

SOFTSERVE'S **EDGE PROCESSING** FOR MISSION-READY SPACE ROBOTICS



The space economy, projected to reach **\$1.8 trillion by 2035**, is driving demand for advanced robotics that can operate autonomously in extreme environments. The need for **cost-effective, low-risk solutions** in space hardware and software is clear. However, traditional hardware and software methods are often expensive, inflexible, and slow—hindering innovation and scalability.

Accelerate, streamline, and enhance space robotics development with SoftServe's mission-ready method of integrating high-performance simulation software with advanced space-grade hardware.

CHALLENGES



HARDWARE CONSTRAINTS

Traditional radiation-hardened boards limit flexibility and performance.



EXTENDED DEVELOPMENT TIMELINE

Long transition from prototype to space-grade hardware and software delays deployment.



COMPLEX TESTING REQUIREMENTS

Space projects often require strict verification and validation, and traditional methods complicate hardware-in-the-loop (HIL) testing.



LIMITED ECOSYSTEM SUPPORT

Space-grade software often lacks support for modern AI and robotics libraries.

SOLUTION

Leverage edge processing for mission-ready space robotics to accelerate development and deployment. **SoftServe's methodology brings together high-fidelity simulation software, the *dacreo* AI ecosystem by BruhnBruhn Innovation, and hardware from Blue Marble's Space Edge Processor (SEP).** This combined solution leverages SoftServe's simulation-first methodology and the SEP's radiation-hardened x86-compatible hardware, allowing seamless development from prototype to deployment.

The approach enables space edge processing, eliminating the necessity of downstream processing and prolonged decision-making by human operators. It also facilitates continuous, real-time testing and validation using SoftServe's NVIDIA Isaac Sim™-powered simulation and co-simulation environment. By linking simulation to space-ready hardware, SoftServe's solution provides a secure, cost-effective pathway to achieving high-performance, mission-critical robotics applications.

BENEFITS



Iterative development enablement based on simulated scenarios

Enable continuous testing using NVIDIA Isaac Sim™ and co-simulation.



Space edge computing

Leverage edge processing to bypass downstream processing and minimize communication lags through autonomous decision-making and operations.



Compatibility with Linux-based ecosystems

Support popular robotics and AI frameworks, facilitating software development.



Real-time hardware-in-the-loop testing

Allows for on-demand performance benchmarking and software verification at any project stage.

TECH STACK

- **NVIDIA Isaac Sim™**: Simulation environment for realistic testing and development.
- **SoftServe-owned co-simulation solution**: Integrates high-fidelity models with general-purpose robotic simulator.
- **Blue Marble Communications Space Edge Processor (SEP)**: State-of-the-art, radiation-hardened, heterogeneous compute platform.
- **BruhnBruhn Innovation's *dacreo* AI software stack**: Linux-based ecosystem enabling advanced AI and machine learning capabilities.

ACCELERATORS



Rapid prototyping on space-ready hardware: Develop and test on actual flight-ready SEP hardware, reducing time spent on hardware transitions.



Continuous simulation integration: SoftServe's simulation environments enable ongoing testing and validation, ensuring application resilience and performance.



Reusable code compatibility: Reuse terrestrial software frameworks seamlessly in space, leveraging Linux-based robotics and AI frameworks.

BUSINESS VALUE

FASTER TIME-TO-MARKET

Accelerate development and deployment of space robotics applications.

ENHANCED PRODUCTIVITY

Unified development toolchain and real-time debugging improve software quality and efficiency.

REDUCED DEVELOPMENT COSTS

Minimize expenses through the reuse of terrestrial software solutions and unified development environment.

INCREASED INNOVATION CAPACITY

Physical AI, machine learning, and robotics frameworks boost the development of cutting-edge solutions.

LOWER PROJECT RISKS

Continuous simulation and testing reduce uncertainties while increasing reliability.

PARTNERS



WHY SOFTSERVE

STABILITY

31 YEARS

Award-winning service, across multiple industries

EXPERTISE

30%

of the team are Sc.D. & Ph.D. holders in robotics & advanced automation

EXPERIENCE

20+ YEARS

Our team's total experience in space projects

TRUST

14 YEARS

Longest space mission with our experts involved

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