

Sistemas Embarcados Distribuidos

OPENDDS

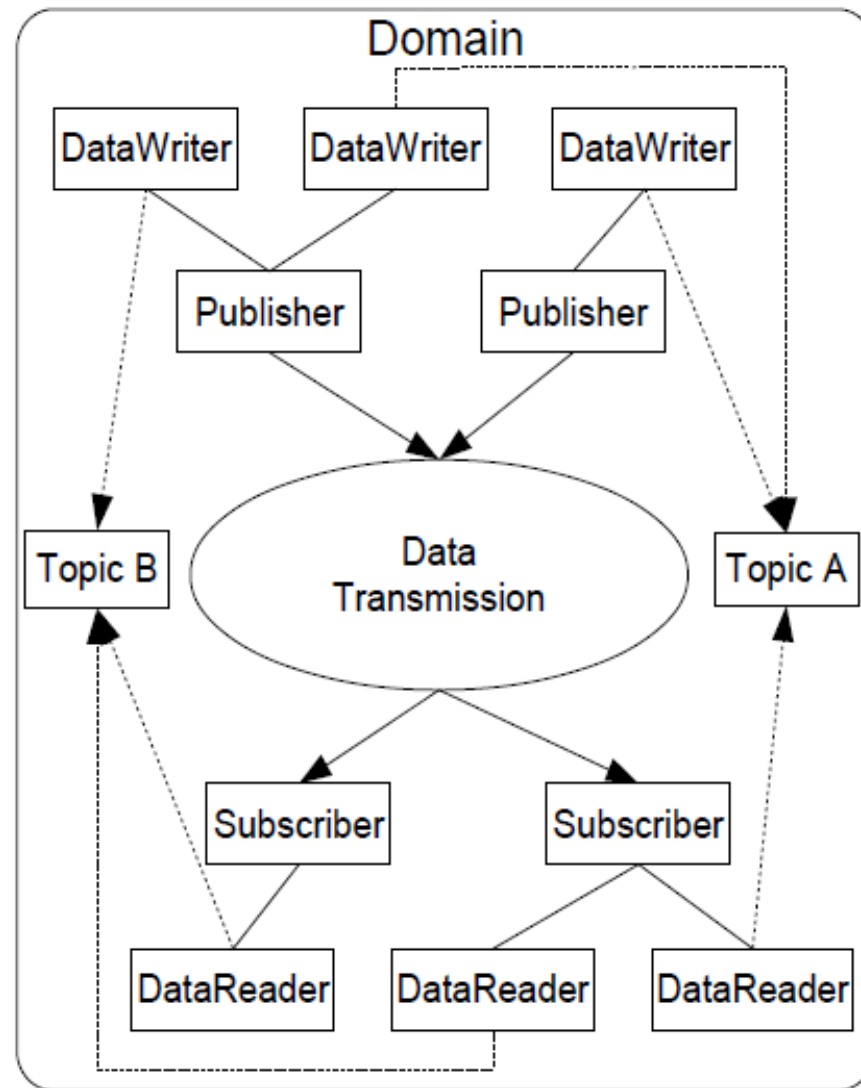
5 de Junho de 2019

Prof. Sergio Takeo Kofuji

Instalação e Testes

- Ambiente Windows com o Visual Studio 2017
- Linux Ubuntu 18.04/16.04/14.04
 - `sudo apt install build-essential`
- Rede de Maquinas Ubuntu no VirtualBox, usando NAT NETWORK
 - Configurar o endereco das maquinas no `/etc/hosts` e reinicializar o service de rede ou fazer o reboot
- Raspberry Pi 3
 - Cross-compilar o OPENDDS para o ARM e transferir o arquivo para o RPI
 - Scp
 - Copia direto no SDCARD
- PC (Windows ou Linux) + Raspberry Pi 3

