The 9 Technologies Redefining War

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In the context of an increasingly complex strategic environment, technological evolution is radically transforming the nature of war. The advantage on the battlefield will not derive from a single innovation, but from the convergence of existing capabilities with a range of emerging technologies. These are profoundly changing the way we fight, plan, and protect.

Artificial Intelligence and Machine Learning

Artificial Intelligence (AI), machine learning, and data science are revolutionizing the quality and speed of military decision-making processes. They enhance the resilience of digital networks and operational effectiveness, enabling advanced simulations, tactical forecasts, and real-time control of combat systems. Predictions about the arrival of **General Artificial Intelligence (AGI)** – capable of matching or surpassing human intelligence in multiple contexts – are increasingly imminent, with potentially disruptive implications for Defense.

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Robotics and Autonomous Systems

The armed forces are increasing the use of **autonomous and unmanned systems**, both terrestrial and aerial and naval. These capabilities not only generate operational mass but also increase lethality and reduce human personnel exposure. Employment doctrines are adapting to integrate armed drones, autonomous swarms, and remotely controlled terrestrial vehicles.

Advanced Precision Weapons

Modern **advanced precision weapons** allow targets to be hit with extreme accuracy from ever greater distances. This reduces collateral losses and enables faster and more effective operations even in complex or urbanized environments.

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Directed Energy Weapons

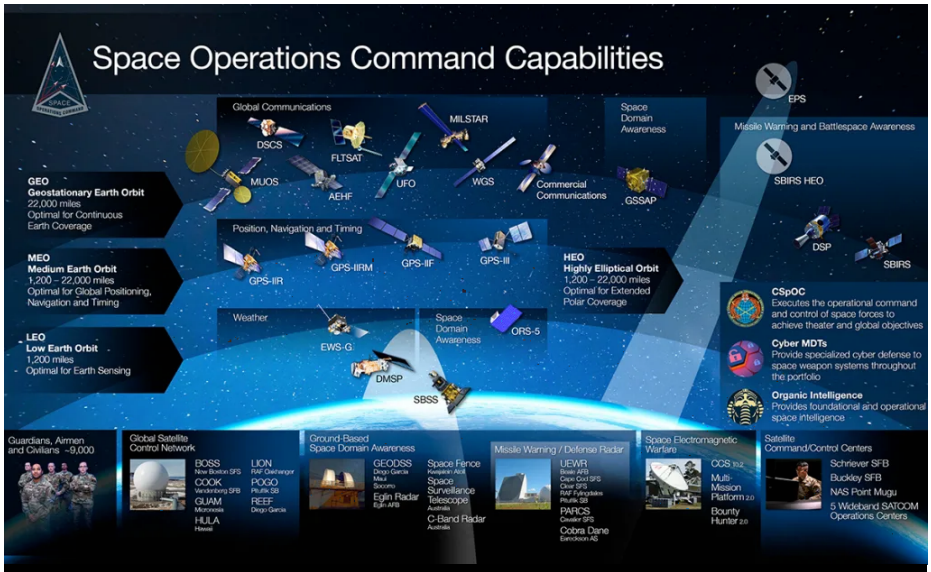
Systems like the British **DragonFire** represent the future of directed energy weapons. These technologies promise high precision, lower operational costs, and less reliance on conventional ammunition, contributing to greater sustainability and operational readiness.

Hypersonic Missiles

Hypersonic missiles, capable of traveling at over five times the speed of sound, are redefining defense and attack strategies. Thanks to their speed and maneuverability, they are difficult to intercept and offer advanced offensive capabilities, with extremely reduced reaction times.

Space Capabilities

Space has become a **fully operational domain**. Satellites and orbiting technologies are essential for communications, navigation, and command and control. However, states are rapidly developing tools to **interfere with or destroy space assets**, making this domain increasingly vulnerable.



