



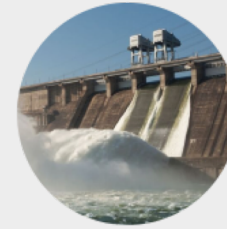
May 21-22

Lee Johnson

Product Management

 [leej@rt.com](mailto:leej@rt.com)





# Connex 6 and Beyond

## RTI Products & Markets Update

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Lee Johnson – Manager, Product Management





# Introducing Connex 6

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Now Available



## Integration Across Platforms & Systems

Scalability | Interoperability

## Performance

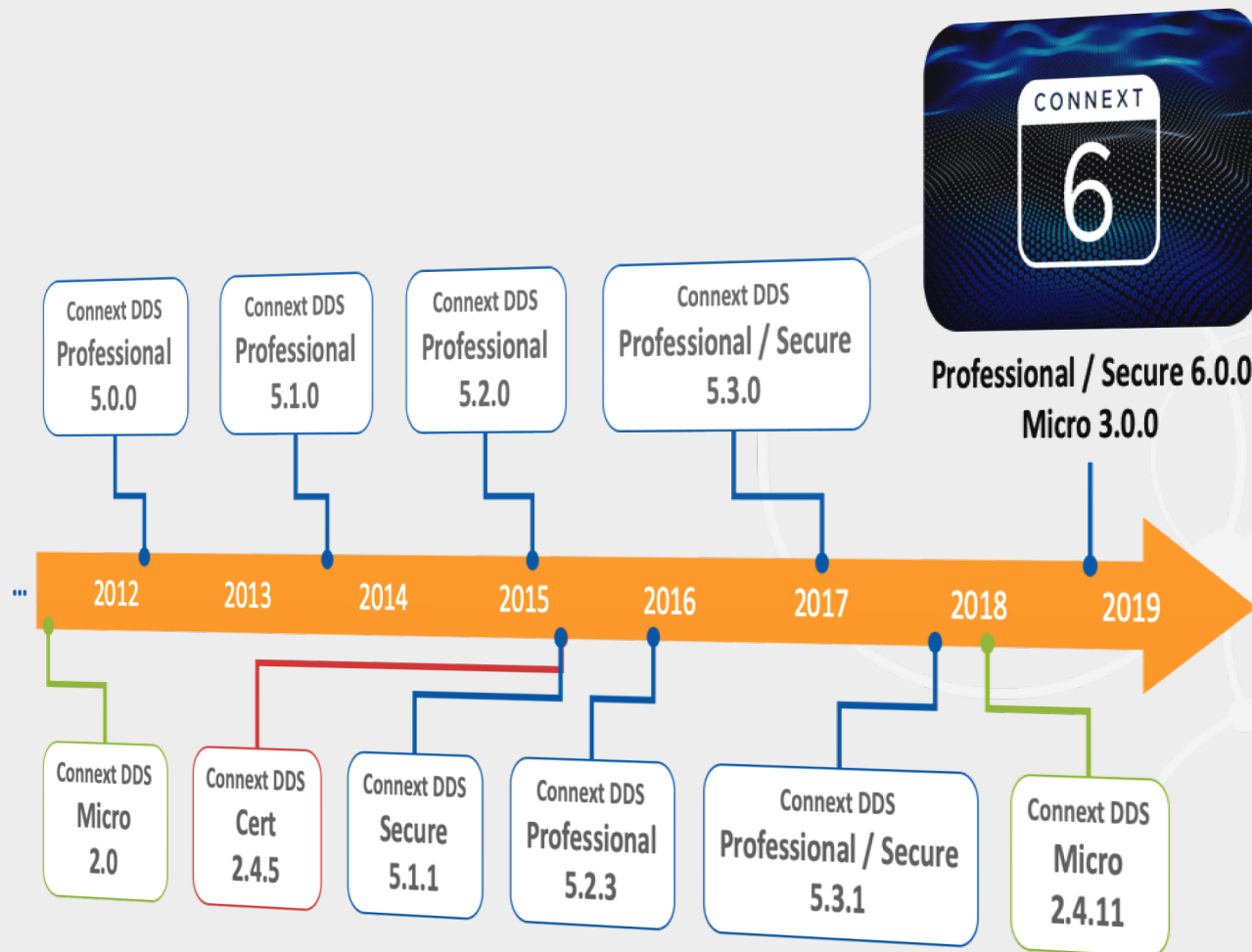
High Bandwidth Data Distribution

## Pathway to Production of Critical Systems

Security | Safety



# Product Lineage of Innovation, Quality and Trust



## Connex 6

- Focus on Platform: interoperability across the product line
- Major advances in scalability, integration, performance, security



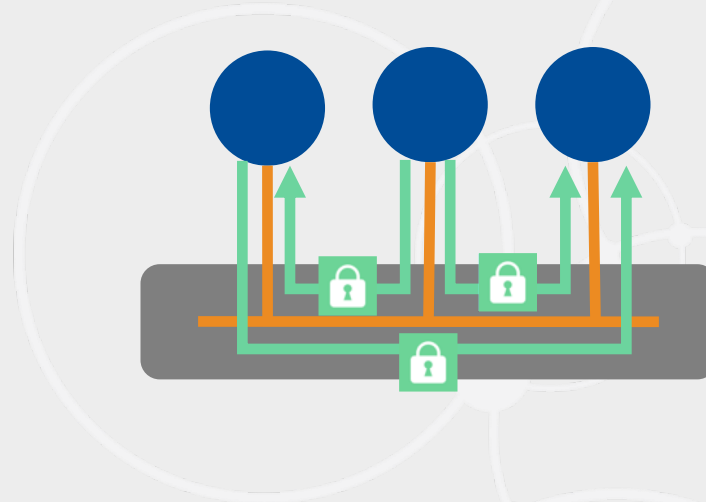
# Addressing Automotive & Healthcare Requirements

## Handling Large Data Efficiently



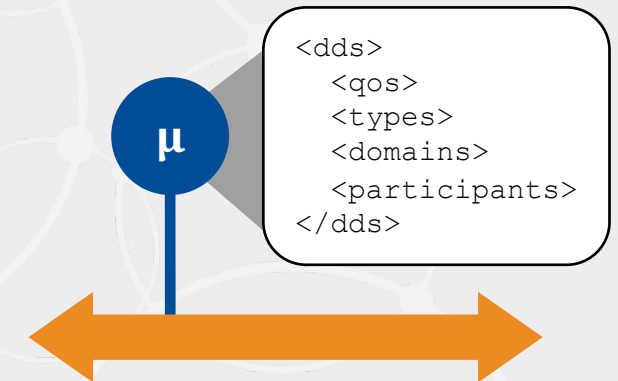
New RTI FlatData™ and Zero-Copy shared memory transport dramatically reduce latency and overhead

## The Latest in DDS-Based Security



Compliant with the latest OMG DDS Security spec and extends support to Connex DDS Micro

## Configurable Micro Applications



Ability to define and configure Connex applications with XML is extended to Connex DDS Micro

# Connex 6: Platform for Distributed System Connectivity



## Connex DDS Professional

Connectivity software for developing and integrating IIoT systems.



## Connex DDS Secure

Designed for systems requiring robust, fine-grained security.



Code Generation



Data Routing



Data Persistence



Data Queuing



Recording & Replay



System Administration



System Introspection



System Monitoring



Database Integration



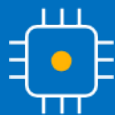
Web Integration



Spreadsheet Integration



3<sup>rd</sup> Party Integrations



## Connex DDS Micro

Designed for resource-constrained systems.