Figure 1-1 DCPS Conceptual Overview



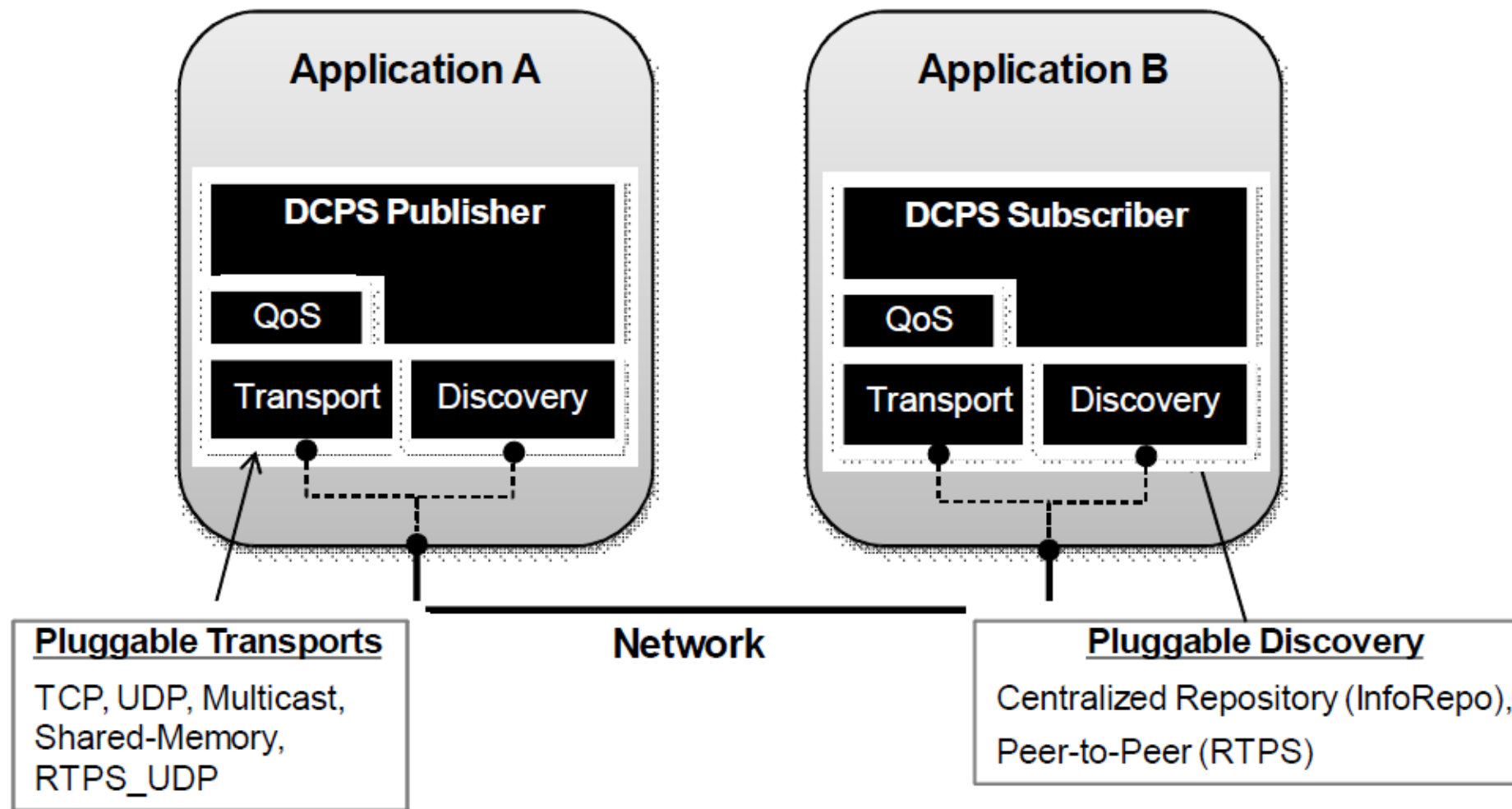
