

# UCS and RTI



The Unmanned Aircraft Systems Control Segment (UCS) Architecture is a U.S. Government-owned architecture that defines the operational requirements for interoperable and interchangeable software components for vehicle control and sensor payloads. RTI® Connex™ DDS fully conforms to the Object Management Group Data Distribution Service for Real-Time Systems (OMG DDS) middleware standard and provides a full featured data bus for implementation of the UCS Architecture.

## Joint Benefits and Highlights:

- Promotes interoperability as the primary business attribute
- Encourages decoupling across time and space
- Provides infrastructure products to support system integrators
- Uses DDS to ensure standards compliance
- Drives business innovations, such as the RTI Infrastructure Community model
- Describes over 150 application services with extensible architecture
- Uniquely supports nonfunctional properties with Quality of Service capabilities

The UCS Architecture uses an open business model with an Open Architecture (OA) based on Service Oriented Architecture (SOA) principles. By prioritizing interoperability as a primary business attribute and specifying interoperability guidelines, it promotes innovation and competition for systems capability across large and small businesses. It also increases collaborative efforts and reduces the total ownership costs of interoperability projects.

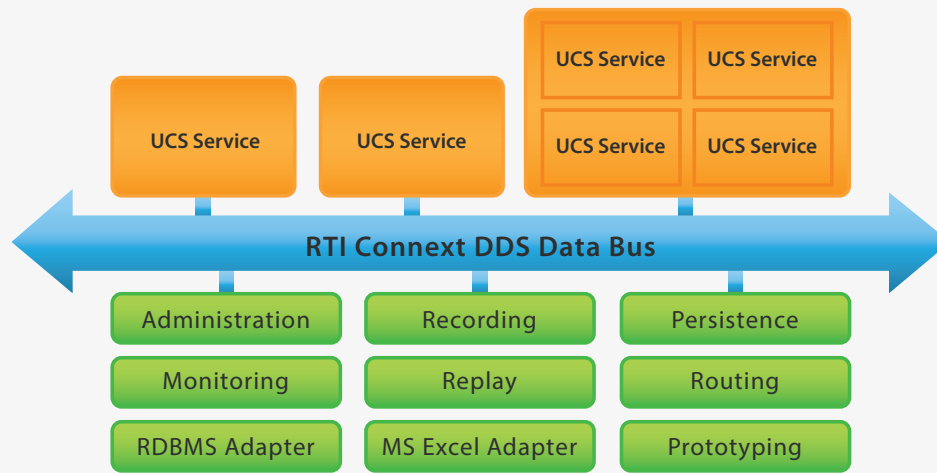
The U.S. Government owns this model and all related architecture and environment transformations. UCS deliberately avoids specifying an implementation framework or approach. However, to date, all UCS implementations, including the initial work package created by five major system integrators, have used RTI Connex DDS as the infrastructure bus.

Since the inception of UCS in 2009, RTI has been integral to the development of the architecture specification and implementation patterns to best promote interoperable systems. Staff from RTI have served as the chair of the data model working group, chair of the implementation platform elements subcommittee (subcommittee 3), chief engineer of interoperability, and various other leadership roles.

In addition to providing model and architecture expertise to UCS through its working group, RTI has also developed the capability to transform the UCS model and architecture into DDS-specific implementations.

RTI Connext DDS is a low resource usage, high performance and DO-178C Level A certifiable method of seamlessly implementing both the content and context specifications of the UCS model. Connext DDS not only covers both message structure (Interface Definition Language - IDL) and context, it is also uniquely suited to support nonfunctional properties via Quality of Service (QoS) capabilities.

The breadth of UCS includes safety and IA elements, use cases, service decomposition and specifications and interface and message specifications. It also provides a rigorous process for documenting messages, enabling enhanced interoperability between different protocols.



RTI Connext and UCS

#### About RTI

Real-Time Innovations (RTI) is the Industrial Internet of Things (IIoT) connectivity company. The RTI Connext® databus is a software framework that shares information in real time, making applications work together as one, integrated system. It connects across field, fog and cloud. Its reliability, security, performance and scalability are proven in the most demanding industrial systems. Deployed systems include medical devices and imaging; wind, hydro and solar power; autonomous planes, trains and cars; traffic control; Oil and Gas; robotics, ships and defense.

RTI is the largest vendor of products based on the Object Management Group (OMG) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, California.



Your systems. Working as one.

CORPORATE HEADQUARTERS  
232 E. Java Drive  
Sunnyvale, CA 94089  
Tel: +1 (408) 990-7400  
Fax: +1 (408) 990-7402  
info@rti.com