

OpenSplice|DDS

Delivering Performance, Openness, and Freedom

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An Introduction to OpenSplice DDS OpenSource

Agenda

- ▶ **Product Organization**
- ▶ **Release Management**
- ▶ **v4.1.x Release Schedule**
- ▶ **The Community Process**
- ▶ **Technology Incubators**
- ▶ **Concluding Remarks**

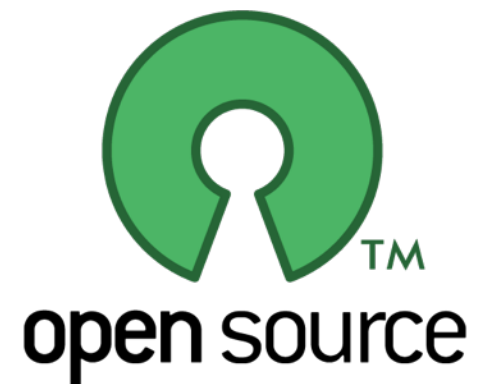
OpenSplice|DDS

Delivering Performance, Openness, and Freedom

APRIL 20TH, 2009

OPENSPLICE|DDS GOES LIVE!

:: <http://www.opensplice.org>



OpenSplice DDS Community

Site Topic Map

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Community Web Utilities

- - advanced search
- [WebTopicList](#) - all topics in alphabetical order
- [WebChanges](#) - recent topic changes in this web
- [WebNotify](#) - subscribe to an e-mail alert sent when topics change
- [WebRss](#), [WebAtom](#) - RSS and ATOM news feeds of topic changes



OpenSplice DDS Community Site

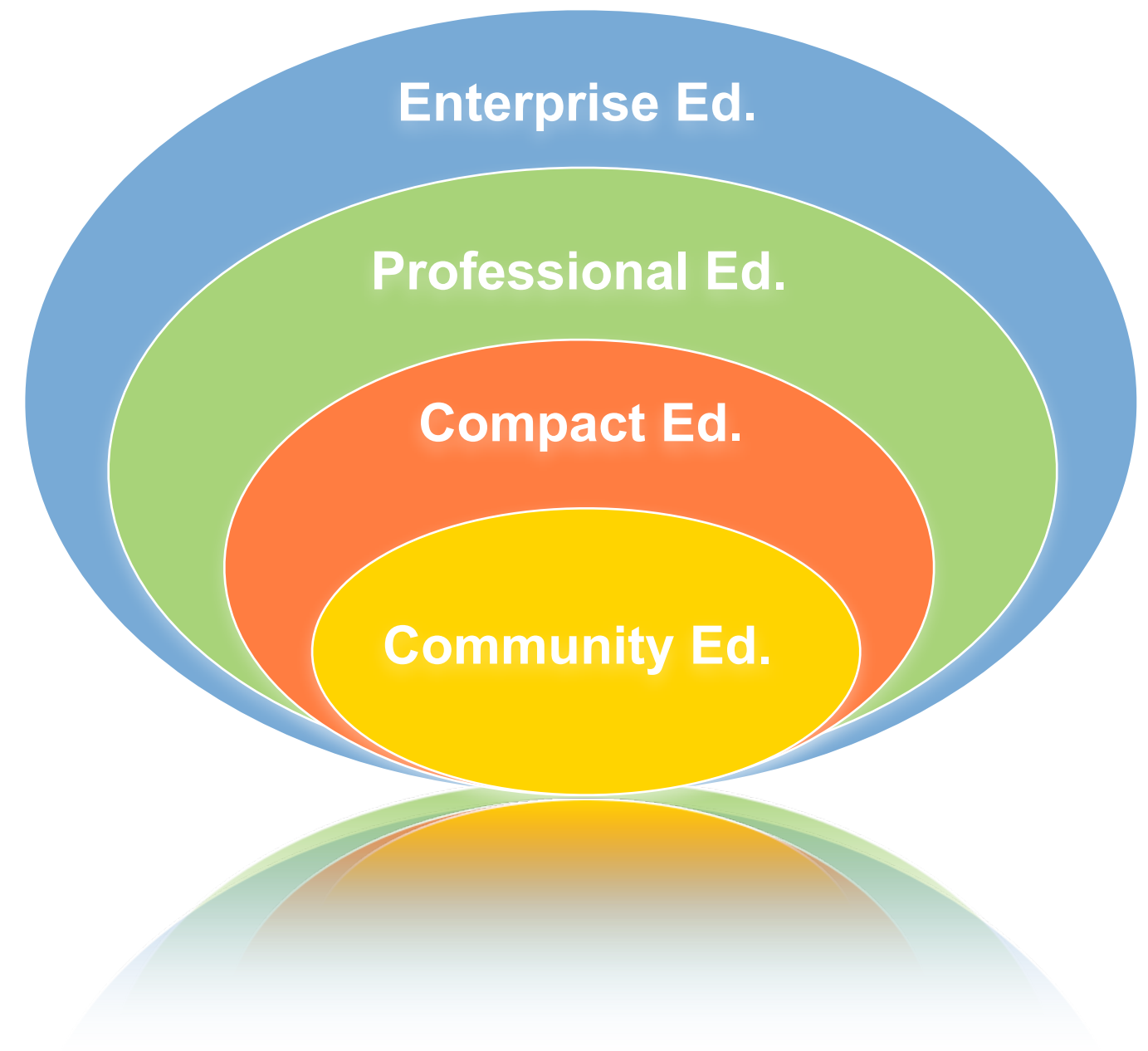
- [About OpenSplice DDS Community Edition](#)
- [Obtaining OpenSplice DDS Community Edition](#)
- [Building OpenSplice DDS Community Edition from Source](#)
- [Installing an OpenSplice DDS Community Edition distribution](#)
- [Getting Help](#)
- [Frequently Asked Questions](#)
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* <http://www.opensplice.org/>

Product Organization

OpenSplice DDS v4.1

- ▶ Product reorganized into Editions
 - ▶ Community Edition
 - ▶ Compact Edition
 - ▶ Professional Edition
 - ▶ Enterprise Edition
- ▶ Product Editions provide a a growing set of functionality to address the needs of increasingly more sophisticated users
- ▶ The Community Edition is Open Source
- ▶ Compact, Enterprise and Professional Edition are available only through Commercial Subscriptions



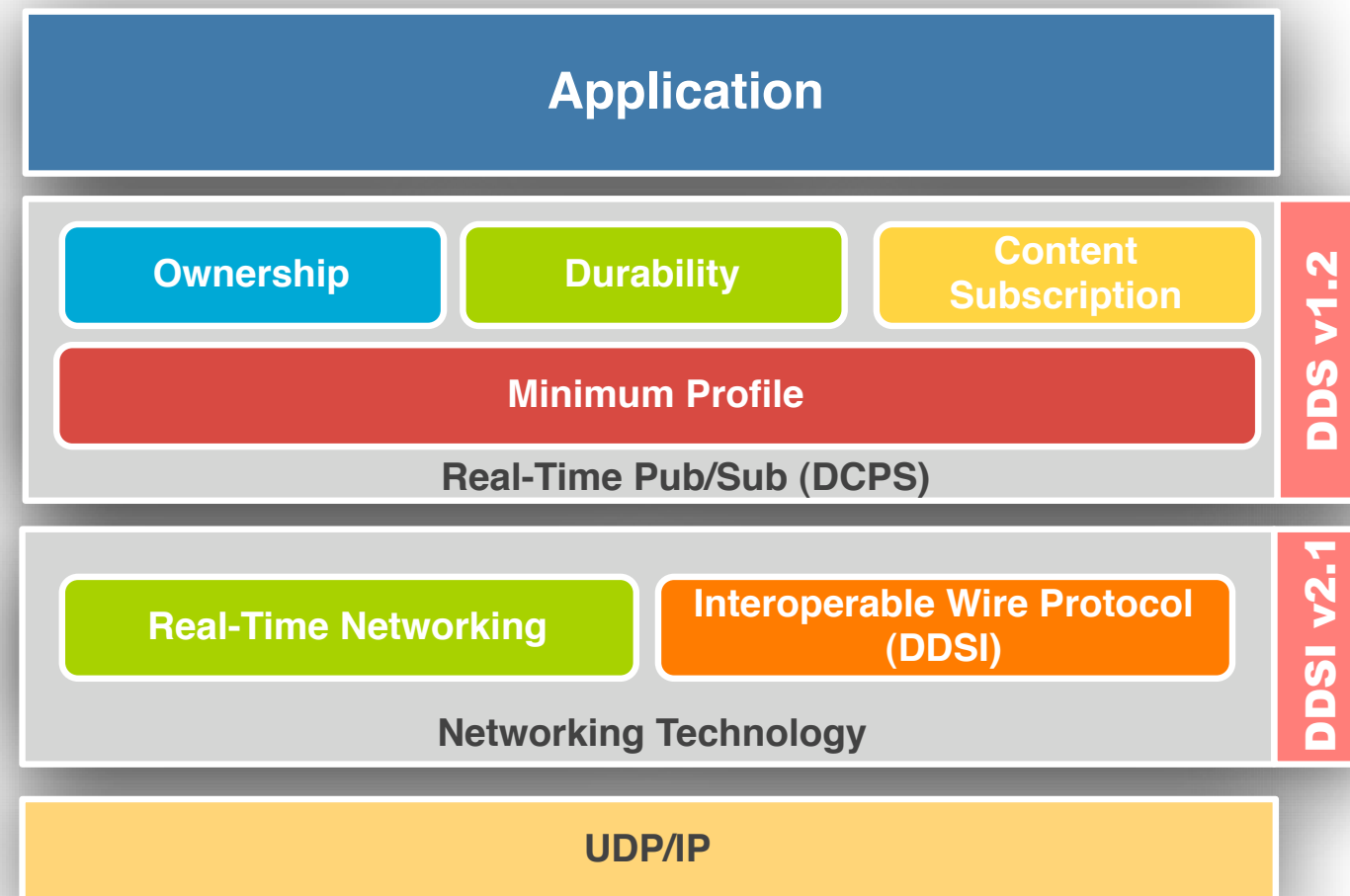
Community Edition

Features

- ▶ OMG DDS v1.2 DCPS
 - ▶ Minimum Profile
 - ▶ Content Subscription Profile
 - ▶ Durability Profile
 - ▶ Ownership Profile
- ▶ Networking
 - ▶ DDSI v2.1 Implementation
 - ▶ Real-Time Networking Implementation

Licensing

- ▶ LGPLv3



Open Source LGPL Licensed Edition – The Best Way to Get Started with DDS

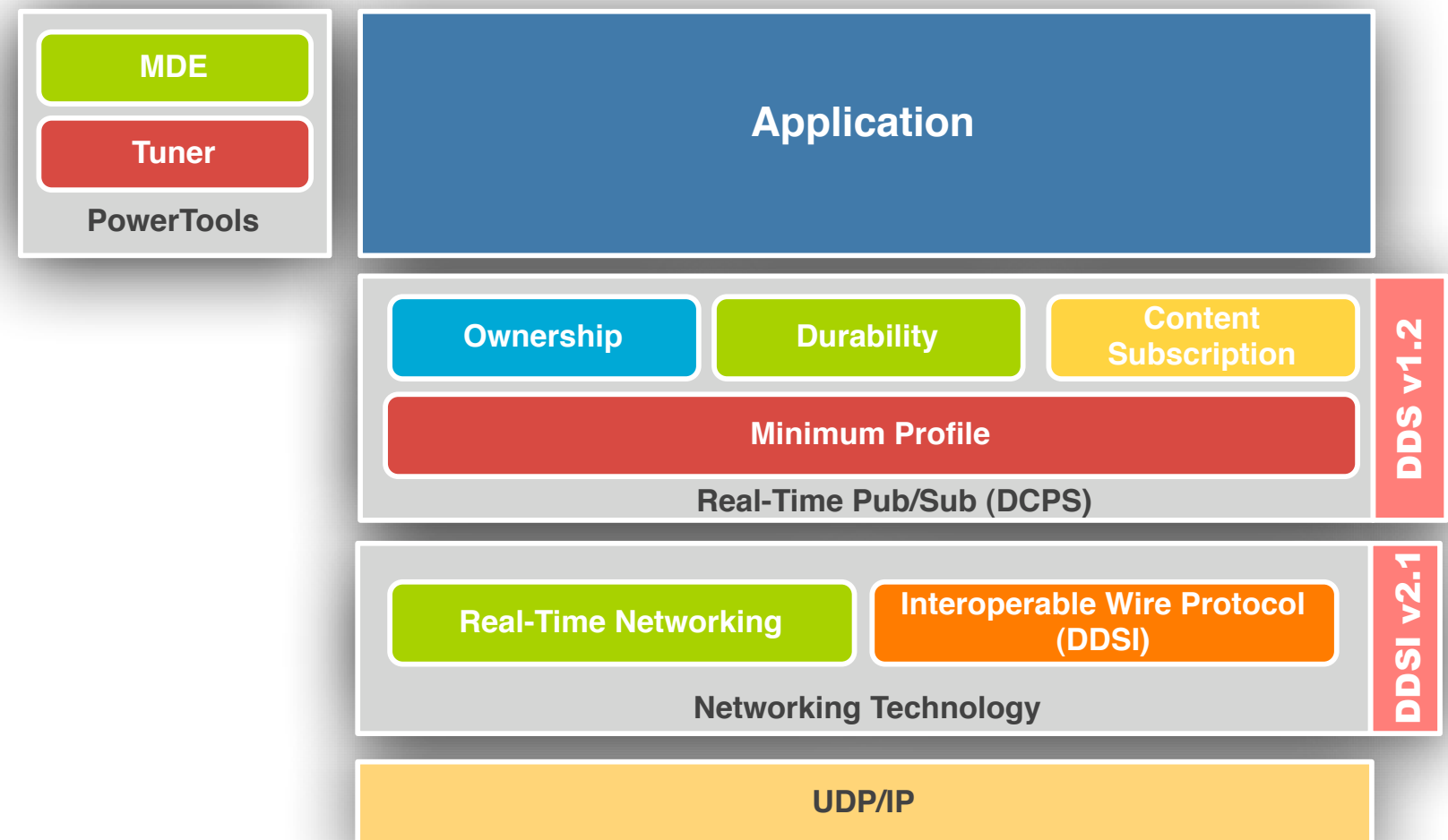
Compact Edition

Features

- ▶ **OMG DDS v1.2 DCPS**
 - ▶ Minimum Profile
 - ▶ Content Subscription Profile
 - ▶ Durability Profile
 - ▶ Ownership Profile
- ▶ **Networking**
 - ▶ DDSI v2.1 Implementation
 - ▶ Real-Time Networking Implementation
- ▶ **PowerTools**
 - ▶ MDE PowerTools
 - ▶ Tuner

Licensing

- ▶ **Commercial**



Commercially Supported, Boosting Your Development with PowerTools

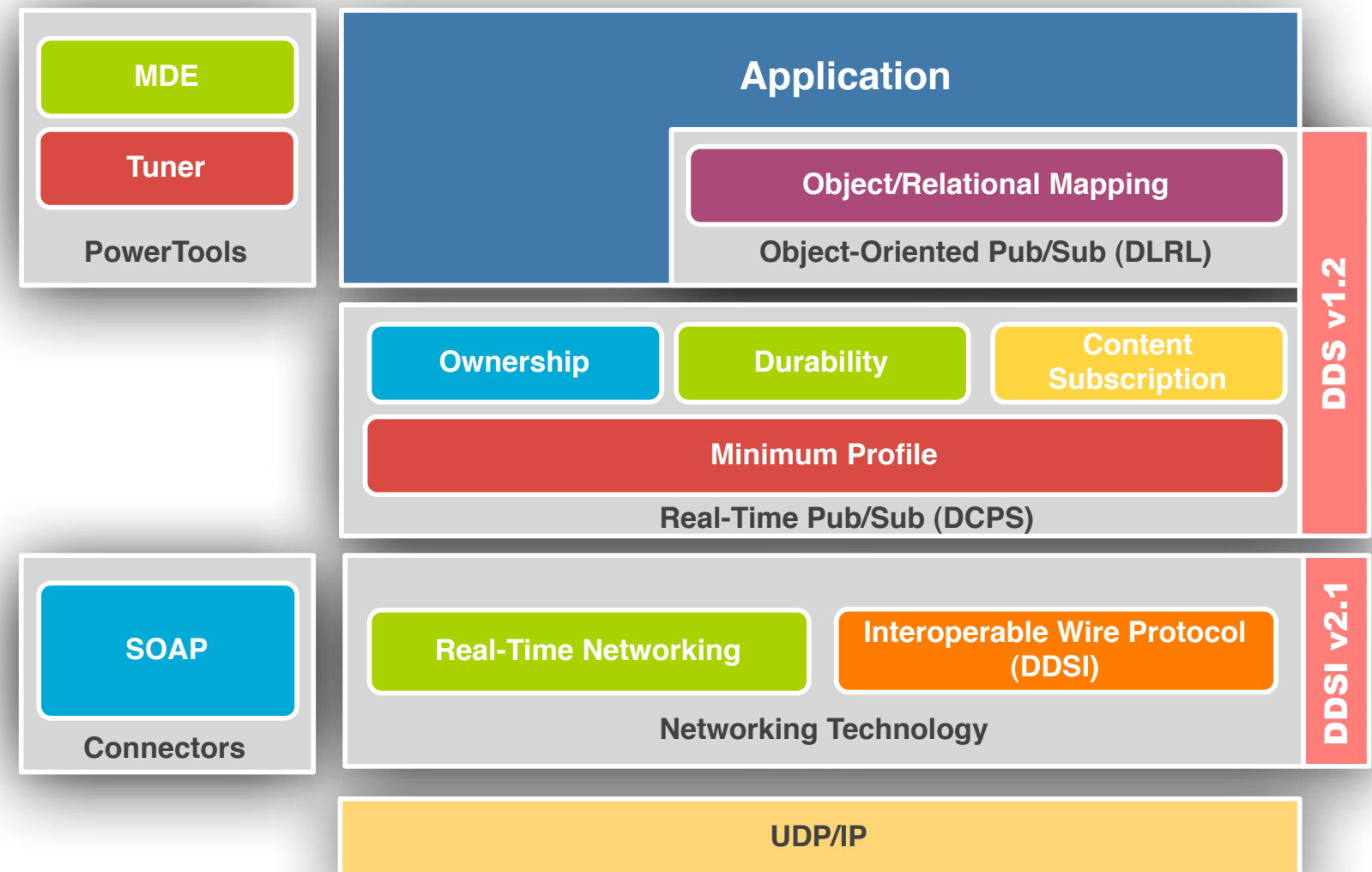
Professional Edition

Features

- ▶ **OMG DDS v1.2 DCPS+DLRL**
 - ▶ Minimum Profile
 - ▶ Content Subscription Profile
 - ▶ Durability Profile
 - ▶ Ownership Profile
 - ▶ Data Local Reconstruction Layer
- ▶ **Networking**
 - ▶ DDSI v2.1 Implementation
 - ▶ Real-Time Networking Implementation
- ▶ **PowerTools**
 - ▶ MDE Power Tools
 - ▶ Tuner
- ▶ **Connectors**
 - ▶ SOAP Connector

Licensing

- ▶ **Commercial**



Unleash the Full Power of the DDS Technology!

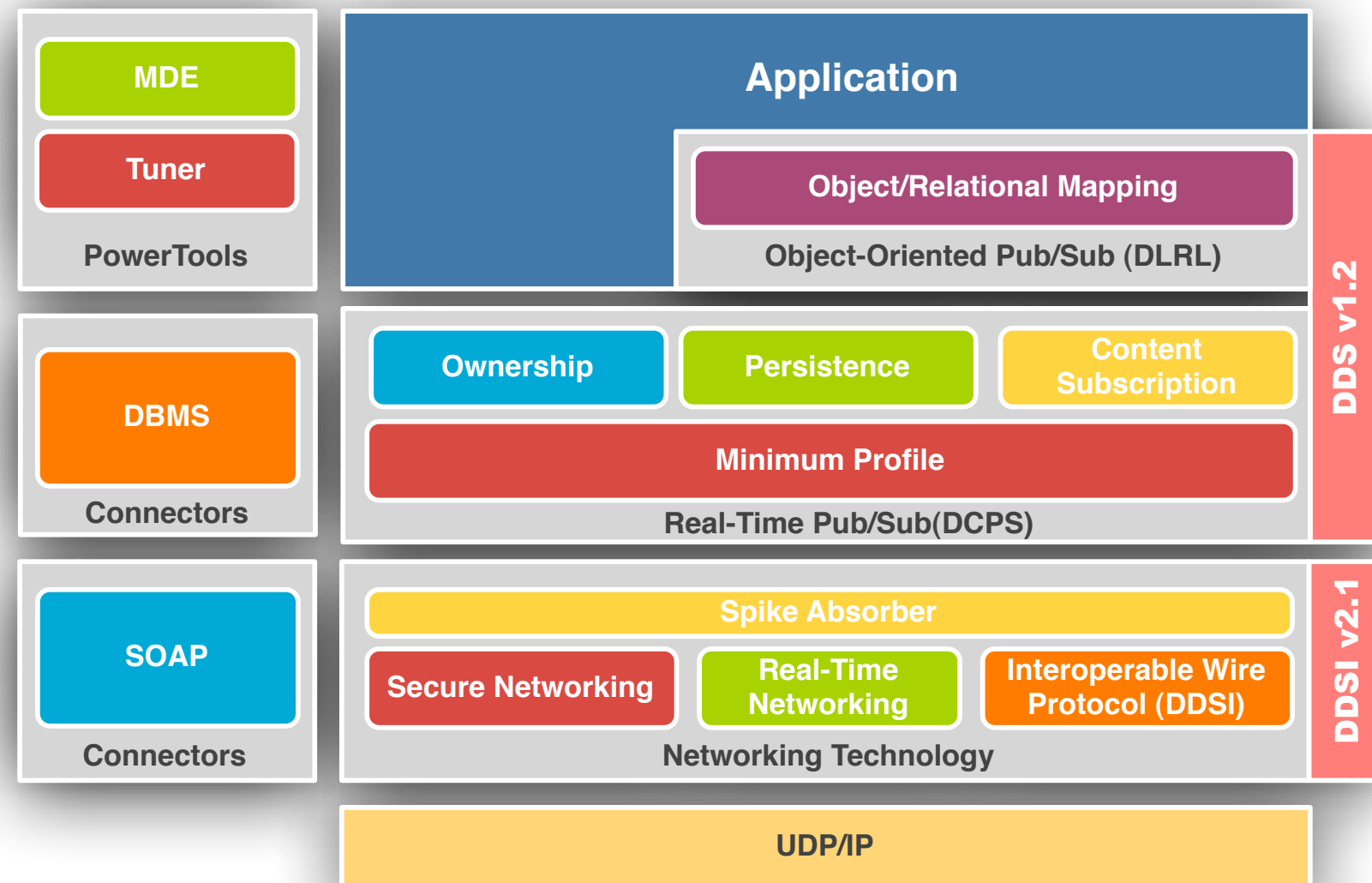
Enterprise Edition

Features

- ▶ **OMG DDS v1.2 (DCPS+DLRL)**
 - ▶ Minimum Profile
 - ▶ Content Subscription Profile
 - ▶ Durability Profile
 - ▶ Ownership Profile
 - ▶ Data Local Reconstruction Layer
- ▶ **Networking**
 - ▶ DDSI v2.1 Implementation
 - ▶ Real-Time Networking Implementation
 - ▶ Spiked Absorber
 - ▶ Secure Networking
- ▶ **PowerTools**
 - ▶ MDE Power Tools
 - ▶ Tuner
- ▶ **Connectors**
 - ▶ SOAP Connector
 - ▶ DBMS Connector

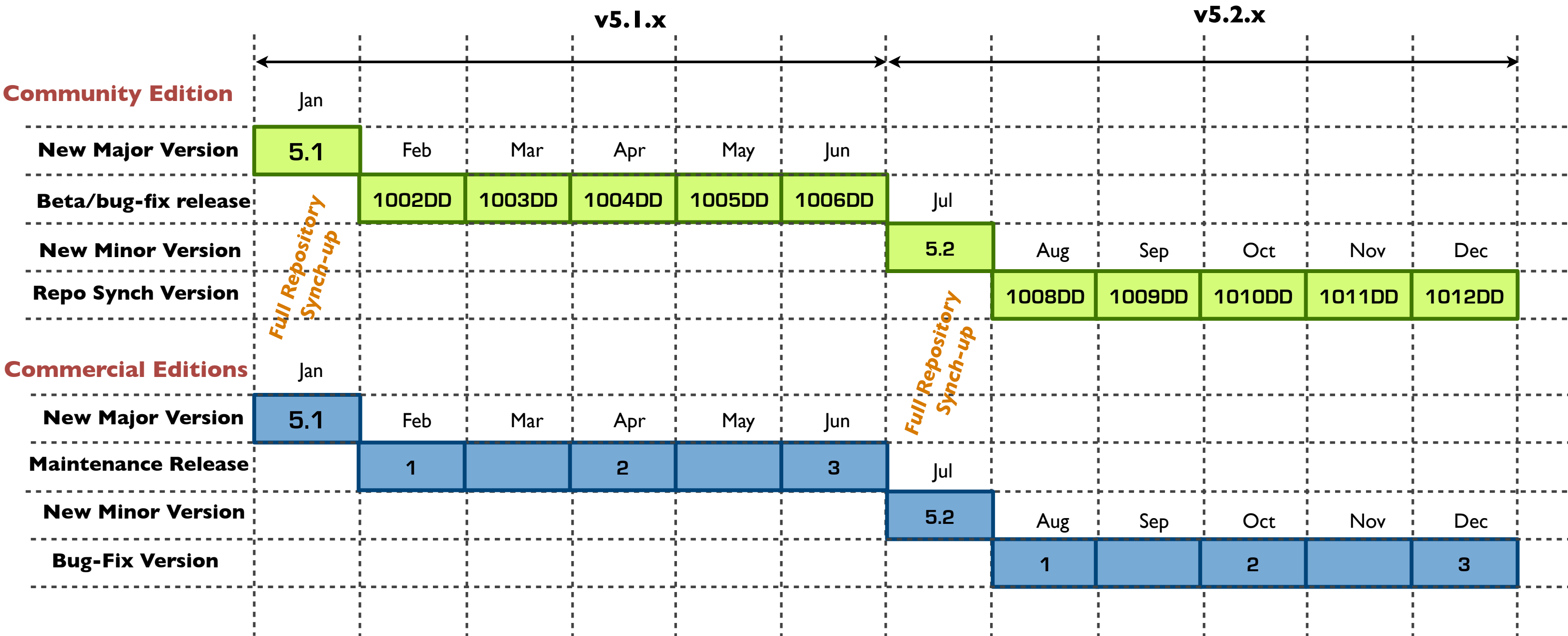
Licensing

- ▶ Commercial



Releases Management

Release Management

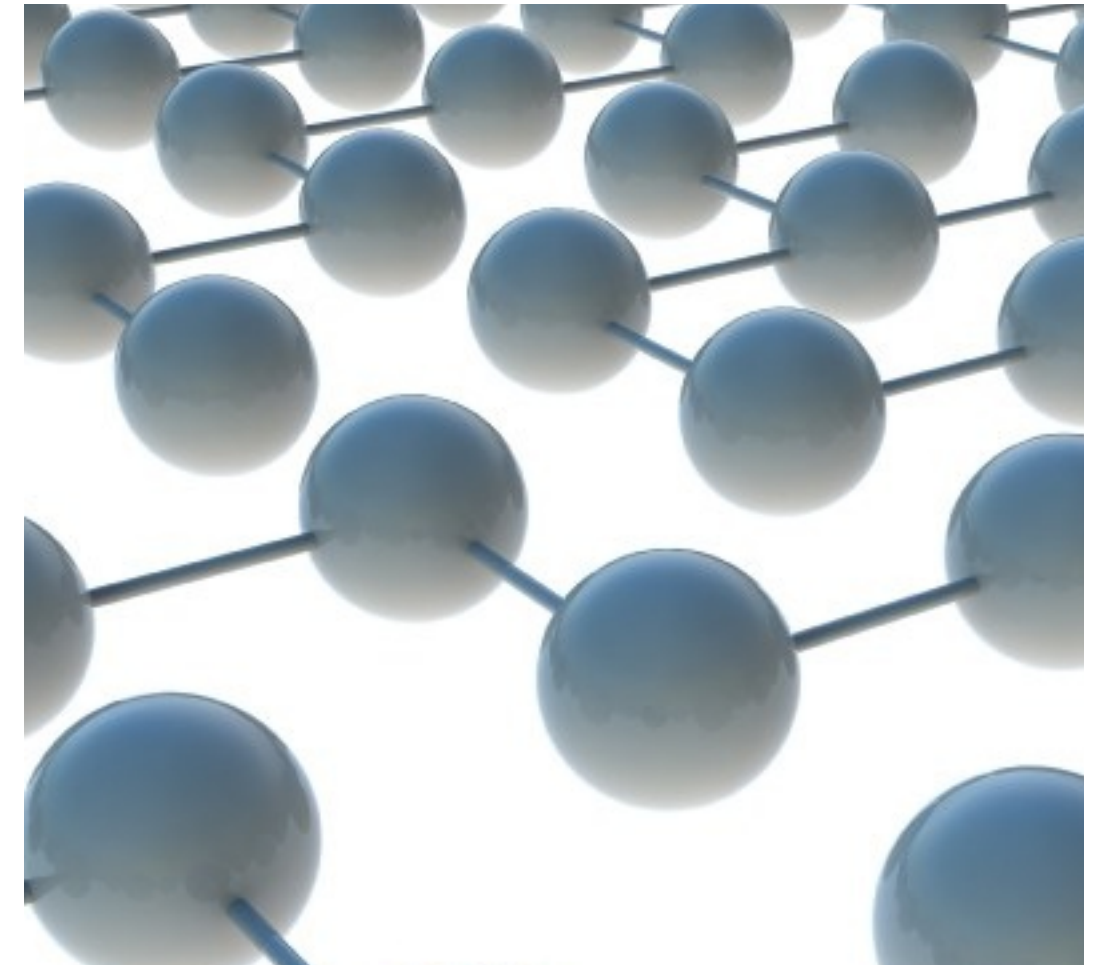


NOTE: This example is intended to show the approach to releases as opposed to showing the scheduled availability for v5.1

Interoperability & Portability

Major Release Change, e.g., from 4.x to 5.x

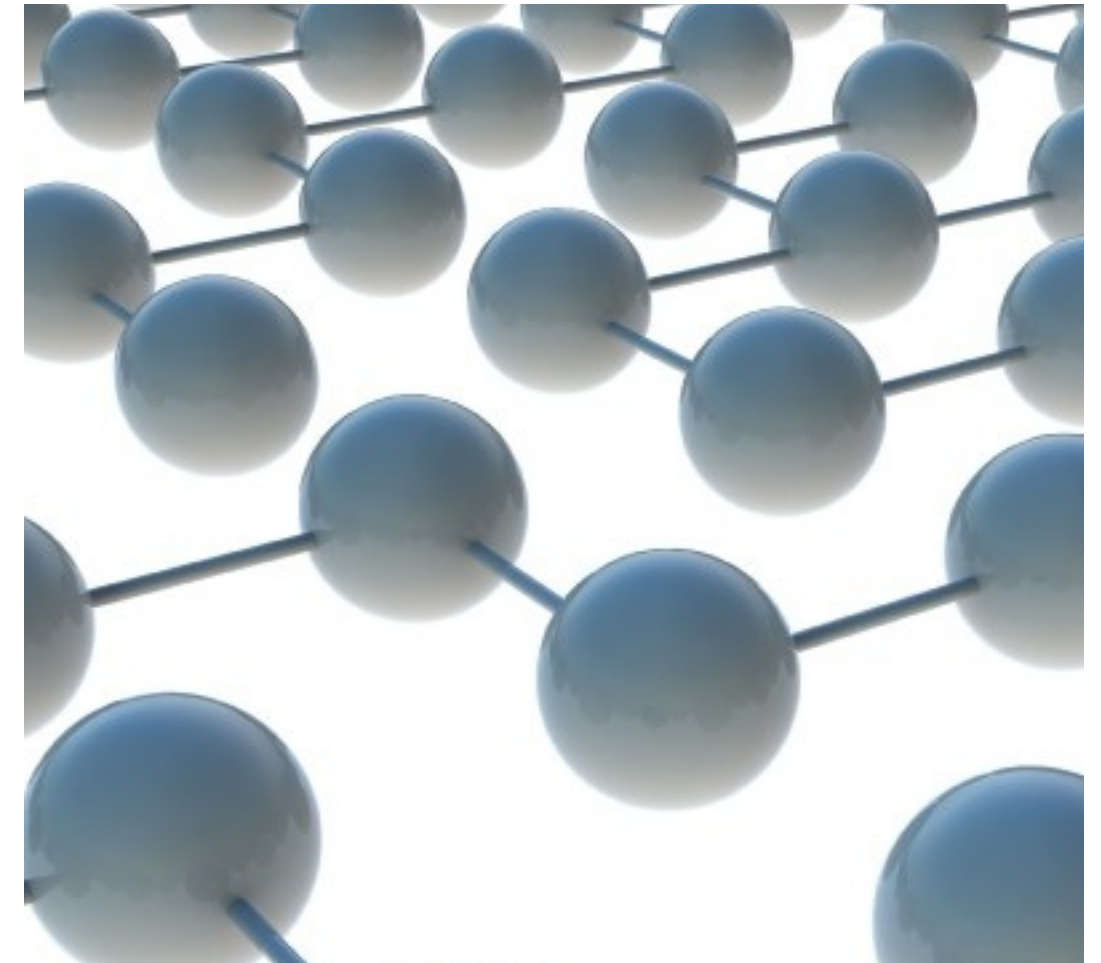
- ▶ APIs of OpenSplice DDS may have been changed
- ▶ Network format may have been changed (might impact backward-interoperability too)
- ▶ API implementation may have been changed
 - ▶ Meaning: preprocessor (idlpp and/or ospldcg) output may have been changed
- ▶ Regeneration of preprocessor output code might be required
- ▶ Customers may need to make modifications to application source code
- ▶ Customer application code might need to be recompiled



Interoperability & Portability

Minor Release Change, e.g., from 4.1 to 4.2

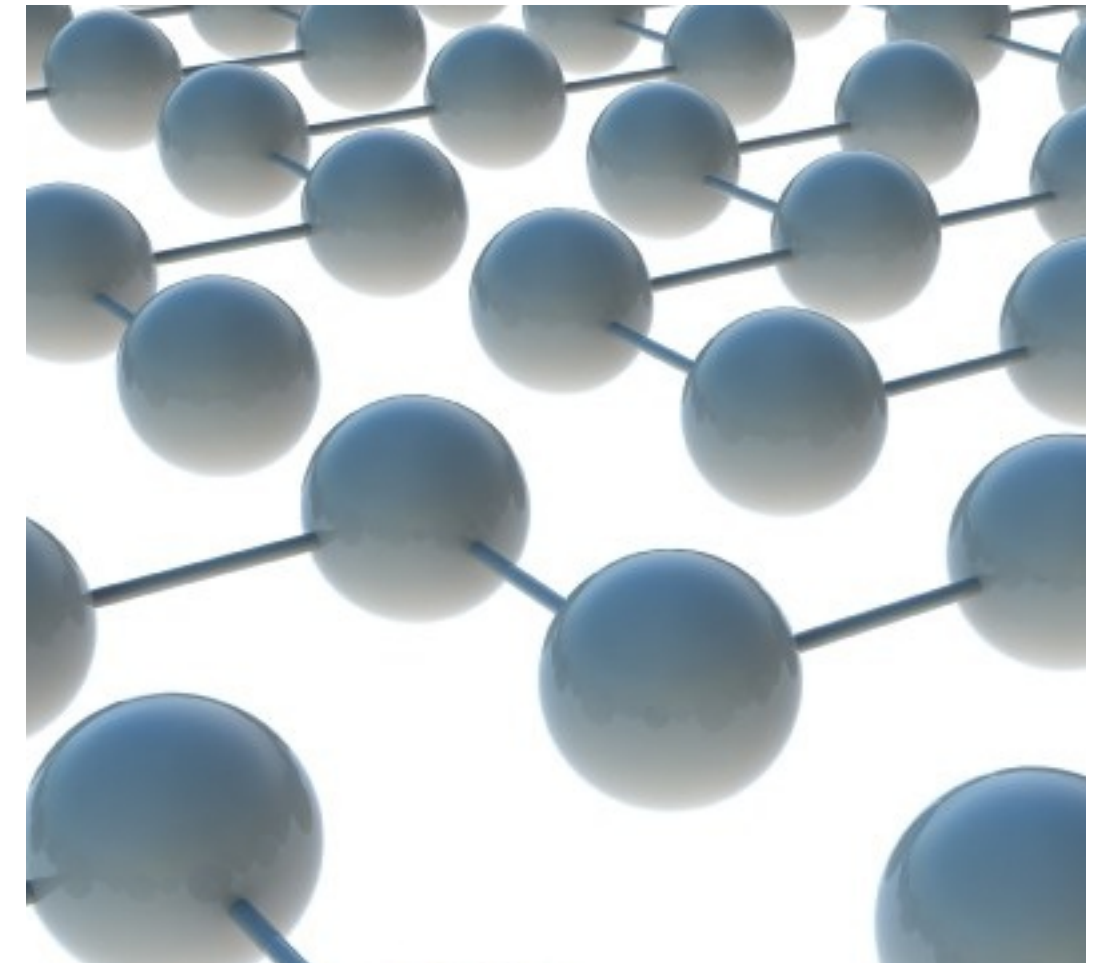
- ▶ No changes on the OpenSplice DDS API
- ▶ Network format may have been changed, but interoperability is guaranteed
- ▶ API implementation may have been changed.
 - ▶ Meaning: preprocessor (idlpp and/or ospldcg) output may have been changed
- ▶ Regeneration of preprocessor code might be required



Interoperability & Portability

Community Edition vs Commercial Edition

- ▶ On-the-wire interoperability when using same major version, e.g, 4.x
- ▶ API portability from Community to Commercial
 - ▶ Commercial Edition provides additional functionalities not available on the community edition
 - ▶ The Community Edition is guaranteed to be a compatible subset of the Commercial edition

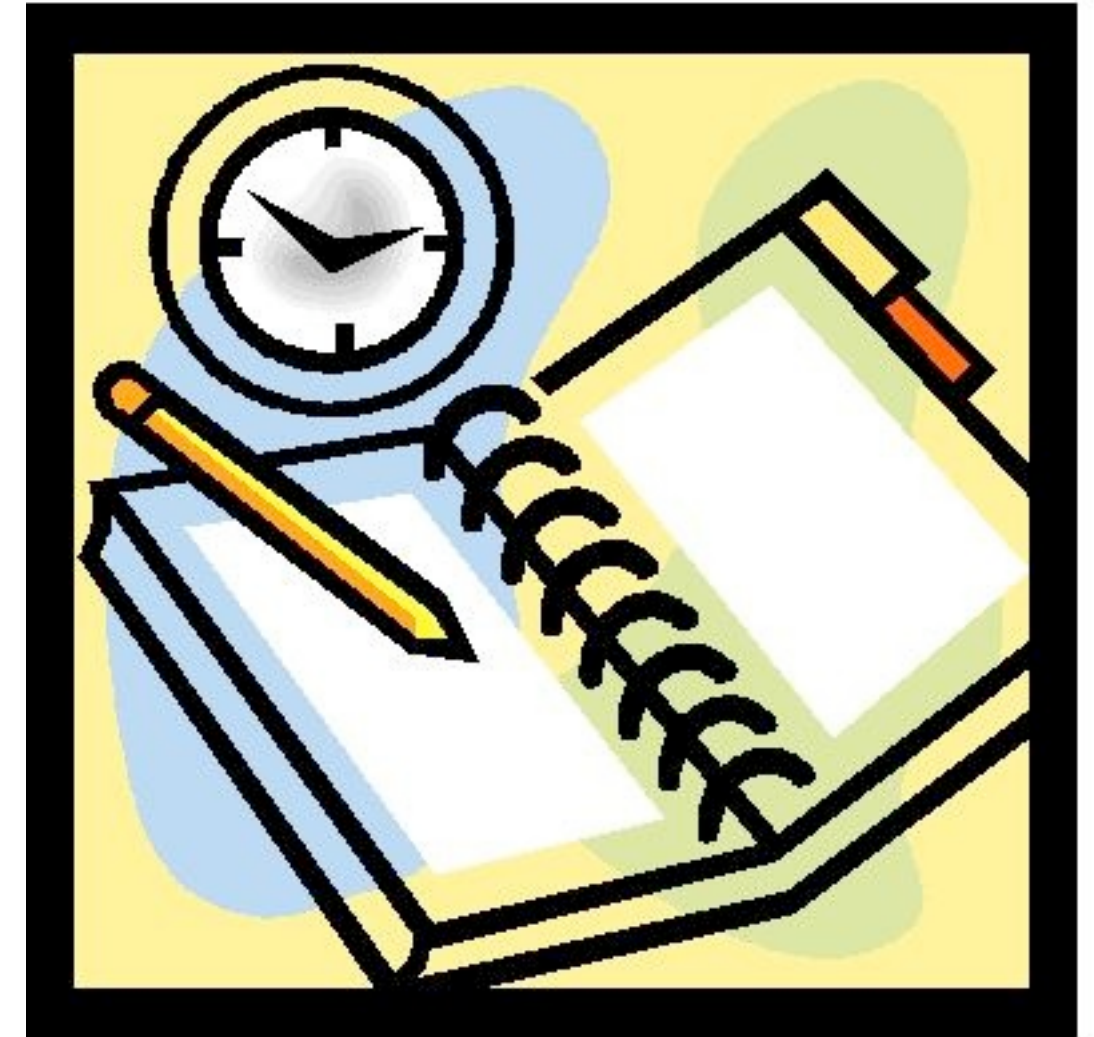


v4.1.x Release Schedule

Release Schedule

OpenSplice DDS v4.1.090526

- ▶ Features
 - ▶ DDSI/RTPS [Beta]
- ▶ Tools
 - ▶ OpenSplice DDS Configuration Tool
 - ▶ mmstat
- ▶ OS
 - ▶ Windows
- ▶ Compiler/Development Environment
 - ▶ Visual Studio Express 2005



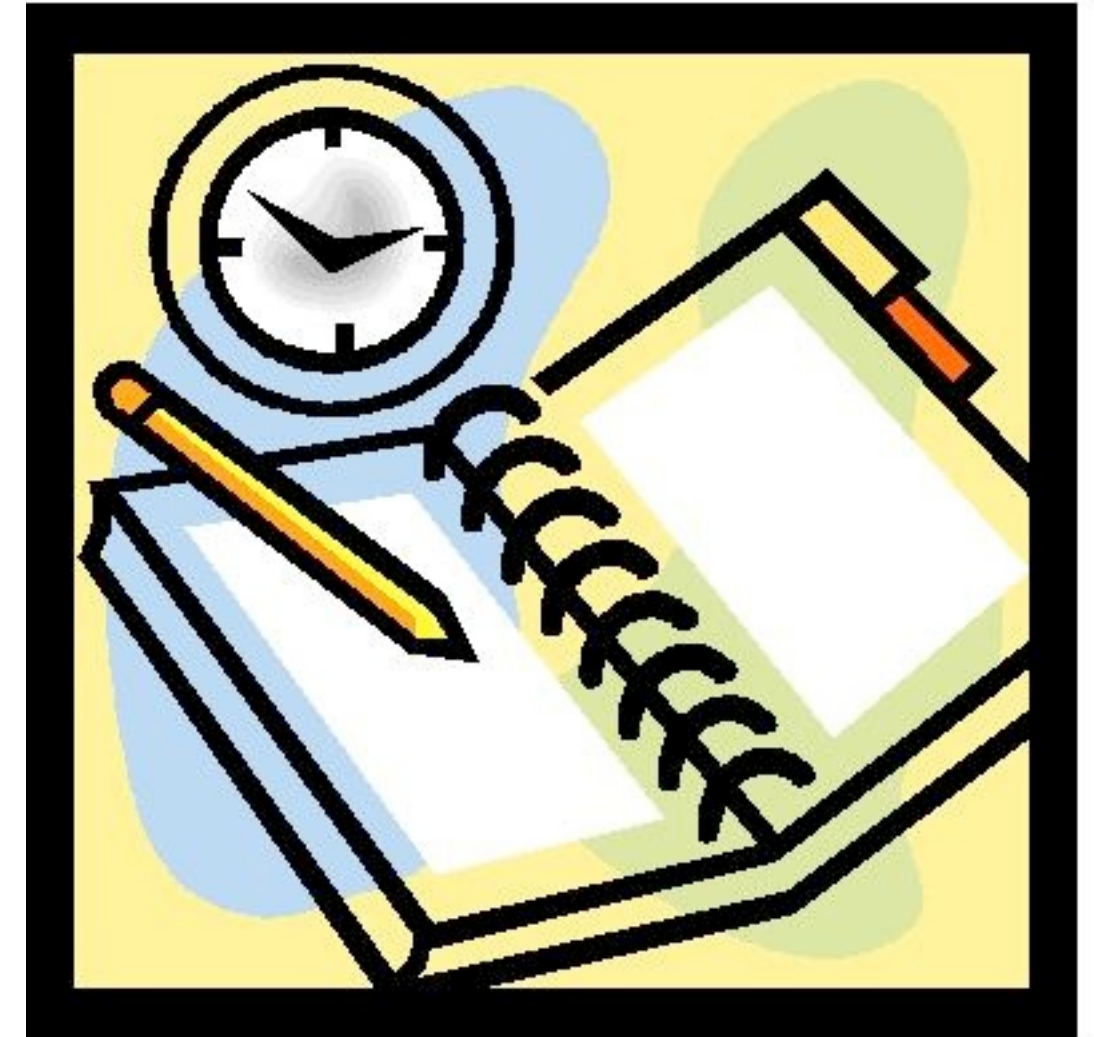
Release Schedule

OpenSpliceDDS v4.1.090626

- ▶ Features
 - ▶ Unicast communication for OpenSplice DDS
 - ▶ Native Real-Time Transport
 - ▶ C# Language Binding **[Beta]**
- ▶ OS
 - ▶ Linux 64-bit

OpenSpliceDDS v4.1.090731

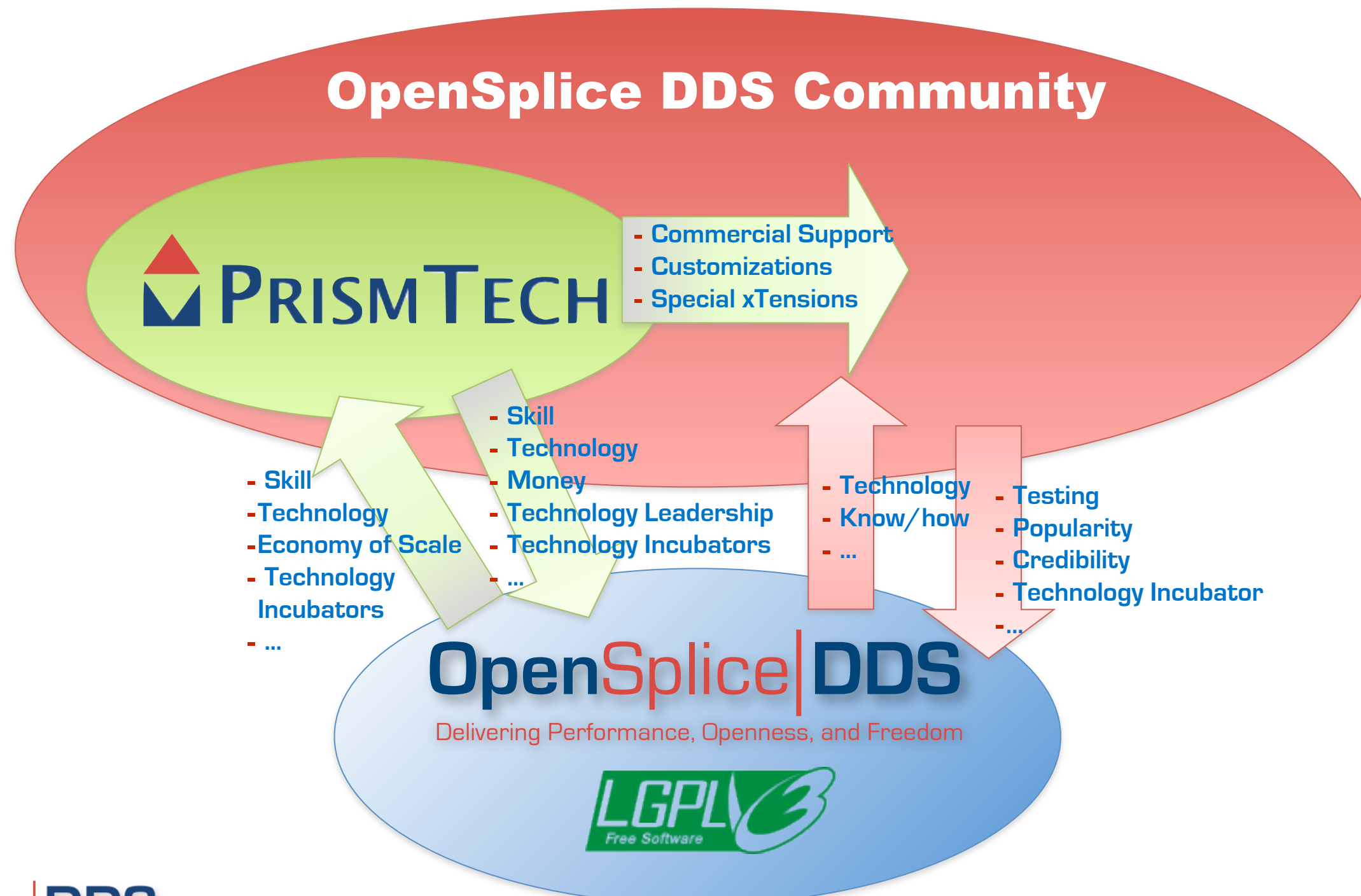
- ▶ Features
 - ▶ C# Language Binding **[GA]**
- ▶ OS
 - ▶ Linux 64-bit



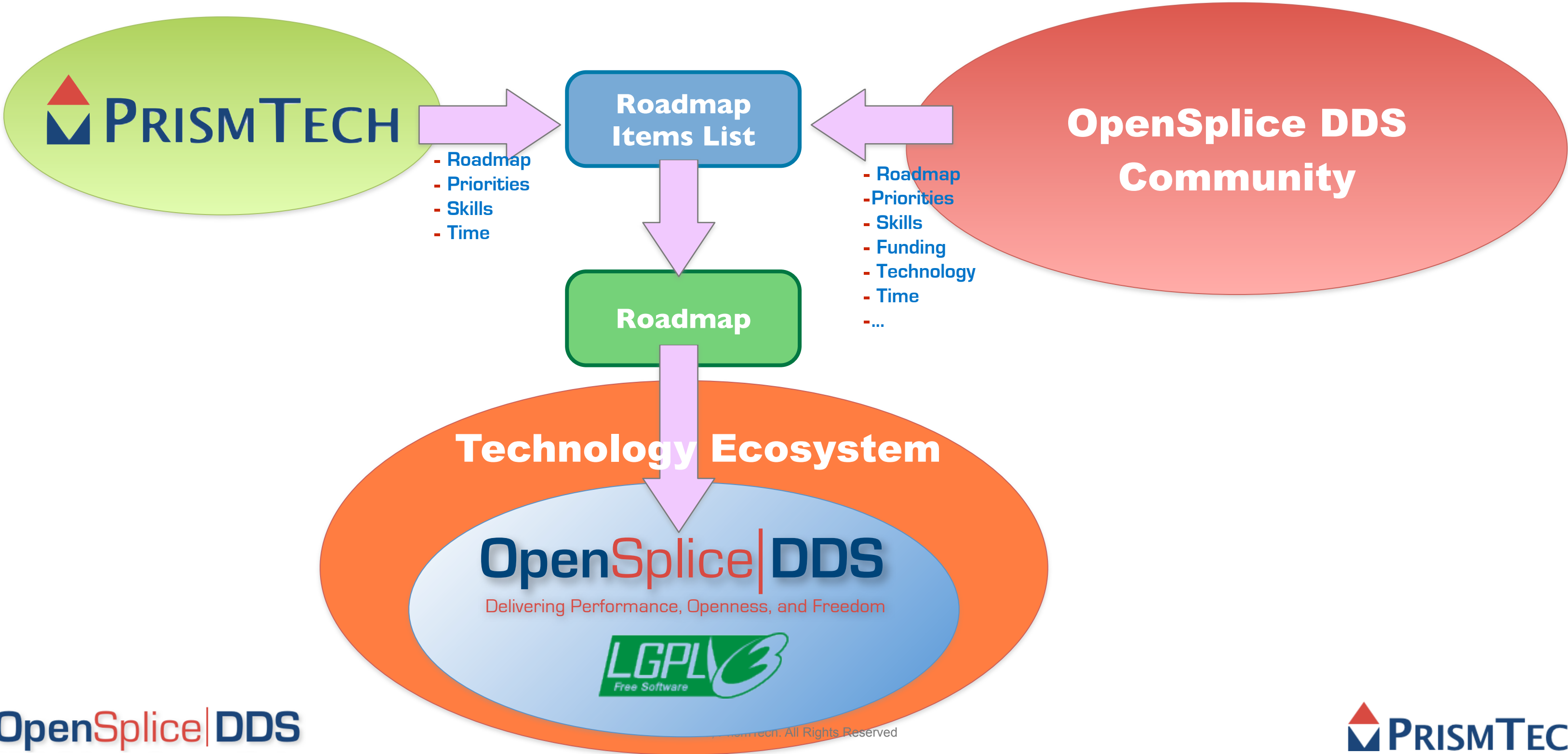
	Community	Compact	Professional	Enterprise
SOFTWARE				
Real-Time Pub/Sub (DCPS)	X	X	X	X
Interoperable Wire Protocol (DDSI)	X	X	X	X
Object Oriented Pub/Sub(DLRL)			X	X
Security				X
CONNECTORS				
SOAP-Connector			X	X
DBMS-Connector				X
TOOLS				
MDE PowerTools		X	X	X
Tuner		X	X	X
DDS TouchStone	X	X	X	X
Operating Systems				
Linux	X	X ⁽¹⁾	X ⁽¹⁾	X ⁽¹⁾
Windows	X	X ⁽¹⁾	X ⁽¹⁾	X ⁽¹⁾
Solaris			X ⁽¹⁾	X ⁽¹⁾
AIX			X ⁽¹⁾	X ⁽¹⁾
VxWorks		X ⁽¹⁾	X ⁽¹⁾	X ⁽¹⁾
INTEGRITY		X ⁽¹⁾	X ⁽¹⁾	X ⁽¹⁾
Language Binding				
C	X	X	X	X
C++	X	X	X	X
Java	X	X	X	X
C#	X	X	X	X
LICENSE	LGPL	Commercial	Commercial	Commercial

The Community Process

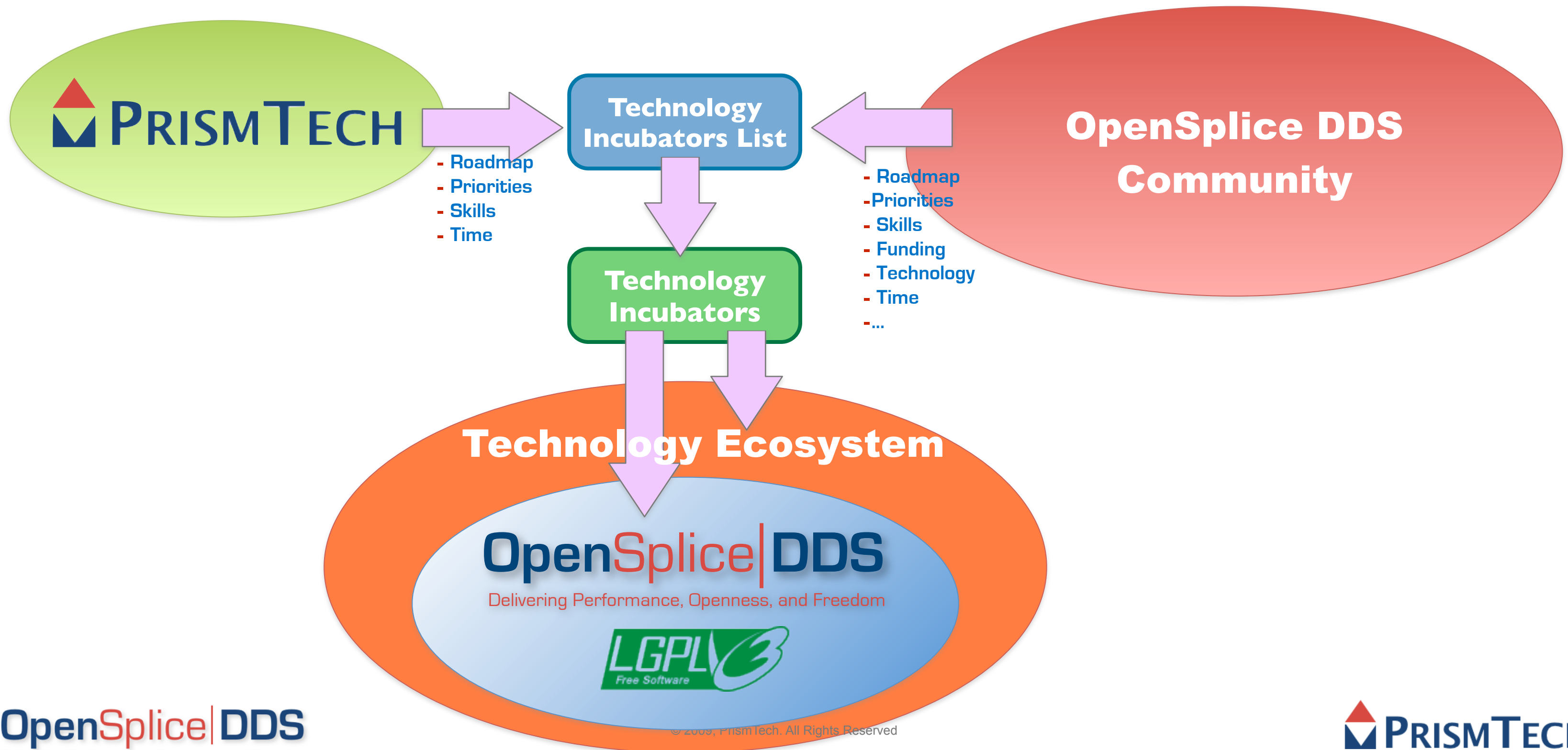
Community Process



Roadmap Planning



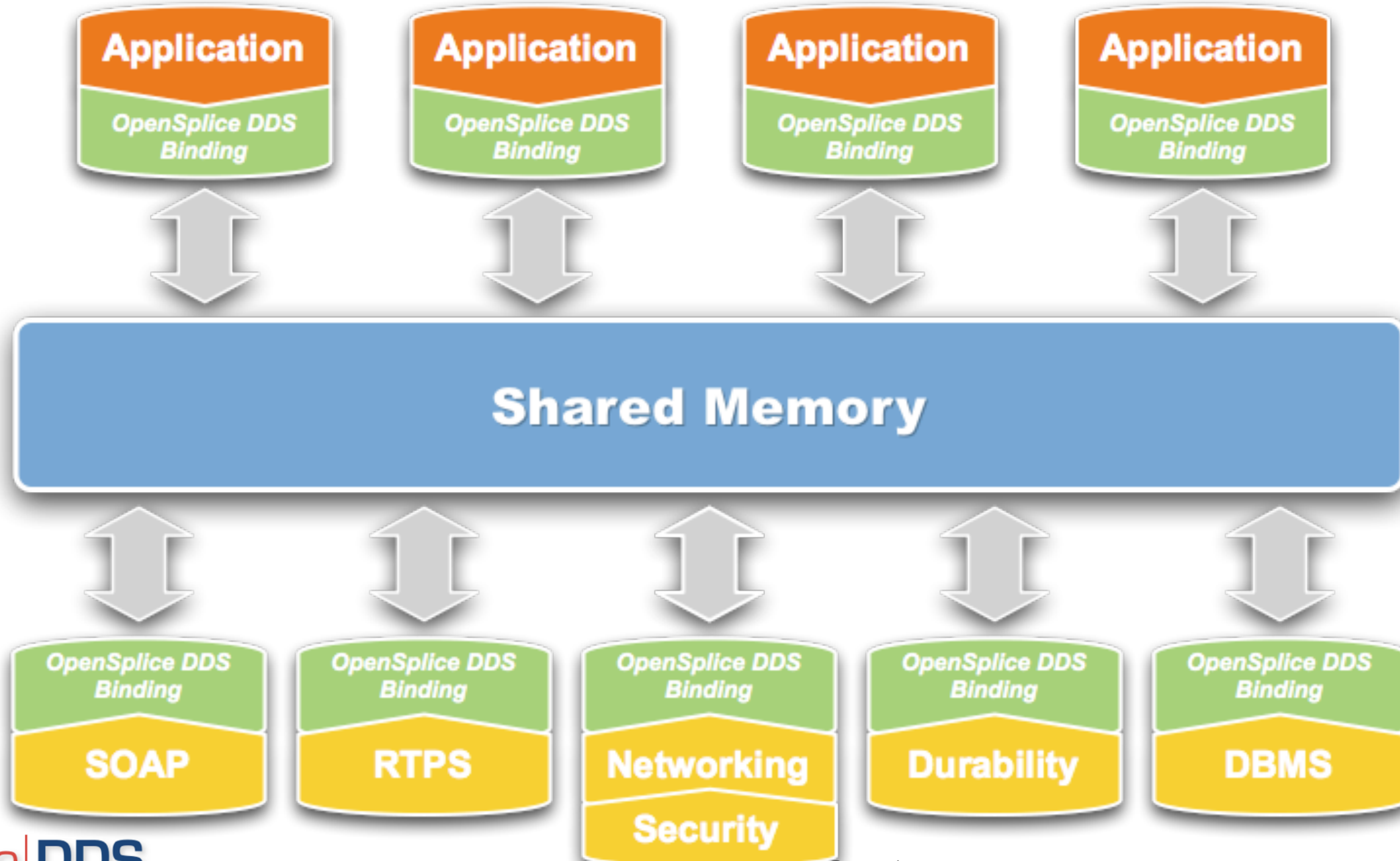
Technology Incubators



Technology Incubators

Live and Running

Open Architecture



DDS Touchstone

Context

- ▶ The ability of easily assess the performance of a DDS implementation in a specific scenario is very important
- ▶ However, few performance benchmarks exist for DDS, but none of those makes it easy to mimic specific user use-cases

Idea

- ▶ DDS Touchstone is a scenario-driven Open Source benchmarking framework for evaluating the performance of OMG DDS compliant implementations.

Community Benefits

- ▶ Simplify the assessment of DDS performance in specific use cases and scenarios
- ▶ Make objective comparisons among DDS implementations

Where

- ▶ <http://dds-touchstone.sourceforge.net/>

DDS|TouchStone

Wishlist

- ▶ Port to other DDS implementations
- ▶ Integrate with Open Source plotting tool
- ▶ Contribute test scenarios
- ▶ Contribute performance benchmark extensions

Context

- ▶ The OMG DDS SIG is currently working to a new “Standard C++ PSM for DDS”

Idea

- ▶ An incubator project for the upcoming “Standard C++ PSM for DDS”
- ▶ Already contains +70% of the API for the new C++ PSM
- ▶ Build the initial reference implementation for OpenSplice DDS

Community Benefits

- ▶ Engage and contribute to the standardization process
- ▶ Validate early-on the upcoming standard
- ▶ Get a better API

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The Standard C++ PSM for DDS Wiki

The current OMG DDS Specification defines the DDS API in IDL. The strength of this approach, which makes it possible to easily derive APIs for specific programming languages such as, C++, Java, etc., by relying on the IDL mapping to the specific language, e.g., IDL2C++, IDL2Java, etc., happens to be one of its key weaknesses when trying to provide an API for C++ because of the relatively dated IDL2C++ specification.

The Standard C++ PSM for DDS is an standardization effort that has been undertaken by the OMG DDS SIG with the goal of overcoming the limitations imposed by the current IDL2C++ mapping and provide C++ programmers with a DDS API that looks and feels like modern C++, leverages the better compiler support for templates as well as the standard library.

CZed is an Open Source project that is backing up the standardization process and providing a reference implementation for the Standard C++ PSM for DDS API.

Status

The current API is organized more or less around the structure of the DDS PIM modules. Below is a quick description of the status for each of the modules.

dds::core

The dds::core currently contains the following DDS elements:

- Basic Types
- Entity
- QoS Policies
- Statuses
- Conditions and Waitsets

ddswatch

Context

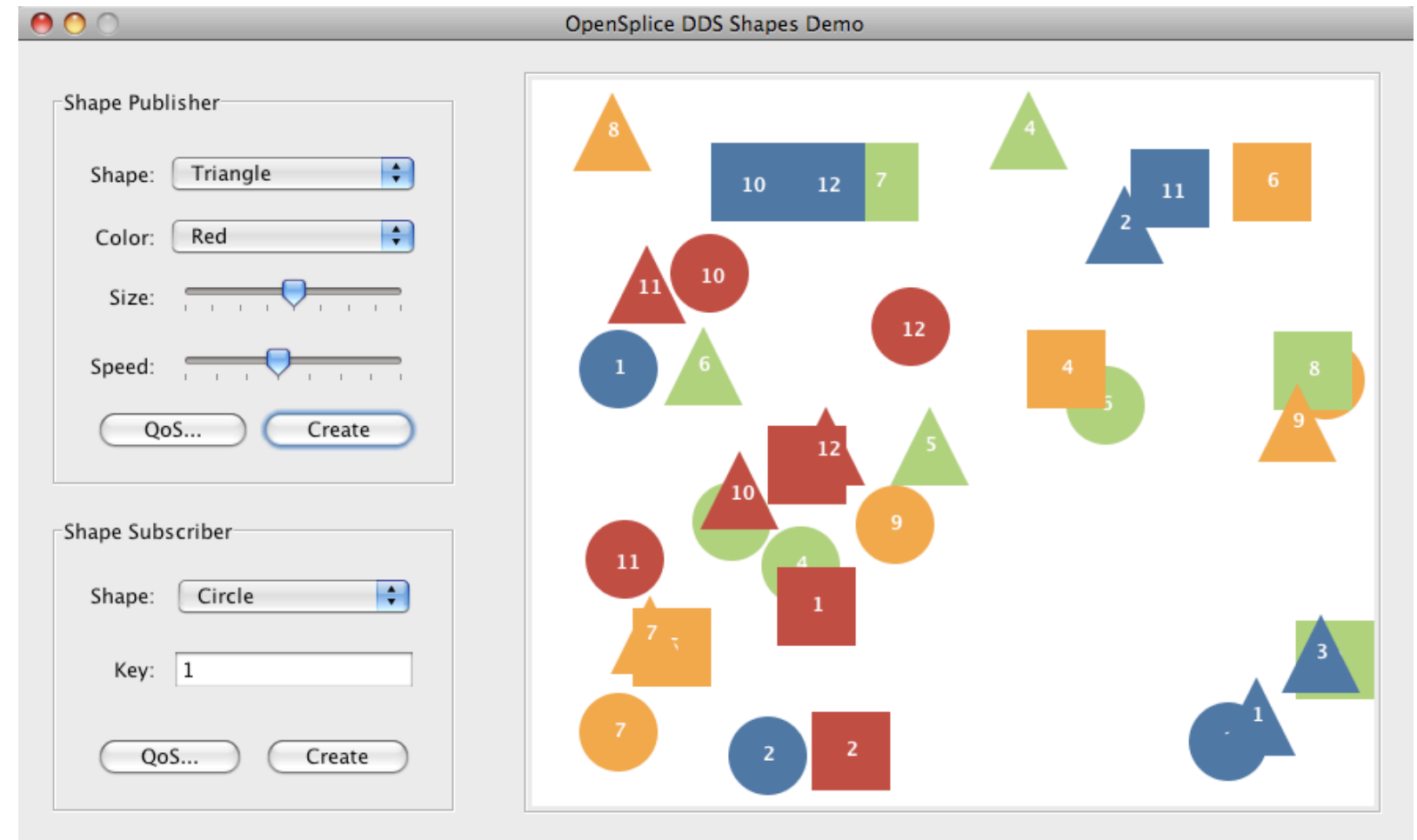
- ▶ DDS is a very powerful technology which makes available to developers many tools
- ▶ Few examples exist in the public domain of how to use this technology

Idea

- ▶ Build an exhaustive set of examples showing how to use each aspect of DDS

Community Benefits

- ▶ Shorter learning curve for new-comers
- ▶ Good source of idioms for learning how to program DDS applications



Status

- ▶ Alpha

Where

- ▶ <http://code.google.com/p/ddswatch/>

Technology Incubators

Seeding Stage

JMS API for OpenSplice DDS

Context

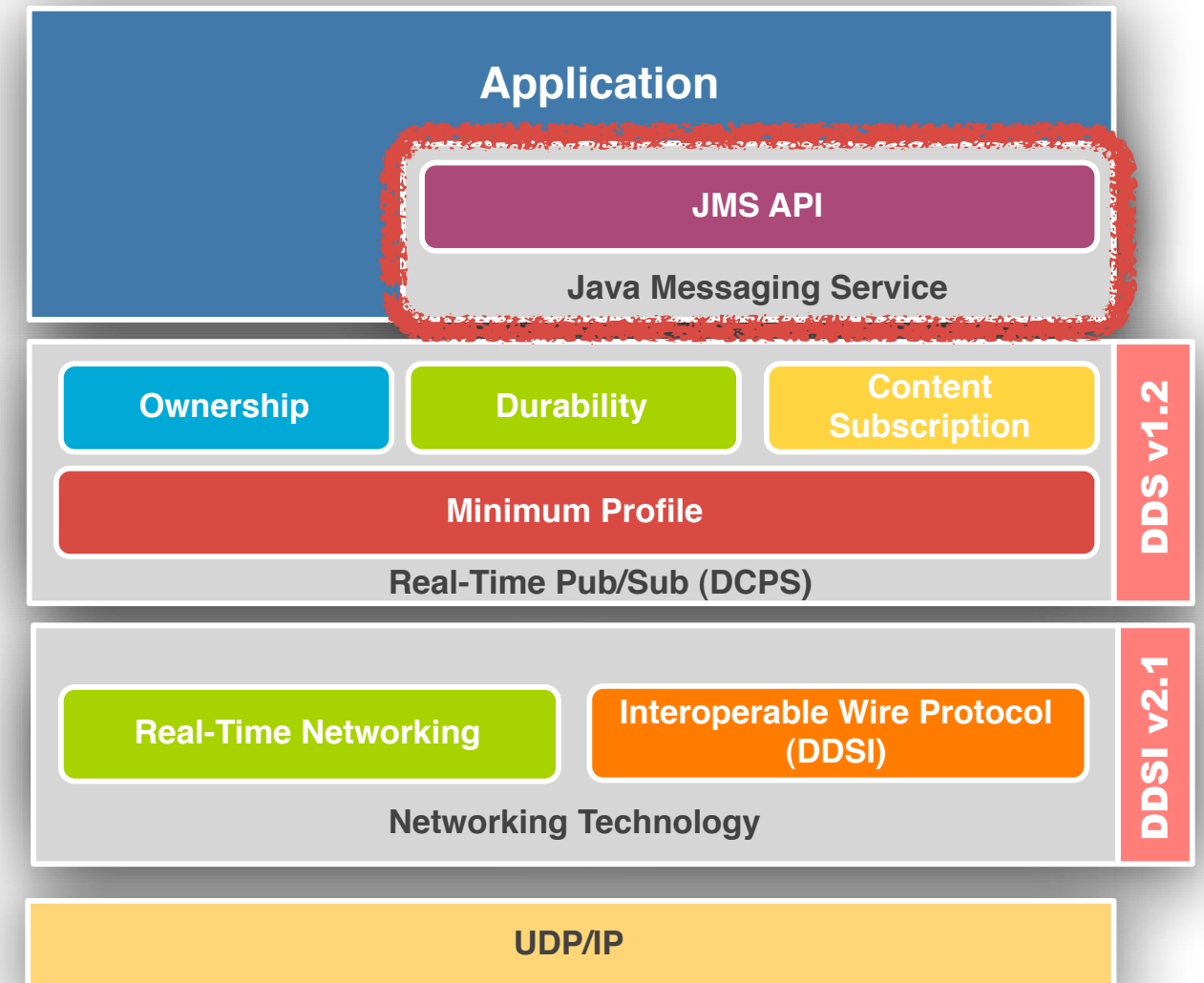
- ▶ JMS is an API very commonly used into the enterprise environment
- ▶ OpenSplice DDS delivers far higher performances and scalability than JMS

Idea

- ▶ Implement a JMS API on top of OpenSplice DDS
- ▶ Extend the JMS API to access DDS QoS and extended data-centric features

Community Benefits

- ▶ Ability to transparently increase performance and scalability of existing JMS-based applications by leveraging OpenSplice DDS under the hood
- ▶ Seamless Integration of DDS applications into ESBs, J2EE, etc.
- ▶ Facilitated integration of Real-Time and Soft-Real-Time Enclaves.



Hibernate 4 DDS

Context

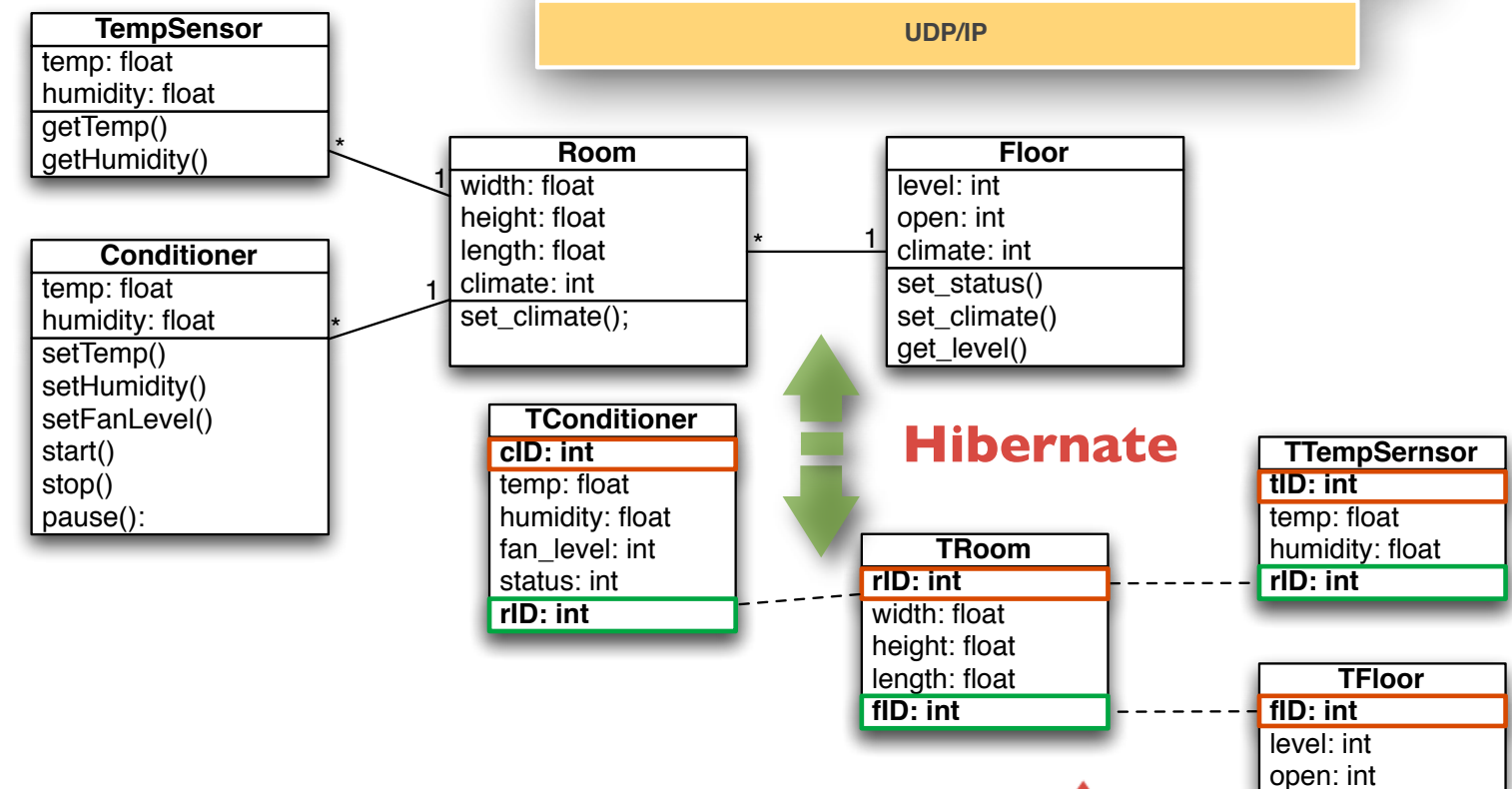
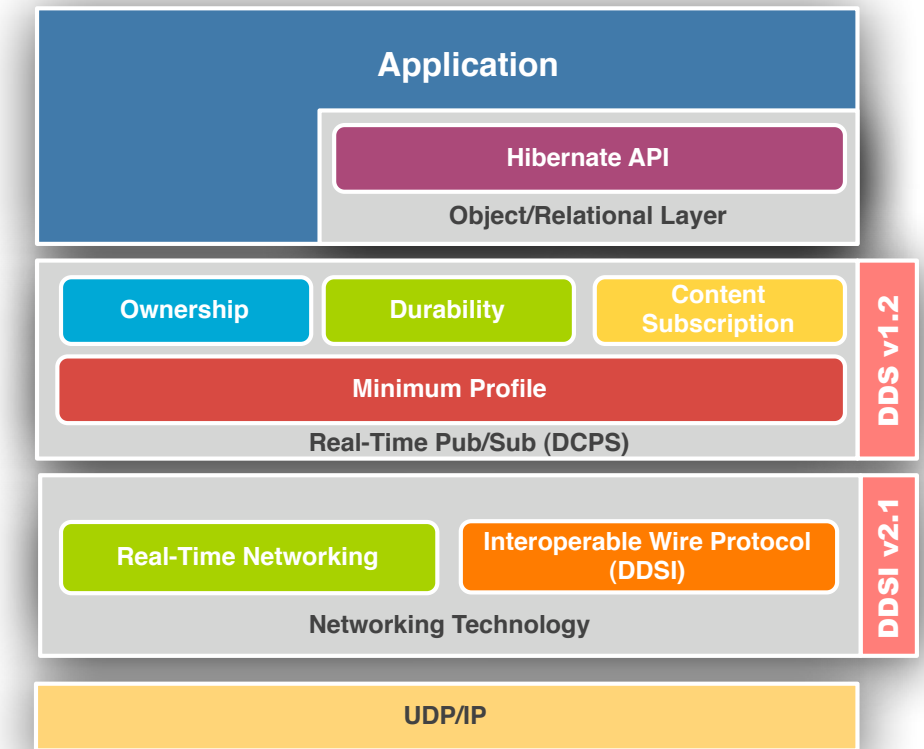
- ▶ DDS already has an Object/Relational Mapping (ORM) Layer, namely the DLRL (Data Local Reconstruction Layer)
- ▶ Hibernate is one of the most widely used ORM with many applications already leveraging it

Idea

- ▶ Port Hibernated to OpenSplice DDS

Community Benefits

- ▶ Leverage the the power of an ORM in DDS via a widely known and adopted technology, namely Hibernate
- ▶ Leverage the OpenSplice DDS port of Hibernate to transparently move your existing applications to OpenSplice DDS for improving performance, and for scaling out.



RESTful DDS

Context

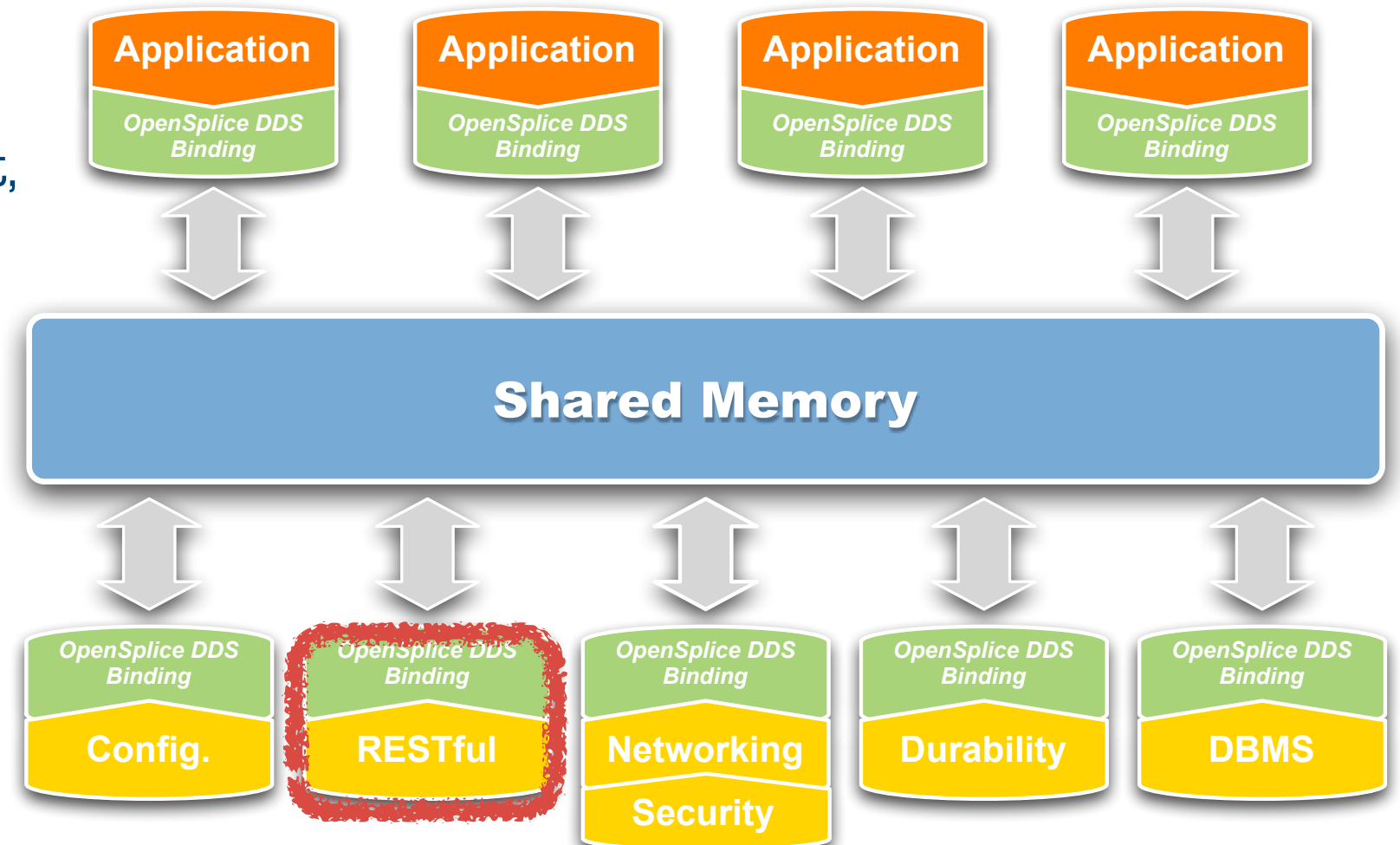
- ▶ REST is becoming the dominant way of accessing services via the internet and a new style of implementing Web Services, supported by the latest Web2.0 applications, e.g. Twitter, Blogspot, etc.
- ▶ REST provides basic CRUD functionalities that nicely map to DDS

Idea

- ▶ Provide RESTful access to the OpenSplice DDS global data space

Community Benefits

- ▶ Easily integrate Web Application with DDS-Based Systems



OpenSplice DDS and Esper

Context

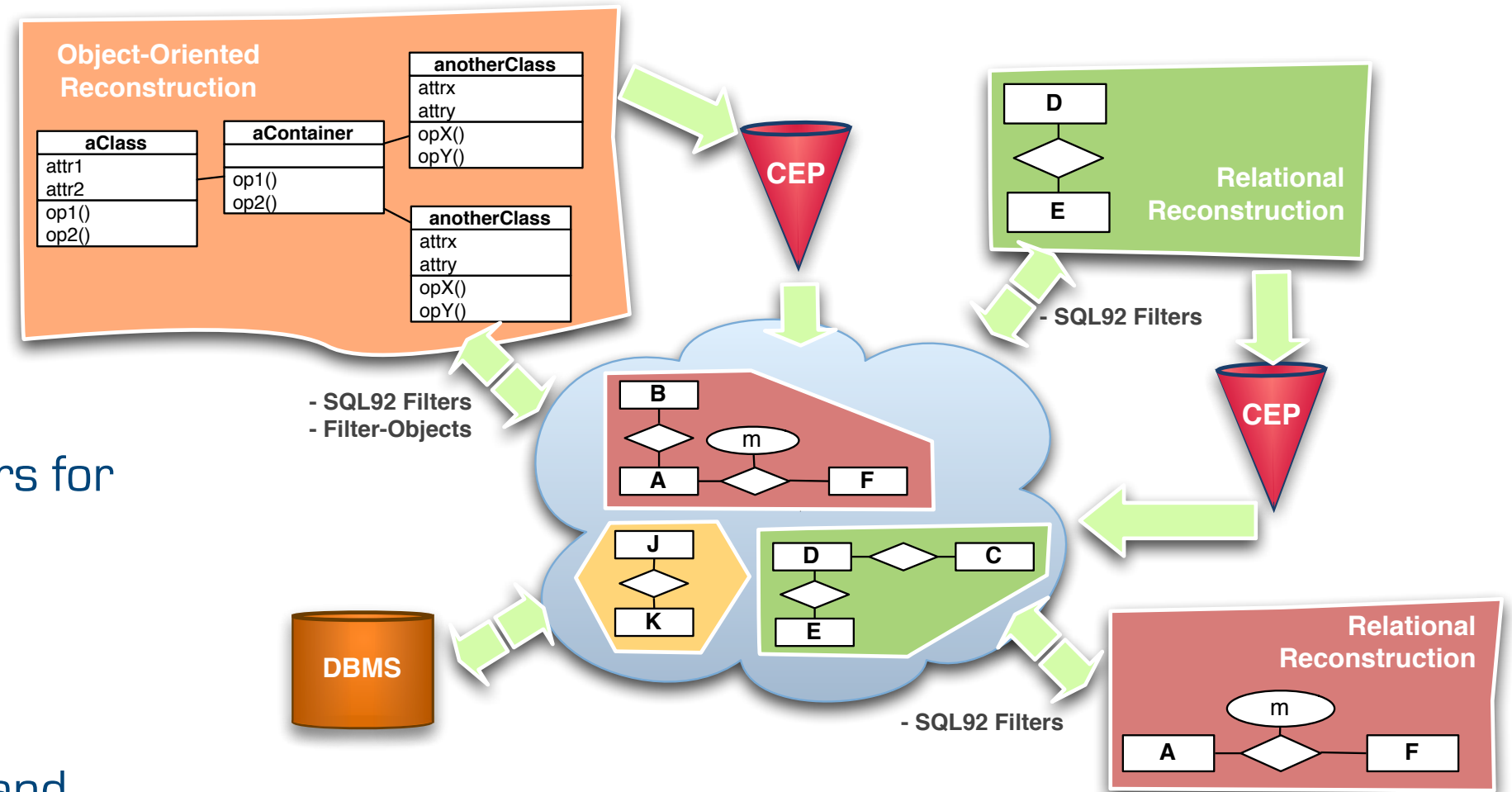
- ▶ OpenSplice DDS is equipped with data filtering capabilities
- ▶ CEP are emerging as the way to detect the occurrence of complex events in data streams
- ▶ Esper (<http://esper.codehaus.org/>) is the leading Open Source CEP engine

Idea

- ▶ Provides off-the-shelf OpenSplice DDS connectors for the Esper CEP
- ▶ Exploit OpenSplice DDS to offload pre-filtering

Community Benefits

- ▶ Full Open Source Solution for Data Distribution and Event Processing
- ▶ Higher throughput thanks to OpenSplice DDS performances



AMQP Wire Protocol

Context

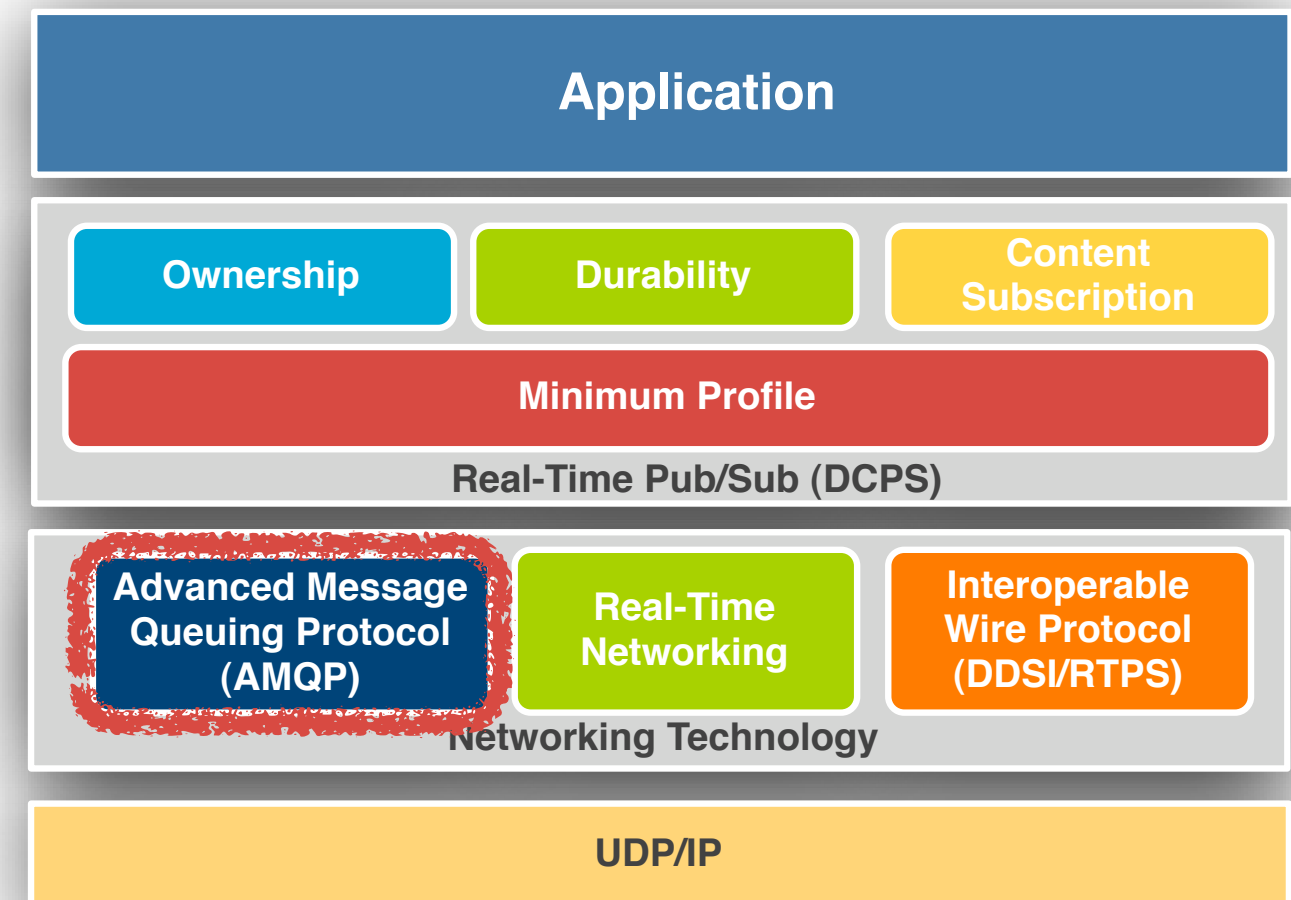
- ▶ AMQP is an emerging standard wire protocol in the Financial Market, however it does not provide as standard API
- ▶ The DDS is also a standard that is gaining quite a bit of momentum in the Financial Community

Idea

- ▶ Implementing an AMQP networking plug-in for OpenSpliceDDS, would make available a standard Pub/Sub API for accessing AMQP functionalities

Community Benefits

- ▶ Standard API for accessing AMQP functionalities
- ▶ DDS / AMQP Bridging



Open Market Data Platform

Context

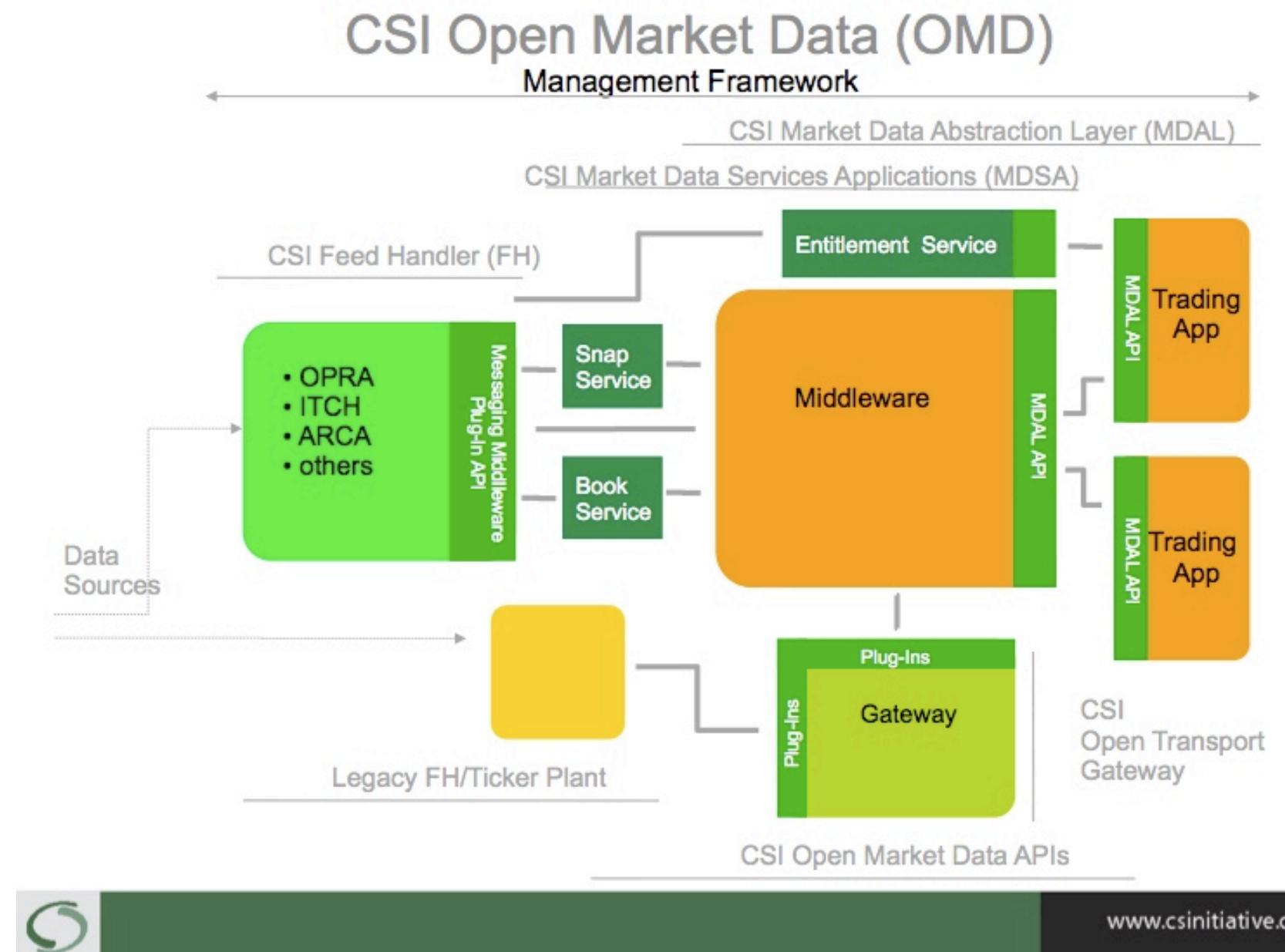
- ▶ CSI has recently started the Open Market Data (OMD) Initiative as an effort to provide an open platform for market data
- ▶ OMD leverages the plug-in approach to make it possible to deal with different technologies for the various building blocks

Idea

- ▶ Implement connectors for OpenSplice DDS into the OMD

Community Benefits

- ▶ Access to a complete Market Data platform equipped with the most performing Open Source Messaging MW



Courtesy of Richard Reichgut

Concluding Remarks

Why Joining?

For Individuals

- ▶ Get exposure to one of the most sophisticated Data Distribution Technology available
- ▶ Improve and extend your DDS skill-set and leverage this on your next career move
- ▶ Have fun hacking the core of a high performance communication middleware

For Companies

- ▶ Work on extensions that are relevant to your business domain
- ▶ Leverage the community effect to get shorter time-to-market and more innovation
- ▶ Build an OpenSplice DDS center of excellence within your organization

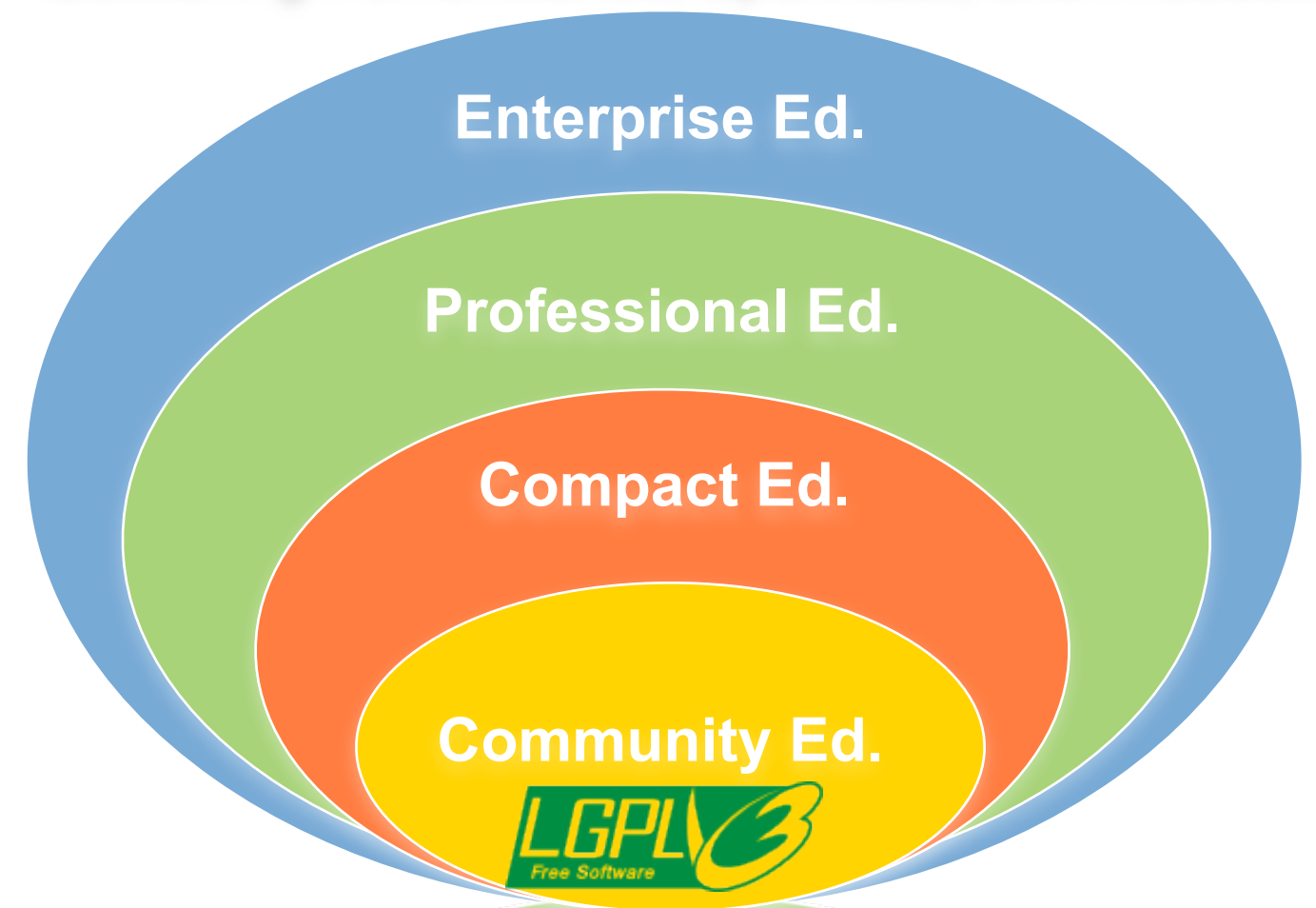


Concluding Remarks

- ▶ OpenSplice DDS is now available as Open Source Software under LGPL Licensing
- ▶ This release provide users with access to the most powerful extreme performance data distribution technology available on the market
- ▶ A set of added value Editions along with a very rich set of Services is available through PrismTech
- ▶ There is already an agenda full of cool items to work-on for the swiftly growing OpenSplice DDS community

Pick your incubator project and contribute to the OpenSplice DDS World domination!

OpenSplice|DDS
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Online Resources

OpenSplice|DDS

Delivering Performance, Openness, and Freedom

* <http://www.opensplice.com/>

* [emailto:opensplicedds@prismtech.com](mailto:opensplicedds@prismtech.com)



* <http://bit.ly/1Sreg>



* <http://www.youtube.com/OpenSpliceTube>



* <http://twitter.com/acorsaro/>



* <http://opensplice.blogspot.com>



* <http://www.dds-forum.org>

* <http://portals.omg.org/dds>