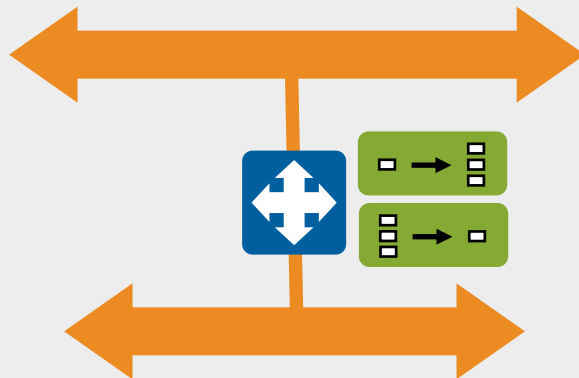


## Connex DDS Cert

Designed for safety-certifiable systems.

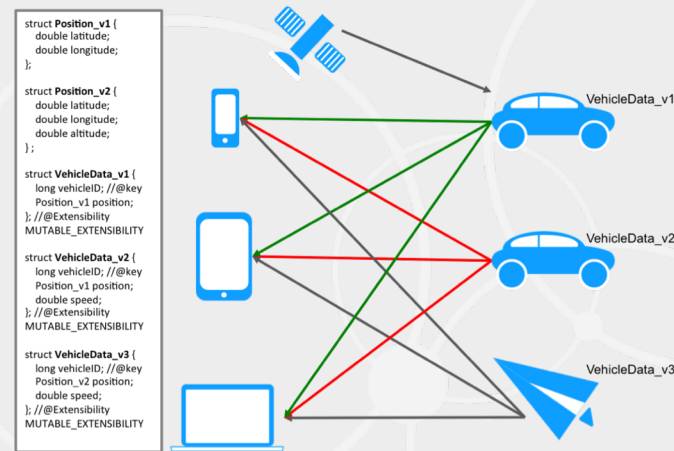
# Improved Integration, Evolvability and Robustness

## Easier System Integration



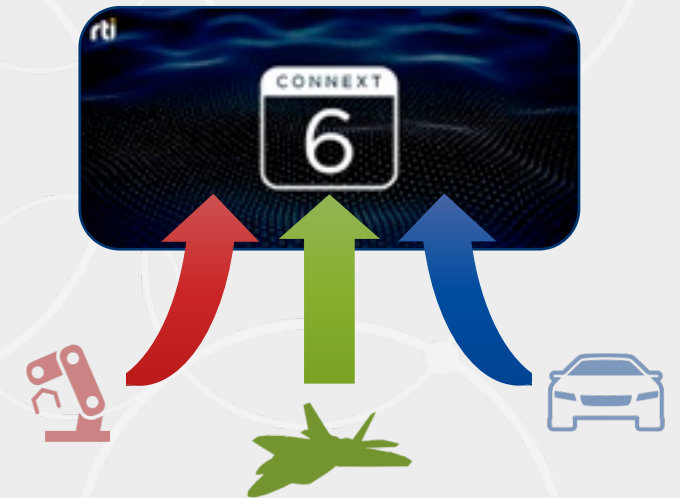
Next generation of Routing Service simplifies bridging data domains through support for advanced transformations

## Enhanced System Evolvability



Savings in data representation on the wire and new annotations make it easier to evolve systems while preserving interoperability

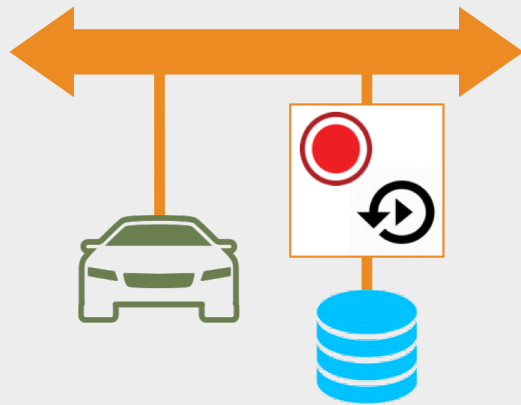
## Improved Dynamic Data



More efficient access and interaction with system data types improves end-to-end performance

