

CAPABILITY BRIEF

RTI MedTech Reference Architecture

DEVELOPING NEXT-GENERATION MEDTECH SYSTEMS WITH RTI CONNEXT

HIGHLIGHTS

Ready-to-use framework for MedTech systems that reduces technical and program risks

Pre-designed architecture that accelerates development

Best practices to help reduce the time and effort required to build reliable systems

Architecture that includes real-world examples and clear use-cases

Detailed documentation and guides

RTI's MedTech Reference Architecture provides everything you need to get started with RTI Connex[®]: a flexible data model, Quality of Service, straightforward documentation, DDS entities, and security artifacts. Comprehensive demos illustrate the value that Connex[®] provides, highlighting the ability to reuse many of the components for your own development efforts.

STREAMLINING THE DEVELOPMENT JOURNEY

RTI's MedTech Reference Architecture is designed to make the development journey easier. Whether you are evaluating Connex[®] or already a user of Connex[®], you can use the reference architecture to understand best practices and key concepts. Our MedTech Reference Architecture helps users gain new insights on how to architect a system using Connex[®], which delivers a real-time software communication framework to streamline connectivity across complex systems.

The MedTech Reference Architecture is hosted on the [RTI Github repository](#), containing:

- Documentation
- One demo focusing on the surgical robotics use-case (see Figure 1).
 - Programmed in Modern C++ and Python, following RTI's best practices
 - Simple GTK-based GUIs
 - Security artifacts to secure communication in compliance with the DDS-Security[™] specification

- One demo that showcases how to use RTI Recording Service and RTI Replay Service to record and replay data from a live system.
- XML Application Creation files, including: Data Types, Quality of Service configuration, and Domain and Participant libraries.

XML Application Creation

XML Application Creation is a mechanism that simplifies the development and programming of Connex[®] applications. A number of XML files containing data model, Quality of Service, and DDS entities make up the architecture of the system. In the case of this reference architecture, they make up the architecture of the demo applications.

Documentation

The documentation is made up of a number of README files that describe the key takeaways from each file. It serves as a comprehensive way to understand what is needed to architect a system using Connex[®]. It also highlights RTI's recommended best practices to architect and develop a system.

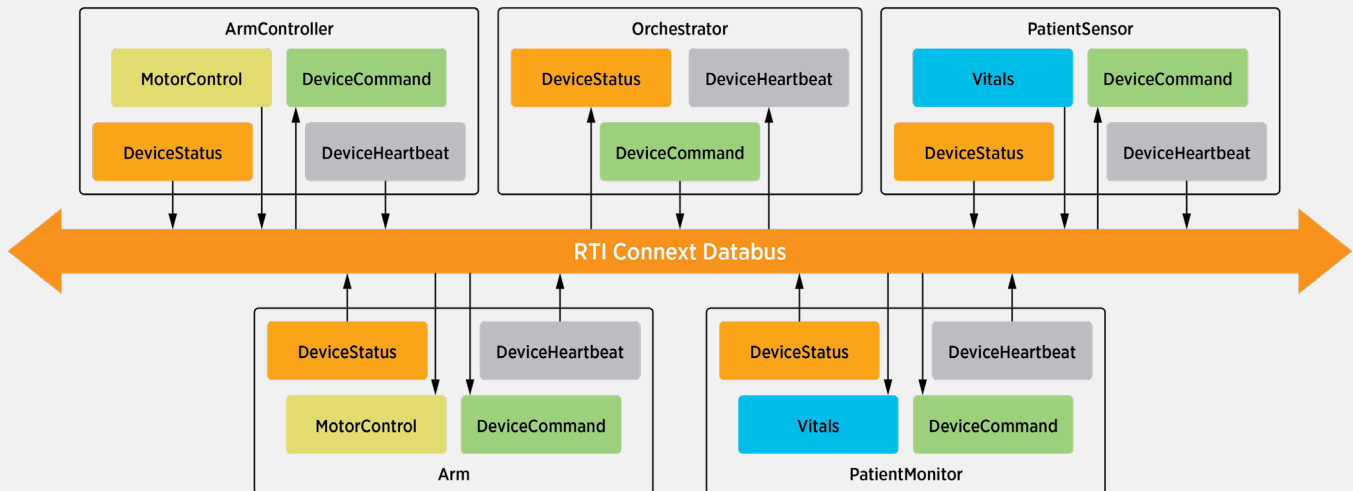


Figure 1: Architecture of the MedTech Reference Architecture demo of the surgical robotics use-case

DEMO 1: SURGICAL ROBOTICS

This demo exemplifies a simple crossover between RTI Shapes Demo and a surgical robot. It is made up of 5 components:

- **Orchestrator:** A GUI application that helps the user control the system, while showing the status of the other applications in the system.
- **Arm Controller:** A GUI application that helps the user control the robotic arm, sending it commands.
- **Arm:** A GUI application that displays the angles of the different joints of the robotic arm through colored graphs.
- **Patient Sensor:** A command-line application running in the background that sends randomly-generated vital signals to the Patient Monitor.
- **Patient Monitor:** A GUI application that displays the vital signals sent by the Patient Sensor through colored graphs.

DEMO 2: RECORDING/REPLAY SERVICE

This demo showcases how to use RTI Recording Service to record the data from Demo 1. Then, it demonstrates how to use RTI Replay Service to replay the recorded data. These two services can be used as powerful tools for:

- Recording live data for post-mission analysis
- Replaying for testing and simulation purposes
- Achieving regulatory compliance
- Running performance verification
- Completing data logging

To learn more about RTI in Healthcare, visit rti.com/industries/healthcare.

ABOUT RTI

Real-Time Innovations (RTI) is the infrastructure software company for smart-world systems. Across industries, RTI Connex® is the leading software framework for intelligent distributed systems. RTI runs a smarter world.

RTI is the market leader in products compliant with the Data Distribution Service (DDS™) standard. RTI is privately held and headquartered in Silicon Valley with regional offices in Colorado, Spain, and Singapore.

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