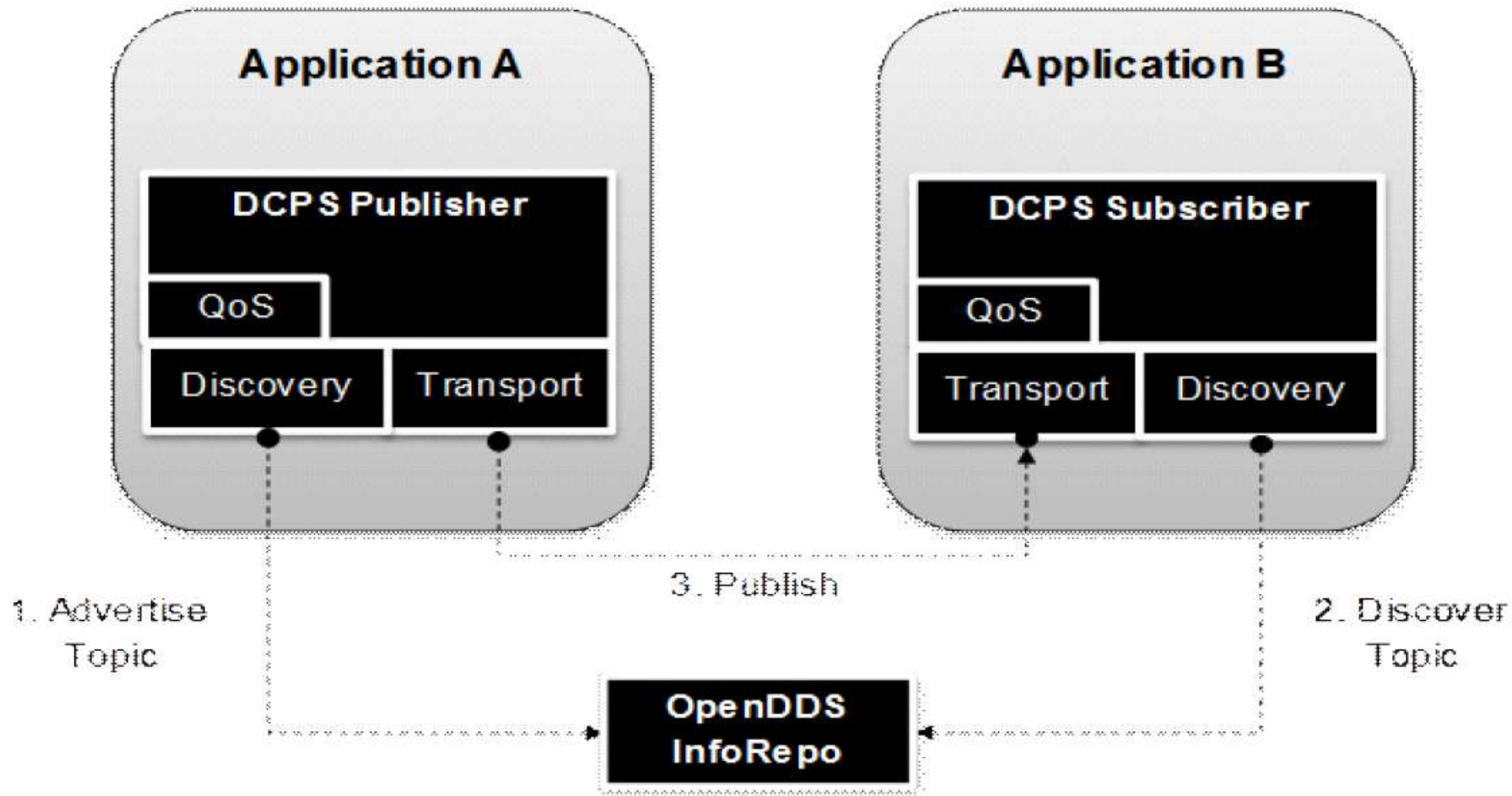
