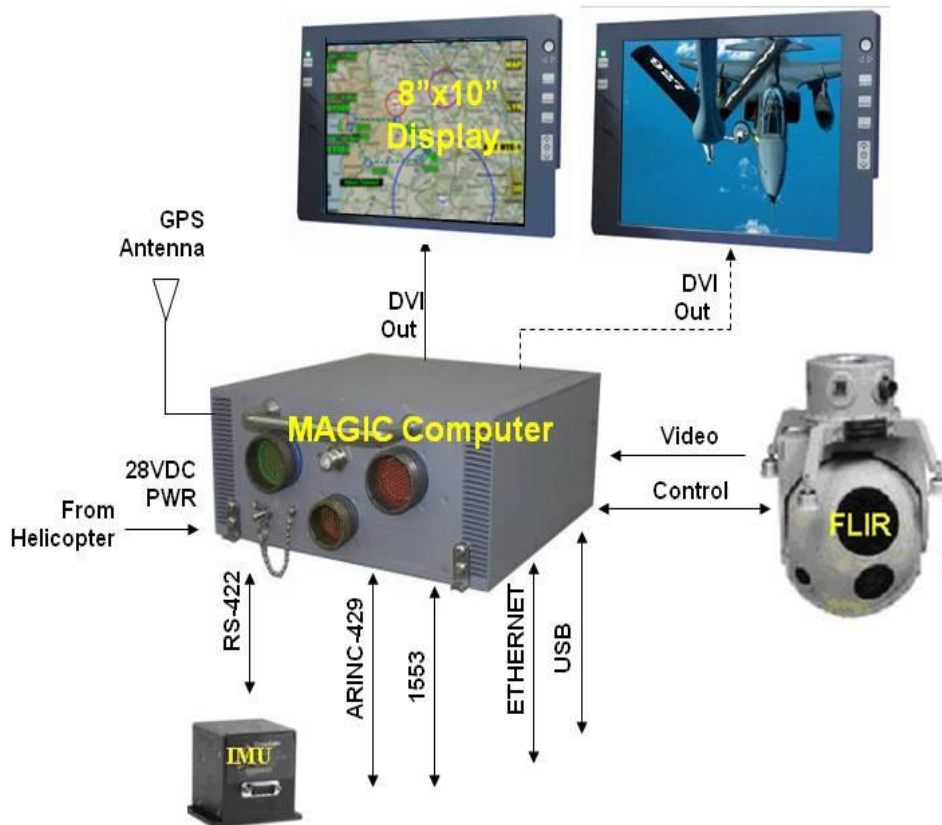
Basic Tactix Architecture

The Basic TACTIX can support a single operator or dual crew members, sharing the same basic information and flight-plan throughout the flight. The Basic TACTIX will not provide 3D capabilities, which are only provided in an expanded system with an additional MAGIC computer onboard.

Since TACTIX is a modular system, it may be configured for additional capabilities, fully supporting two crew-members, plus mission specialist joining onboard and sharing the same information over TACTIC network. Such a solution shall be based on expended system architecture, as depicted below:
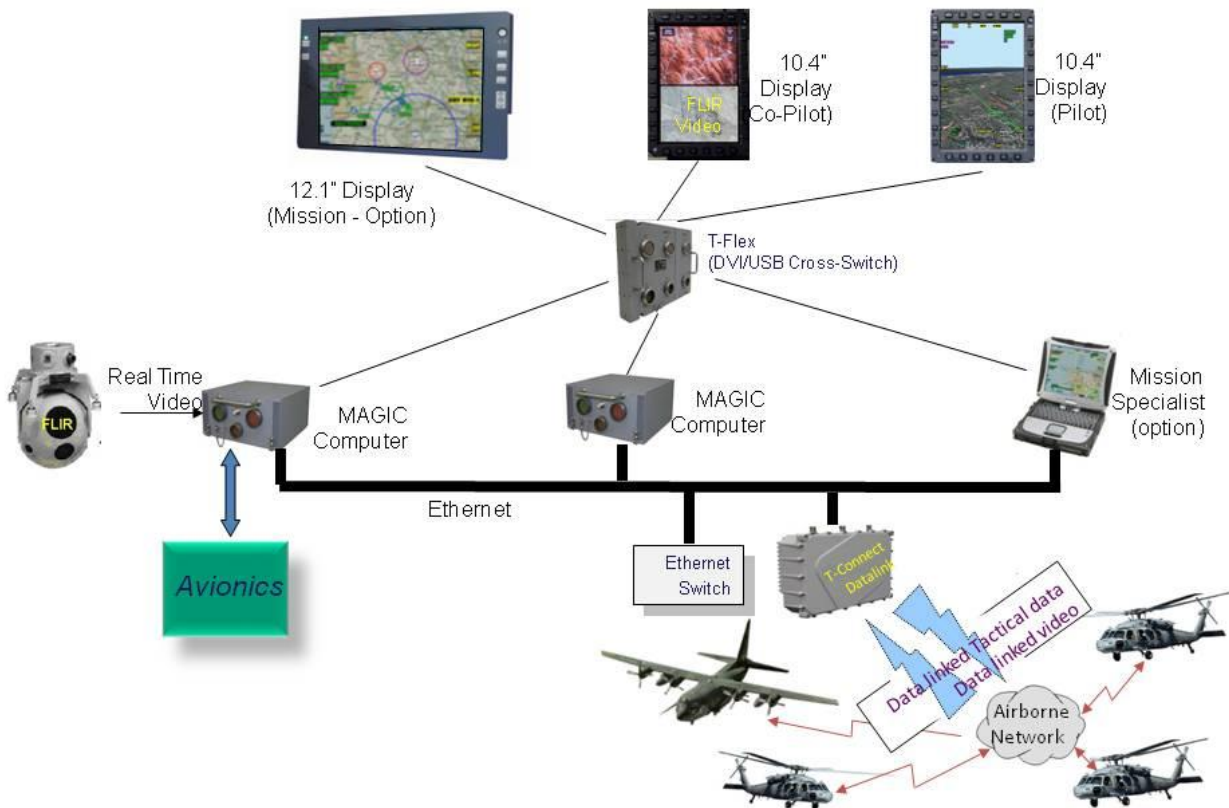
Tactix Onboard Network Arcitecture

Major Features & Functions

- **Mission management** - 2D & 3D digital moving map, flight plan, tactical information as overlays, highway in the sky corridor guidance, supporting information – threats, no fly zones, time & distance to waypoints, navigation compass etc. 3D provide full synthetic vision display.
- **C4I** - Data Center (images, data and live video from onboard and externally received data) & tactical view of all allied and foreign aircraft in the area
- **Mission planning** – mission plan, airborne mission edit, mission rehearsal, terrain analysis (Line Of Sight, ground proximity etc.)
- **Safety** - Computed ground proximity warnings, threats Line Of Sight (LOS) alerts, threats alert, avoidance zone entrance etc.
- **Synthetic Vision option** – 3D presentation of the outside world generates a synthetic vision view of the terrain, with tactical information overlaid over the synthetic video presented to the crew-members. This option is only valid in the network architecture.
- **Mission Planning / Mission Debriefing** - TACTIX is provided with a mission planning & mission debriefing workstation, allowing to plan missions, load it to the helicopter system, record flight data and events and debrief the flight on the ground, with a flight playback feature of the debriefing system.

Frequently Asked Questions

Is Tactix an avionics solution?

Tactix was designed as a mission system. It is a complementary add-on to any existing avionics (legacy or modern), with its' own capabilities and features you will not find in standard avionics. However, in cases where the aircraft does not have modern avionics, TACTIX could be a "cost-effective mini-avionics" providing moving map and information overlays, which will help the pilot to perform his flight and his mission.

Can Tactix be an avionics replacement?

Yes. Tactix basic layers are built over a digital moving map, and includes compass and other avionics related data, combined with the mission data (flight path etc.). In case of a legacy cockpit, in which budget does not allow to go to a full-scale modernization, TACTIX will enhance the basic avionics package, providing the pilot with a moving map and will ease pilot's workload.

What is the benefit of a Stand-Alone TACTIX?

Stand-alone TACTIX is a self contained system, not connected to the existing avionics. Such a system provides the full benefits of C4I, onboard mission planning, full situational awareness (based on communication and stored data), terrain avoidance alerts and more. TACTIX also presents a 2D situational awareness map with threats and other information, as well as intuitive viewed 3D map. Both will reduce pilot workload, and will provide a clear understanding of the mission arena.

What are the C^4I capabilities of TACTIX?

C4I capability is based on information exchange & data sharing. The system is handling data, messages & images exchange between the aircraft and the ground command post, as well as aircraft to aircraft messaging and information sharing. TACTIX allows composing; sending and receiving messages like email exchange, as well as data upload & download. Images captured onboard (via a FLIR sensor for example), could be transmitted to another aircraft, or to the ground. Data received from other aircraft is presented over the onboard map – allied forces location, no fly zone, dangerous areas, threats location etc. All the information is dynamic & continuously updated. The photo to the right is a typical Data-Center image view, after transmitting from another aircraft.

What is the added value of TACTIX to modern avionics?

Installing TACTIX to a platform with modern avionics will bring the following benefits:
- Addition of C^4I functionality (messages, images, paperless cockpit)
- Providing information of targets, threats and allied forces location, which may be overlaid over the main flight displays (Primary Flight Display & Navigation Display)?
- Adds mission planning and mission rehearsal capabilities to the system.
- Adds synthetic vision capabilities.

What is the added value of modern avionics to TACTIX?

- Capability to get sensors data to TACTIX (weather radar, TCAS etc.)
- Receive mission planning from the avionics presented over the TACTIX 2D/3D maps**.**

What capabilities do a 3D map adds?

The 3D map is a true synthetic vision display, including overlaid 3D objects, such as threats, flights corridors, allied and enemy aircraft, avoidance zones etc. All presented in an intuitive synthetic

vision display. It is actually a full 3D moving map, created in real time from stored satellite images and terrain elevation images, all stored on the onboard computer mass-storage memory. The synthetic vision image is better and quicker understood by pilots, reducing the pilot's workload and allowing quick and intuitive understanding of the arena, as an advanced situational awareness tool to the crew.

What is a Data Center, and why it is required in the cockpit?
Data Center is the modern way of paperless cockpit information management. A central tool allows the crew-members quick access to images, charts, messages and any other data items stored. Data Center also presents all currently available live video sources from connected platforms (via data-link communication' if exist), for immediate view. The helicopter may access the video stream from a ground observer, receiving immediate and live video of his point of interest, as well as reviewing messages just received from his command post, or fresh images uploaded to him for his current mission. All the information is intuitive and easily accessed via TACTIX data center.

What modularity & redundancy levels does TACTIX provide?
TACTIX is a distributed architecture, with a local processor to each crew member (Excepts for the TACTIX-Basic that only use a single computer. This architecture will not support redundant operation. If required, an additional computer shall be added to the system). Any fault in one computer, will not degrade the mission capabilities as the other computers on the same mission network will back it up. T-Flex switch allows the flexibility of switching any computer to any display, supporting a high level of system redundancy. The robust onboard network architecture, along with TACTIX T-Flex video/data switch assures that the system shall be tolerant to faults. In a full configuration, the system is still functional in case of faults, due to this high level of redundancy.

What are TACTIX components?
TACTIX is a modern aircraft mission network. It is based on Astronautics' powerful MAGIC computers that provide strong processing and graphics capabilities, as well as mass-storage for maps & images database. The MAGIC computers are rugged, environmentally qualified airborne unit. All onboard computers are linked on a local 1GB Ethernet, operated via a military switch that is part of the system.

TACTIX also include optional capable data-link device (T-Connect) and optional FLIR sensor. If the FLIR sensor exists – TACTIX will integrate to it.

TACTIX is available in the following configurations:
- ✓ Tactix-Basic: Basic, single system for a single operator.
- ✓ Tactix-Duo/Trio: Onboard network of 2-3 operators (Multiple crew onboard network)
- ✓ Tactix-Flex: Flexible system with up to 5 users
- ✓ Tactix-Connected: Add on datalink to any of the above configurations
- ✓ Tactix-View: Add on FLIR sensor to any of the above configurations.