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Quantum Computing and Quantum Technologies

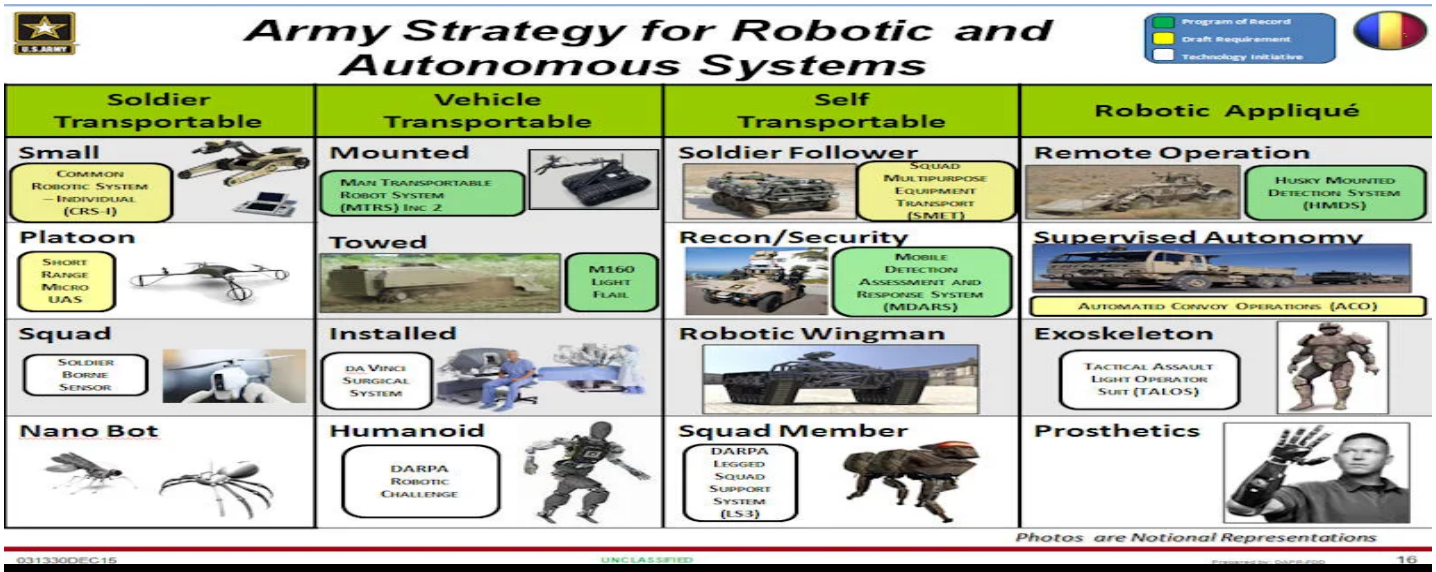
Advances in **quantum computing** could render current encryption techniques obsolete, with serious repercussions on communication security. At the same time, quantum navigation could offer alternatives to GPS in scenarios where satellite signals are compromised by attacks or interference.

Cyber Threats

The cyber domain is constantly evolving. The integration between AI, quantum technologies, and the growing reliance on satellite communications is creating an environment where **cyber threats will be increasingly difficult to prevent** and counter. Attacks could have devastating effects on critical infrastructures and military networks.

Biological Engineering

Engineering biology opens new frontiers in both medical and operational fields. It can enhance the physical and cognitive capabilities of personnel, optimize immune and regenerative responses, develop new energetic and explosive materials, but also create dangerous **biological weapons** and synthetic pathogens, with devastating impacts on a global scale.



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Conclusions

The war of the future will be dominated not by a single innovation, but by the **symbiosis between advanced technologies** and integrated capabilities. Success on the field will depend on who can best orchestrate AI, robotics, space, cyber, and biotechnologies into a single interconnected and adaptive operating system. For modern armed forces, this means **accelerating digital transformation**, investing in research and development, and redefining doctrines and training. The future of conflict has already begun.

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