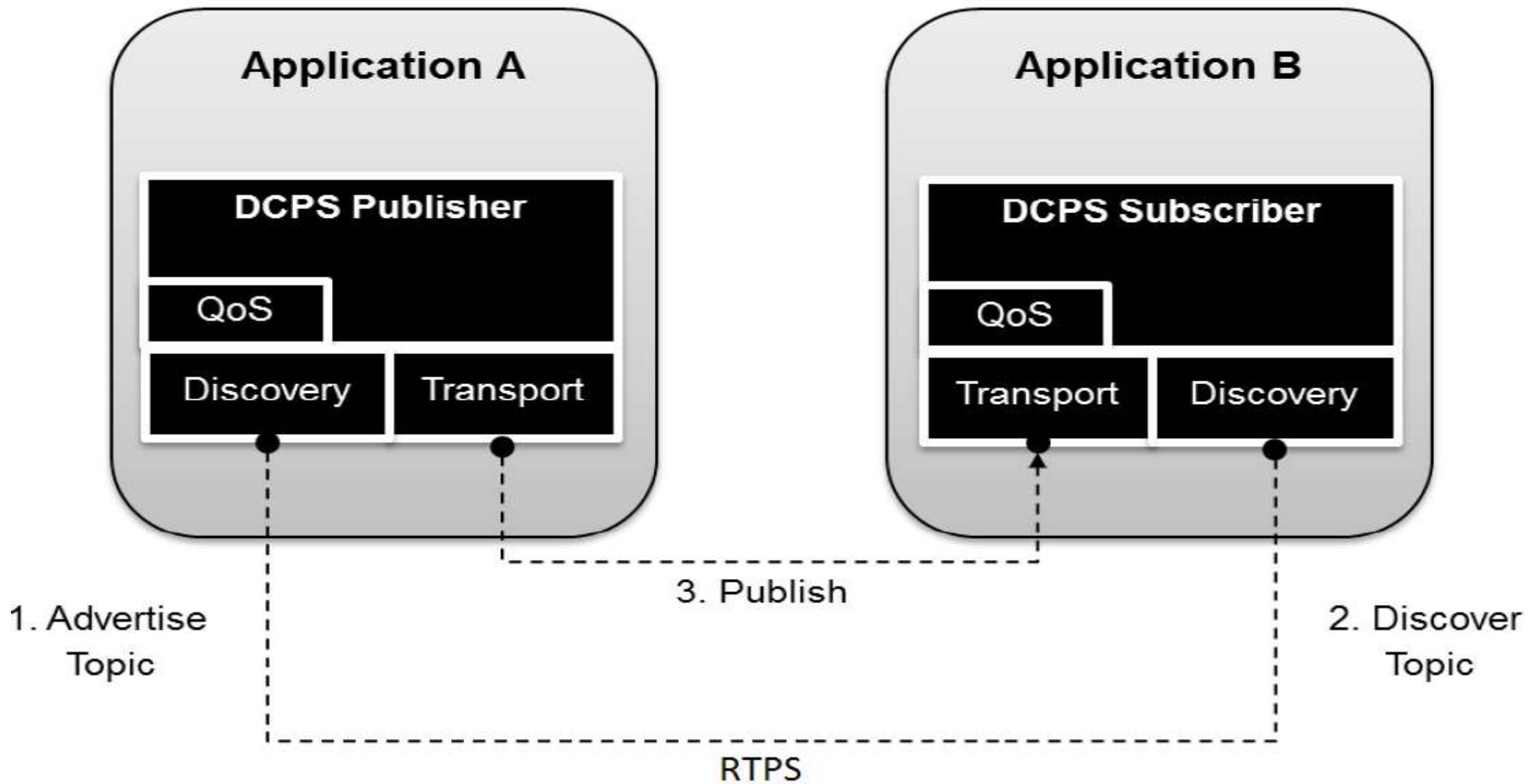
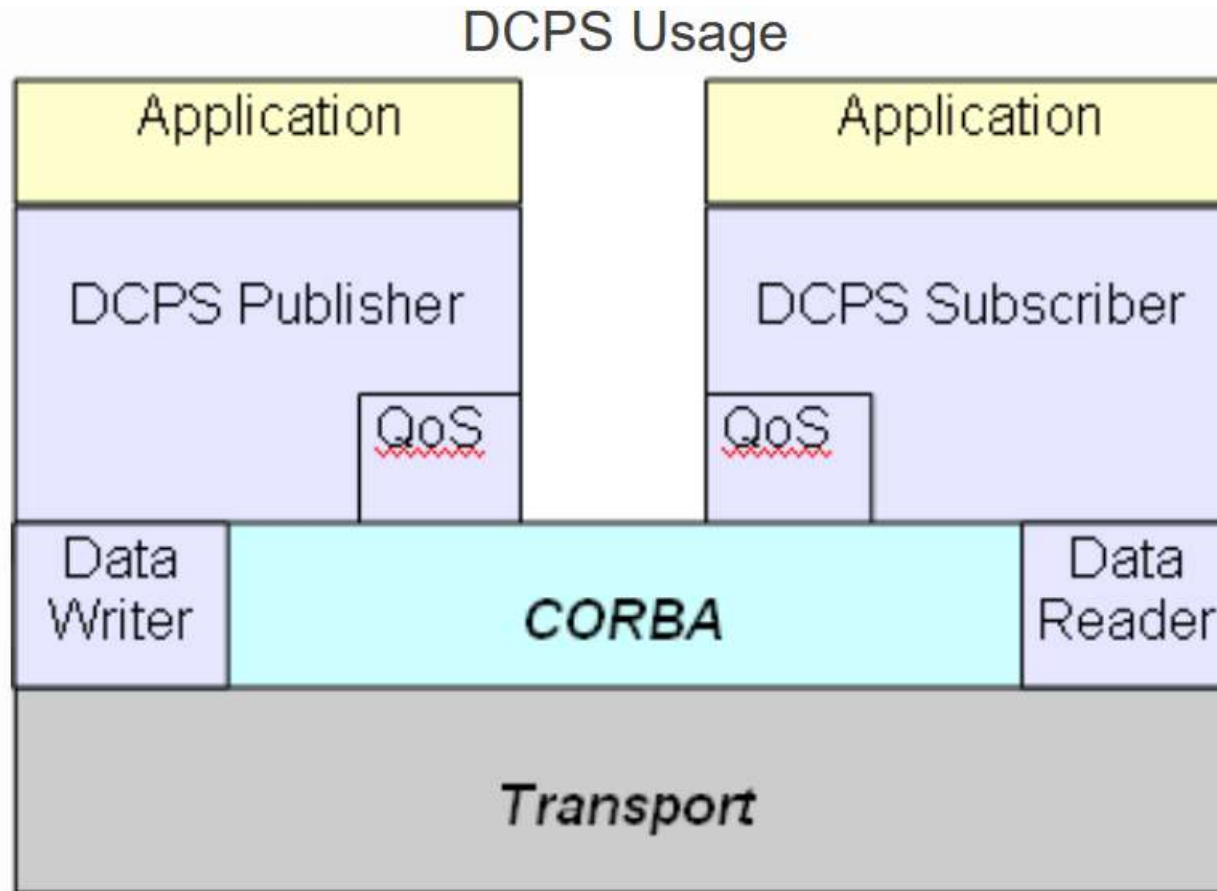