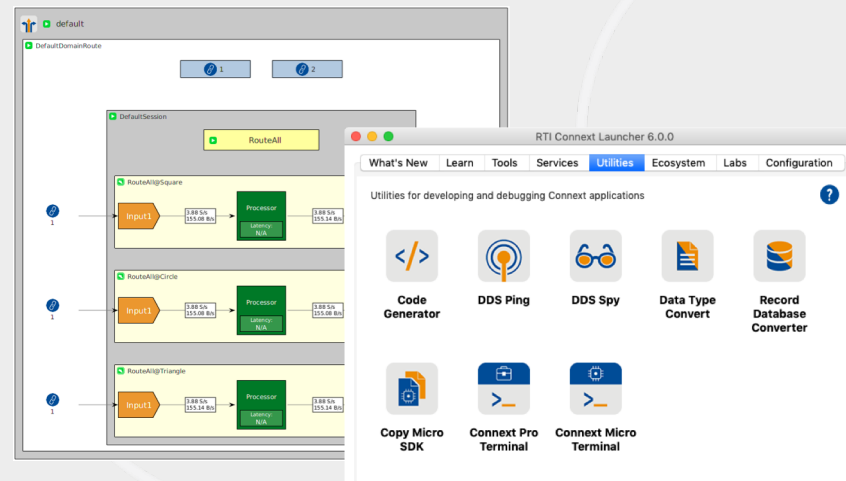
# Enhanced Tooling and Platform Support

## Simplified Data Recording



Next generation of Recording Service improves performance, simplifies configuration and adds support for custom storage plugins

## Enhanced Connex Tools



Enhancements to Admin Console and Launcher improve usability and integrations with Connex Products & Services

## Extended Platform Support



Support for 75+ compute platforms and embedded systems, including Linux, QNX, VxWorks, Windows and more

# Connex 6 – How to Get Started

Download from the RTI Support Portal



**rti**

## Support

RTI understands that middleware is a mission-critical part of your application. Our support engineers are exceptionally qualified in all areas of real-time and embedded systems and are trained to quickly troubleshoot and problem solve.

Free Trial

[support.rti.com/downloads.php](https://support.rti.com/downloads.php)

Download the Connex 6 Free Eval



**rti**

## Free Trial

Connex® DDS is the world's leading implementation of the Data Distribution Service (DDS) standard for Real-Time Systems.


Try a fully-functional version of Connex DDS 6.0.0 for 30 days.

[Download the Trial Version](#)

License Type

- Standard 30-day evaluation license
- Internally funded, pre-proposal IR&D
- University research and education

[www.rti.com/free-trial](https://www.rti.com/free-trial)


Click  to start RTI Launcher





# Connex 6 Compatibility & Migration

RTI Connex DDS



6.0.0

Search docs

- 1. Installation and Upgrade
- 2. General Compatibility
- 3. Product-Specific Compatibility
- 4. Changes to This Document
- 5. Copyrights

Docs » Migrating to Connex 6

## Migrating to Connex 6

For instructions on migrating from previous releases to Connex 6, first see the Compatibility and Migration chapters of the 5.3.1 Release Notes. Then return to this document for additional considerations for migrating from 5.3.1 to Connex 6.

RTI strives to provide a seamless upgrade path when the product is updated. When upgrading to a new version of *Connex DDS*, consider the following:

- 1. Installation and Upgrade
- 2. General Compatibility
  - 2.1. Wire Compatibility
  - 2.2. Code and Configuration Compatibility
  - 2.3. Type System Compatibility
  - 2.4. XML Format Compatibility
  - 2.5. (Move these sections to appropriate new sections above or below)
- 3. Product-Specific Compatibility
  - 3.1. RTI Connex DDS Core Libraries and Utilities
  - 3.2. RTI Connex DDS Micro
  - 3.3. RTI Routing Service
  - 3.4. Security Plugins
  - 3.5. Persistence Service
  - 3.6. RTI Queuing Service
  - 3.7. RTI Recording Service
  - 3.8. Database Integration Service
  - 3.9. Web Integration Service
  - 3.10. Cloud Discovery Service (Experimental Feature)
  - 3.11. RTI Launcher
  - 3.12. Administration Console
  - 3.13. RTI Monitor
  - 3.14. Code Generator
  - 3.15. Secure WAN Transport
  - 3.16. TLS Support

## • Migrating to Connex 6 Online Guide:

– Available online on RTI Community ([community.rti.com](http://community.rti.com))

## • Guidance and Considerations:

– Migrating from 5.3.1

– General Compatibility (wire, type system, transports, etc.)

