Course: IT-ONK

Exercise	Data Distribution Service (DDS)
Material	N/A
Required	Approved solutions to all exercises are prerequisite for attending the exam
Deadline	See Campus Net
Revision	April 30, 2013
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Middleware

1. What does middleware do, and why is middleware needed?
2. Mention one concrete middleware implementation
   (a) Illustrate how this can be part of a distributed system.
   (b) What communication paradigm, e.g. RPC or Publish/Subscribe, does it employ?
3. How does IDL (Interface Description Language) relate to middleware?
4. What does space, time, and flow decoupling mean? Relate to P/S middleware

Data distribution service for real-time systems

1. Describe briefly the Data Local Reconstruction Layer (DLRL)
2. Describe briefly Data Centric Publish Subscribe (DCPS)
3. Describe briefly the roles of the DDS/DCPS entities
   (a) Subscriber and Reader (b) Publisher and Writer (c) Topic name, type, and key
4. Describe briefly the role of quality of service parameters
5. Redo the Shapes examples and the Java example from the slides

Analysis, design, and implementation

Analyse (OO/UML), design (OO/UML) and implement (Java) a minor distributed service prototype based on RTI Connext. The purpose of the service is up to you; it should at least involve:

1. Two publishers that publishes different kinds of data
2. Two subscribers with different data needs
3. Differentiated levels of qualtity of service

For instance, the service could distribute news tagged with one or more predefined categories, e.g. sports, economy, and science; the subscribers may only be interested in certain news categories. Also, the service could distribute stock quotes to interested consumers, or sensor output to process-montior and -control devices. To get started, you can revise the example in the end of chapter 3 in the your reading: Real-Time Innovations "RTI Connext: Core Libraries and Utilities. Getting Started Guide", RTI, 2012.

Technical report

Write a technical report that

1. Includes answers to all exercises
2. Incorporate the answers in a natural way into your report text
3. Adheres to the report template on CampusNet