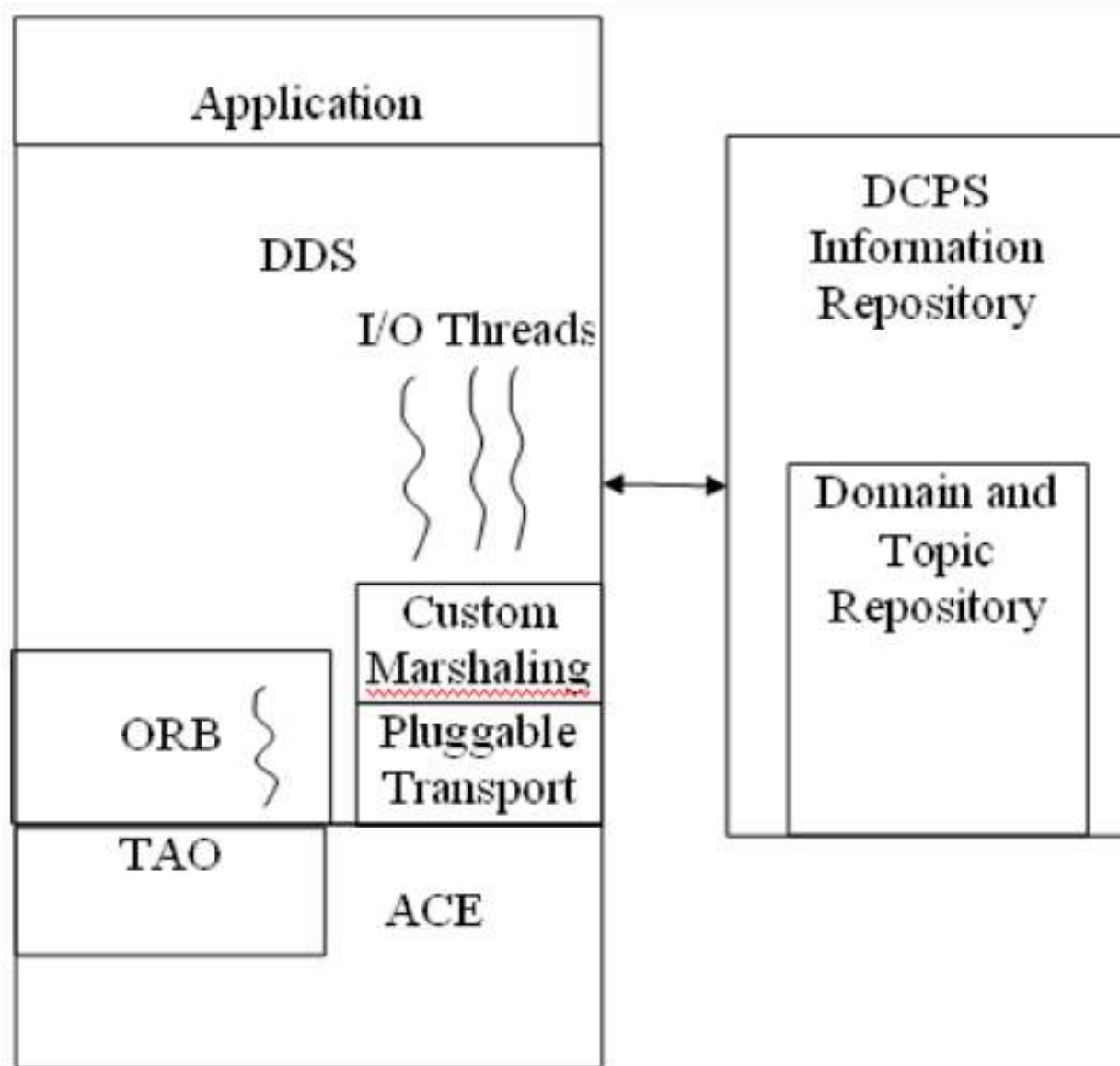
Figure 1-2 OpenDDS Extensible Transport Framework





