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Robotic Combat Developments

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Early U.S Efforts

- Command Center

Command Center Development Stations

FMC Corporation's AGVT (advanced ground vehicle technology) demonstrator, based on an M113-series armored personnel carrier.

Advanced Ground Vehicle Technology - 1985

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Autonomous Mobility Efforts

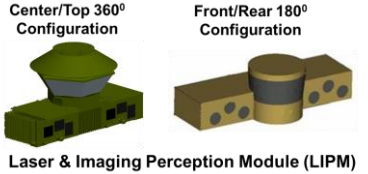
- Autonomous Land Vehicle, 1985
- ARL: Robotic Demos

- DARPA Challenge: 150 mile course
  - 2004: 15 participants; zero completed; 7.4 miles most completed

  - 2005: 23 participants; 5 completed entire course

- FCS: Autonomous Navigation System

Imaging Perception Module (IPM)



Laser & Imaging Perception Module (LIPM)

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URAN 9

- 30 mm cannon (2A72)
- 7.62 mm coax
- ATGM (9M120-1 Ataka)
- Rockets (Shmel flamethrower; or Strela anti-air)

- **Tele-operation**: limited autonomous capabilities if signal lost
- Some limited ablity to detect, identify and engage enemy forces without manual human direction
- Weighs 12 tons and is five meters long
- 22 mph on highways, 15 mph off-road
- Protection from shell splinters and small-arms
- Thermal and electro-optical sights and sensors

Lessons Learned

- **War time experience**
- Not able to perform the assigned tasks in the classical types of combat operations
- Thermal and electro-optical sensors proved incapable of spotting enemies beyond 1.25 miles
- Sensors, and the weapons they guided, were useless while the Uran-9 was moving due to a lack of stabilization
- When fire commands were issued, there were significant delays
- Unreliable
- EW vulnerability
- Loss of communications/control

- Estimates 10-15 more years before UGVs are ready for such complex tasks