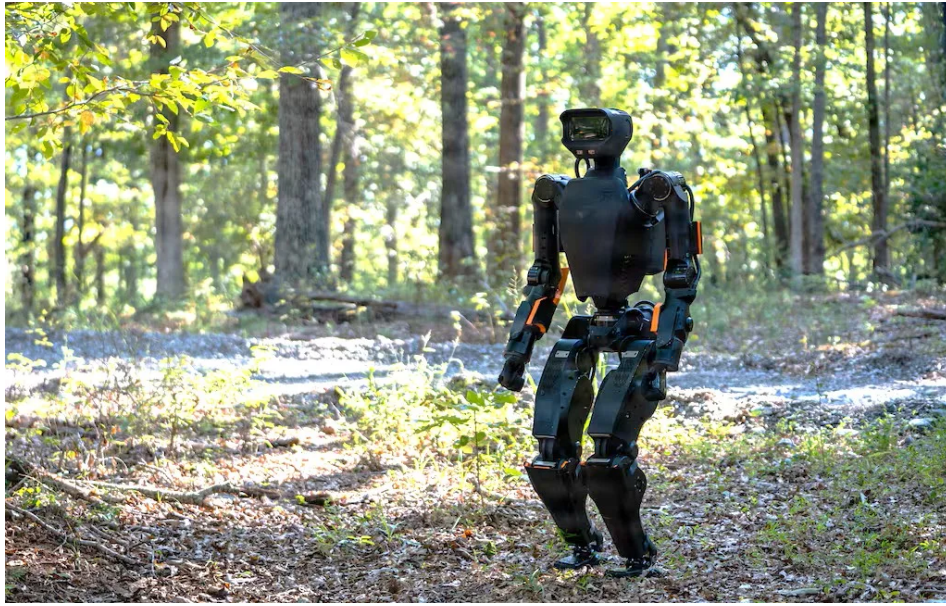




Robot Soldiers: the U.S. Army Between the Terminator Dream and the Harsh Reality of the Battlefield

Published on 20/10/2026

The US Army has announced the winners of the **xTechHumanoid** competition, an initiative created to assess the impact and contribution of emerging humanoid technologies in future military operations. Of the 103 proposals reviewed, the Army selected 10 finalists (each awarded \$25,000), ultimately choosing five winners: **ACES Group, IHMC Robotics, Hydroplane Limited, Ras Labs and Velocity Explorations.**

Alex Miller, Chief Technology Officer of the US Army, explained that the xTech program was designed to rapidly survey the market and avoid becoming bogged down in multiyear studies. Its primary objective is to identify mission needs, challenges and the real opportunities offered by humanoid robots, which are part of a broader autonomy strategy aimed at expanding the depth and effectiveness of robotic systems on the battlefield.

Expectations vs. Reality: the Technology Gap

The competition's evaluation criteria included complex scenarios for small operational units in combat situations, ranging from basic tasks (such as checkpoint security, obstacle negotiation and firefighting) to tests of advanced subsystems (thermal sensors, battery life and endurance). However, the comparison with reality highlighted clear operational limitations:

*"The requirements went beyond what current technology can achieve," stated **Robert Griffin**, senior researcher at IHMC Robotics. "There is currently no robot in the world capable of running at 45 km/h while carrying a 23 kg payload and remaining operational for 24 consecutive hours."*

Faced with these limitations, the participating companies had to focus on specific, targeted areas:

- **Basic operational capabilities:** The IHMC Robotics team tested the robot "Alex". During trials at Marine Corps Base Quantico, Alex demonstrated the ability to move independently over rough terrain (mud, woods, and gravel), responding to voice and remote commands. It performed complex movements such as digging with a shovel, highlighting its motor capabilities despite the test's ultimate failure.
- **Advanced subsystems:**
 - **Velocity Explorations** presented software capable of monitoring radio traffic and interpreting troop tasks and movements to understand the tactical context and act accordingly.
 - **Ras Labs** tested highly sensitive tactile sensors on robot fingertips for handling delicate objects.
 - **Hydroplane Limited** and **ACES Group** focused on power systems. Hydroplane adapted a 10 kW hydrogen fuel cell (initially developed for the Marines), reducing its size for humanoid robots while providing greater efficiency and three times the energy density of conventional diesel generators.

What future for robots in uniform?

The competition's results will provide the US Army with clear guidance on where to direct research and development investment in order to deliver the greatest operational benefit to soldiers on the front line.

Despite the progress, experts urge a strong sense of realism and ethics:

1. **No life-or-death decisions:** Griffin stressed that current artificial intelligence can easily be deceived or confused. No ethical development foresees entrusting these machines with lethal decisions on the battlefield.
2. **Replacing humans in high-risk tasks:** The priority for the humanoid sector remains removing people from situations of extreme danger, such as firefighting operations, rescue missions in burning buildings, or nuclear and environmental cleanup.

In conclusion, the xTechHumanoid competition confirms that the era of advanced robot soldiers is only just beginning: the path toward fully integrating these machines into the armed forces will still take time, but the synergy between commercial industry and defense is charting the course for the battlefields of the future.

News link: <https://www.war.gov/News/News-Stories/Article/Article/4613847/robotics-competition-winners-advance-military-exploration-of-humanoid-capabilit/>