Arquitectura OpenDDS





Implementação OpenDDS

<http://opendds.org/documents/implementation.html>

Custom marshaling

- An efficient variant of CORBA's CDR is used

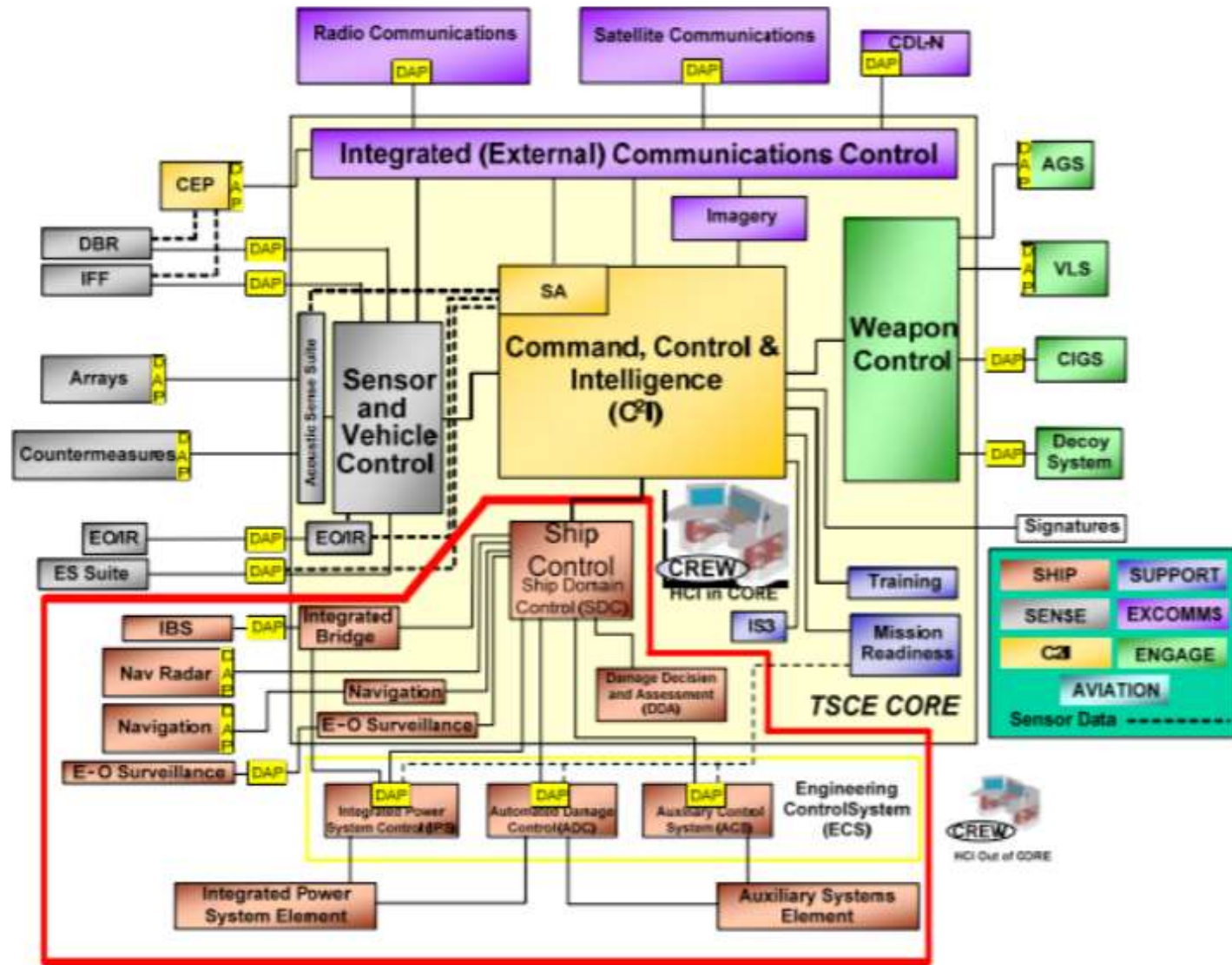
DCPS Information Repository

- Separate process that brokers domain interactions
- All participants interact and rendezvous through the repository
- Needs to be running when DDS is used
- Is not involved in the actual data flow

