User Scenario 3: Medical Devices

Return to User Experiences

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- ☐ **[DDSFmember]Please Review**

Overview

The medical industry is interesting because of the wide variety of uses spanning things such as connecting surgical tools in the operating room, home monitoring tools connecting patients to doctors offices, wearable medical devices, and large scale collection of usage data from all systems. Each of usages have their own particular networking challenges and data_distribution_service_dds is able to make software development and deployment easier across a lot of these scenarios.

One of the things that is interesting is the ongoing and often unexpected benefits that DDS user realize from the technology. Here is an example, a surgical device manufacturing team made the decision to use DDS in their product. Their initial concern was reducing development cost and having the flexibility to modify their design using more or fewer processors and basically changing the location of their software components without having to modify or recompile the application code. After four years of development, the team realized that in addition to the original selection criteria, their integration and test costs had dropped significantly. DDS has standardized Application Programming Interfaces (APIs) for multiple programming languages. The device development team was using C and C++ DDS APIs, but the test team was able to use Java and Python DDS APIs to quickly build and modify test simulators and test software. Using DDS dynamic discovery, the simulators and real hardware components were interchanged seamlessly within the system.

The electronics in operating rooms are becoming increasingly smarter. Part of this is attributable to the sharing of sensor data, alerts and notifications between the devices and better interaction with the human surgical team.

Standardized interfaces using the DDS technology make sharing the data possible even between different medical equipment manufactures using different DDS vendor products. These are the results and benefits of those interactions being realized today.

DDS Benefits in Medical

- Deployment to varied underlying network infrastructures - Easy deployment across lan, a variety of hospital networks that have different characteristics and limitations, and wan for different connections.
- Wide range of processors / os / language support – from embedded to server - The support for a wide range of target processors and environments is important. There are medical devices using a variety of Intel and ARM Power PC processors. Along with larger server clusters at the back-end. There is also a variety of typical desktop and server configurations Operating Systems down to various embedded Real-Time Operating Systems (RTOSs). Being able to use DDS across all these environments and configurations is a huge benefit allowing flexibility for

future development, deployment and integration.

- Standardized DDS Security - Is critical support U.S. Food and Drug Administration (FDA) requirements for connecting systems as well as for patient information security.
- On-the-wire interoperability between data_distribution_service_dds products that span from typical desktop -

Figure 1: