



The **Uli (Unified Link Interface) SDK** is a comprehensive suite of software libraries designed to enable seamless integration of asset capabilities across multiple domains. By offering standardized, unified interfaces within the infrastructure, the Uli SDK aligns with the Department of Defense (DoD) **Modular Open Systems Approach (MOSA)**. This ensures smooth interoperability between modules, supporting the dynamic addition, removal, or reconfiguration of components as operational needs evolve.

Building on its foundational interoperability, the Uli SDK empowers advanced **Data Visualization** and **AI agent integration** by providing consistent interfaces to access and interact with data topics and asset capabilities. This enables developers to create sophisticated solutions that enhance situational awareness, optimize decision-making, and improve system performance across diverse operational domains.

Key features of the Uli SDK include:

1. **Modular Open System Approach (MOSA)** provides interoperability and flexibility of the system architecture.
2. **Communication path partition** that only servers and clients of the same partition can communicate.
3. **Secure messaging** and mutual authentication between services and clients.
4. **Dynamic ID assignment** for assets, computing modules, and applications.
5. **Discovery** of services, resources, data topics, agents, and transform reporters.
6. **Data access authorization** categorized into classified, controlled, and unclassified tiers.
7. **Exclusive service control**, ensuring controlled access to services.
8. **Lifecycle management** of services, including startup, runtime, and shutdown phases.
9. **Service health reporting and monitoring** to track Comp App status.
10. **Emergency stop (e-stop) propagation** to allow services to manage critical situations.
11. **Support for various operational modes**, including Standard, Training, Maintenance, and user-defined modes.
12. **Integration with** Google MESOP, ROS1, ROS2, Foxglove Studio, AI Agents, NVIDIA ISAAC Sim, and Omniverse.

13. **Code generation tools** that produce C++ code for record structures, messages, services, Comp Apps, and Python bindings.
14. **Cross-build support** for x86_64, NVIDIA Jetson Nano, Xavier, and AGX, as well as multiple Ubuntu versions (18.04, 20.04, 22.04, 24.04).
15. **Comprehensive examples** of Comp Apps and QT PySide6-based UIs.

Advantages

The Uli SDK stands out for its secure and dynamic features, providing key advantages:

Safety: Monitoring the user e-stop event and the health conditions of the services. Partition message transports between safety-critical and general-purpose functions.

Security: Secure messaging and mutual authentication between services and clients.

Unified agent and data access interfaces: enable the discovery of agents and data topics, and support agent execution and data topic subscriptions. Data access is categorized into classified, controlled, and unclassified levels, with separate storage for each.

Quality: Quality assurance is embedded throughout the development lifecycle, with continuous review and validation to ensure objectives are met.

Cost-effectiveness: The Uli SDK is open-source for licensed customers, offering low overall costs.

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