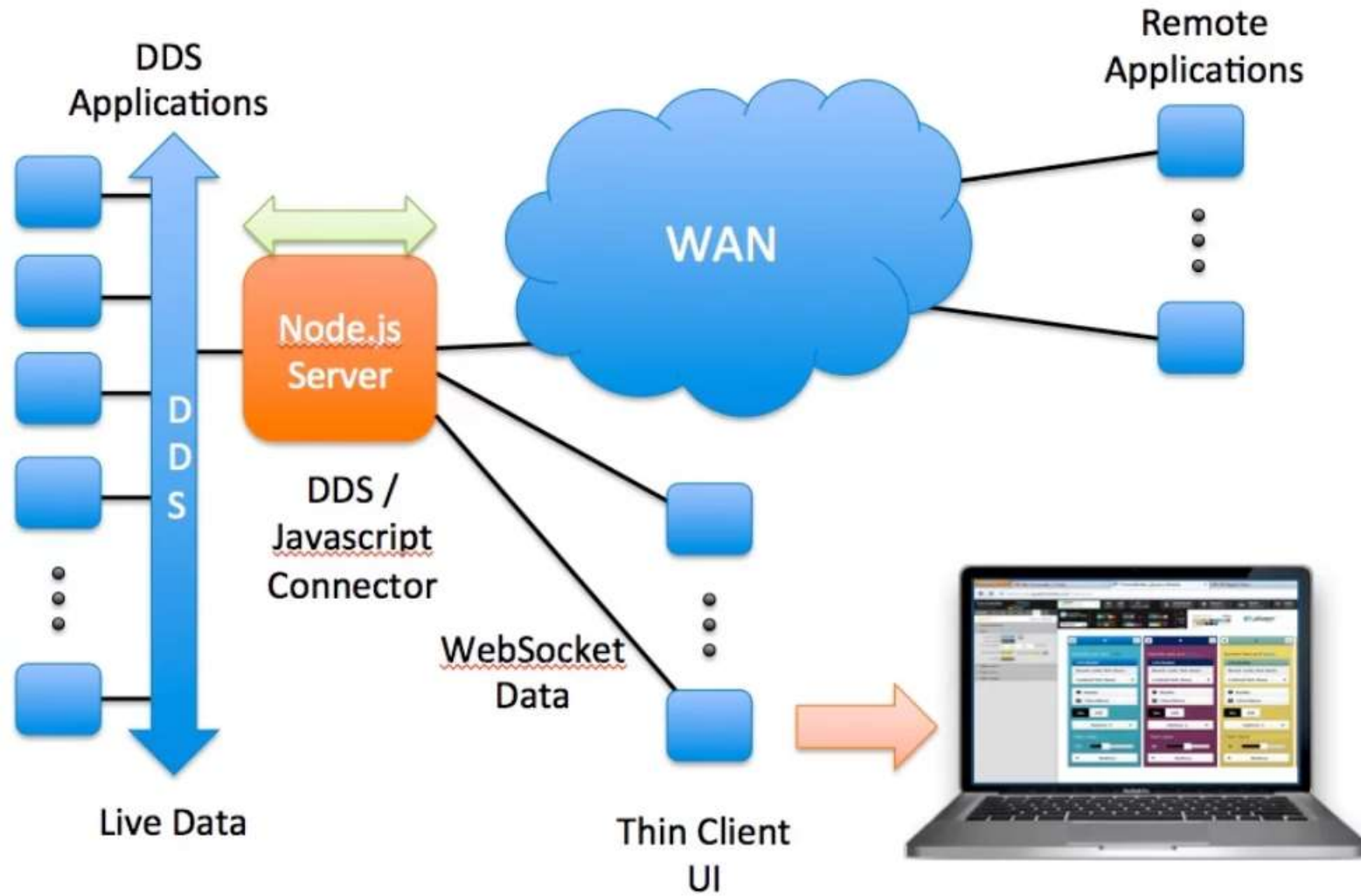
Threading

- OpenDDS creates several threads
- Separate thread to run the DDS ORB
- Separate threads for handling non-CORBA I/O

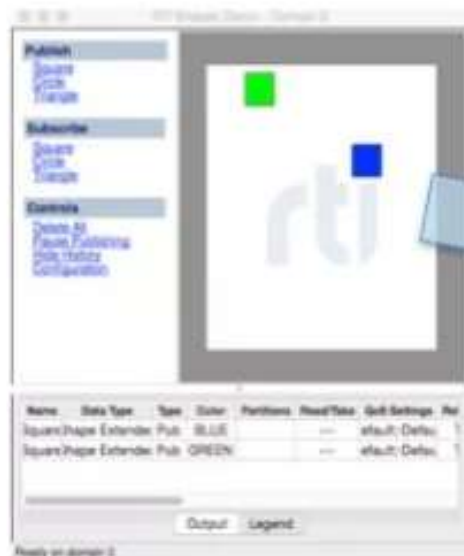
INTEGRAÇÃO DDS+NODERED+...



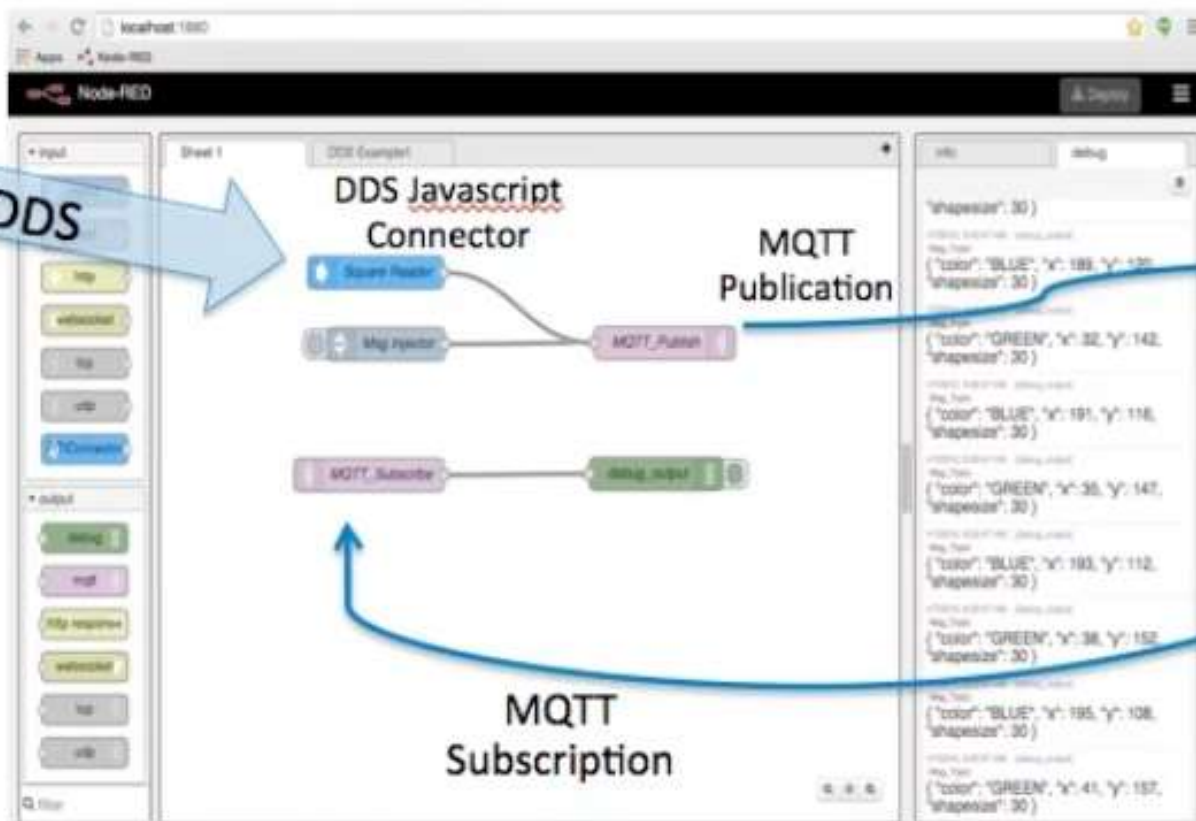
<https://www.energy.gov/sites/prod/files/2016/08/f33/23.%20Intergrating%20VOLTRON%20with%20NodeRed%20and%20DDS%20%28Roup%2C%20PNNL%29.pdf>



