4.2.5 Manageability

Return to Non-Functional Requirements

- ☐ **[char]Please Review**

Manageability is most important during the second half of a System Lifecycle phases (i.e. operation, maintenance, support). Manageability can greatly influence the recurring costs and can increase the chances of a failure. Often a system that hard to manage is described as fragile since the smallest of changes can have dire consequences on the systems functionality.

> *Manageability directly influences a system's reliability, availability, security, and safety, thus being a key ingredient of system dependability.*
>
> *Just like security and safety, manageability is generally hard to retrofit in complex systems—it is always easier to build it in from day one. However, in the absence of means to measure manageability and to quantify the various tradeoffs, it is difficult to get the design right. We proposed a manageability metric that combines management workloads and weightings based on real world studies with direct measurement of the number of steps involved in management tasks and their duration.* [1)]

- 4.3.5.1 Types of Manageability Functions
- 4.3.5.2 Manageability Costs
- 4.3.5.3 System Manageability Issues
- 4.3.5.4 Software Manageability Issues

DDS Specifics

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Data Distribution Service (DDS) can not solve all of a systems(or projects) Maintainability issues, however, by DDS's design, it can eliminate or reduce the Manageability issues that could arrise from using DDS.

Table 1: DDS role in helping Manageability

Kinds of Management	Description
Health Monitoring, Logging, and Alerting	Although there are currently no DDS standards for that directly supports System Monitoring, each of the DDS Vendors have sets of tools which can be used for that purpose. These tools include • Development and troubleshooting including specialized network sniffers, modeling tools, and code generators • System monitoring and administration including terminals, shared memory management tools, recorders and replayers • Functional, systems and performance testing • Federated Discovery • Bridges to other Message-Oriented Middleware (MOM) products • Topic aggregators
Configuration and Control	DDS uses a standardized Discovery process which eliminates most of need for configuration. Some DDS Vendors offer specialized or advanced tools that aid in tuning DDS configurations and discovering performance issues
Deployment and Updates	DDS Extensible and Dynamic Topic Types for DDS (DDS-XTypes) allows for planned evolution of the Datatypes within a ddsapplication. For example, adding or removing fields in a Data Structure, changing the basic type from an int16 to an int32, etc.
Asset Discovery and Inventory	DDS automatically registers all Data Writer and Data Reader allowing them to be discovered. It is possible

1)

Toward Quantifying System Manageability, George Cadea, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, Accessed 20 July 2020, https://www.usenix.org/legacy/event/hotdep08/tech/full_papers/candea/candea_html/index.html

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Last update: **2020/11/20 21:04**