Guardium UGV
Introduction
The Guardium UGV™ is the world's 1st Operational Autonomous UGV System, being deployed this days by the Israeli Army

The System Provides Tailored Cost-Effective Solution and could be easily adapted to support various of security and combat support missions
Guardium UGV™ - Main Characteristics

• Semi Autonomous Unmanned Ground Vehicle
• Medium platform, advanced modular architecture (JAUS).
• Autonomous Navigation
• Obstacle Detection & Avoidance
• Variety of sensors, observation, Acoustics, Panoramic view
• Variety of Payloads: Weapon System, Audio system, Smoke Grenades,
• Command Station Integrated with DAP C4ISR
• Robust wideband Communication Solution
Operational Applications

IDF First Phase Implementation:

- Site Security
- Border Patrol
- Reconnaissance & Surveillance
- Route Proving
- Enemy Deception
- Threats Detection
- Logistics Support
Track Record

• DARPA Grand Challenge (Mojave Desert, CA, 13 Mar-04):
  – Elbit – the only international team competing in the race.
  – One of the two top performers out of 109 candidates.

• IDF Proof-of-Concept (Israel, Jan/Feb-05)
  – Successful demonstration of operational capability:
    • Along the Disengagement Fence.
    • In a Battalion-level urban scenario.

• DARPA Urban Challenge (Victorville, CA, Oct-07)
  – Last 20 Teams in the Competition (Out of 90 world-wide)

• IDF operational evaluation (Y07)
  • Several vehicles and control station
  • integrated to the Operational activity Along the Israeli boarder.

• Operational Border Patrol System (Y08)
Development Approach

Technology  
Gen. 1  
Gen. 1.5  
Gen. 2  
Gen. 2.5  
Gen. 3

TDP

Product

Avidor  
Guardium  
Avantguard  
Ronin

Guardium-UGV  
Phoenix-UGCS  
CLS-UGV  
AG-UGV
Overcoming Technological Challenges

- **Accurate navigation and control system**, with and without GPS availability.
- **Communication** - Wideband, Reliable, Continuous, no Latency.
- **Obstacles detection and avoidance**
  - Other vehicles presence.
  - Human presence.
  - Static obstacles.
- **Human engineering** – Remote control over platforms and multi payloads:
  - Controlling Complex Events.
  - Operators Training.
- High level of **versatility** of the different types of platforms.
Overcoming Technological Challenges (2)

- **Ground tactical environment**
  Connectivity, obstacles, threats, weather etc.

- **Decision making at vehicle level**
  - Situation awareness
  - Real Time reaction

- **Mixed manned and unmanned operational environment.**
  - Doctrine
  - Command and Control

- **Safety and Security considerations:**
  - Reliable operation
  - Self protection
  - Full Control
  - Testing and Validation
System Architecture

- UGV
- Platform
  - Platform & Platform Infrastructure
- Mission Computer
- Vehicle Control System
- Obstacle Detection System
- Payloads
- Global Tactical Planning & Execution Peripheral Sys Handshaking Lethal Payload Control
- Mission Management Center
- Command & Control Center
Command Station

- Maximum automatic system alerts
- Advanced and Unique GUI
- Advanced Safety mechanism.
- Advanced Man-Robot Interface
Automatic Obstacle Detection & Avoidance

- Multi Sensors System (RADAR, Row Lasers, Rotating Lasers, Stereo)
- Open Architecture
- 3D “World” Model
IDF Certified System

GUARDIUM UGV system has passed successfully the IDF Acceptance Tests and has:

**IDF Safety Approval** (Safety, Environmental, Operational)

The system has hundreds of working hours at different conditions (Terrain, Weather, Environmental)
Guardium UGV™ - Main Advantages

- Operationally trialed System – low risk solution.
- Generic Autonomous suit could be easily tailored to any customer vehicle.
- Fully integrated with C4ISR system.
- Open configuration could be adapted per required mission.
- Cost Effective security Solution.
Company’s Current Activities

• Fielding of IDF’s First generation of security UGVs Program – First Half 2008.
• Development of IDF’s second generation of Military UGVs
• Operational evaluation of a Combat Support Vehicle (Phoenix UGCV)
• Securing Critical Assets
Thank You