NodeRed Development



DDS
Publisher



MQTT
Server

<https://community.rti.com/downloads/experimental/rticonnextdds-connector>

VORTEXDDS+NODERED

- <https://istblog.adlinktech.com/2015/11/10/rapidly-build-iot-apps-with-vortex-and-node-red/>

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- <https://objectcomputing.com/resources/publications/mnb/code-generation-with-opendds-part-i>
- <http://mnb.ociweb.com/mnb/MiddlewareNewsBrief-201006.html>
- <http://mnb.ociweb.com/mnb/MiddlewareNewsBrief-201007.html>
- <https://hub.docker.com/r/objectcomputing/opendds/>
- https://www.slideshare.net/PrismTech1/dds-and-opcua-explained?from_action=save

Video



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Revolutionizing Data Distribution with an Open and Secure DDS



OpenDDS[®]

August 22, 2018

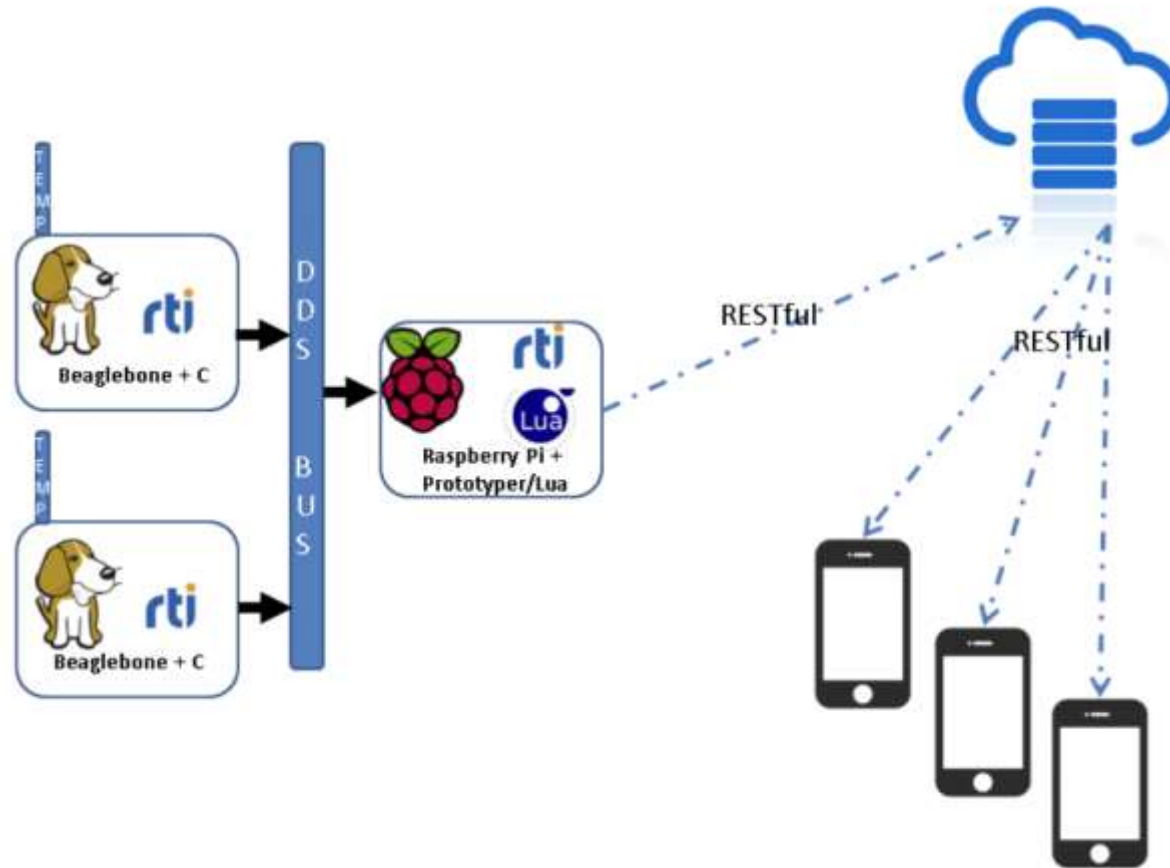
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DDS&IOT



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<https://www.rti.com/blog/2014/02/21/build-a-multi-location-temperature-monitoring-system-using-connex-dds-rti-prototyper-with-lua>

Thank You!