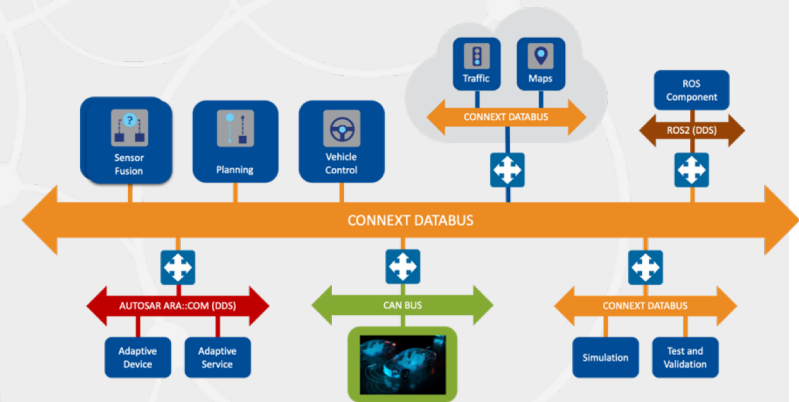
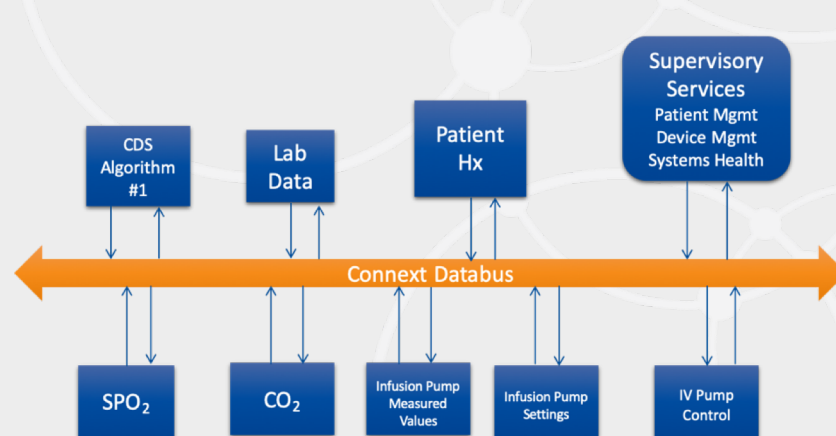
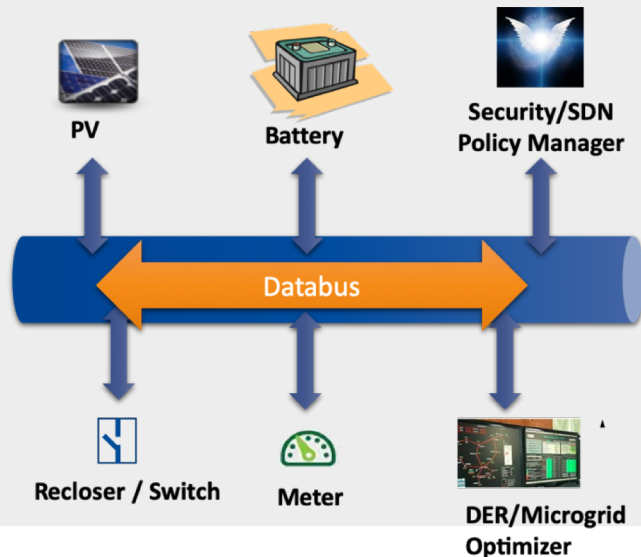
– Product-specific Compatibility

# Industry Focus

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# Driving Force: IIoT Connectivity for Autonomy

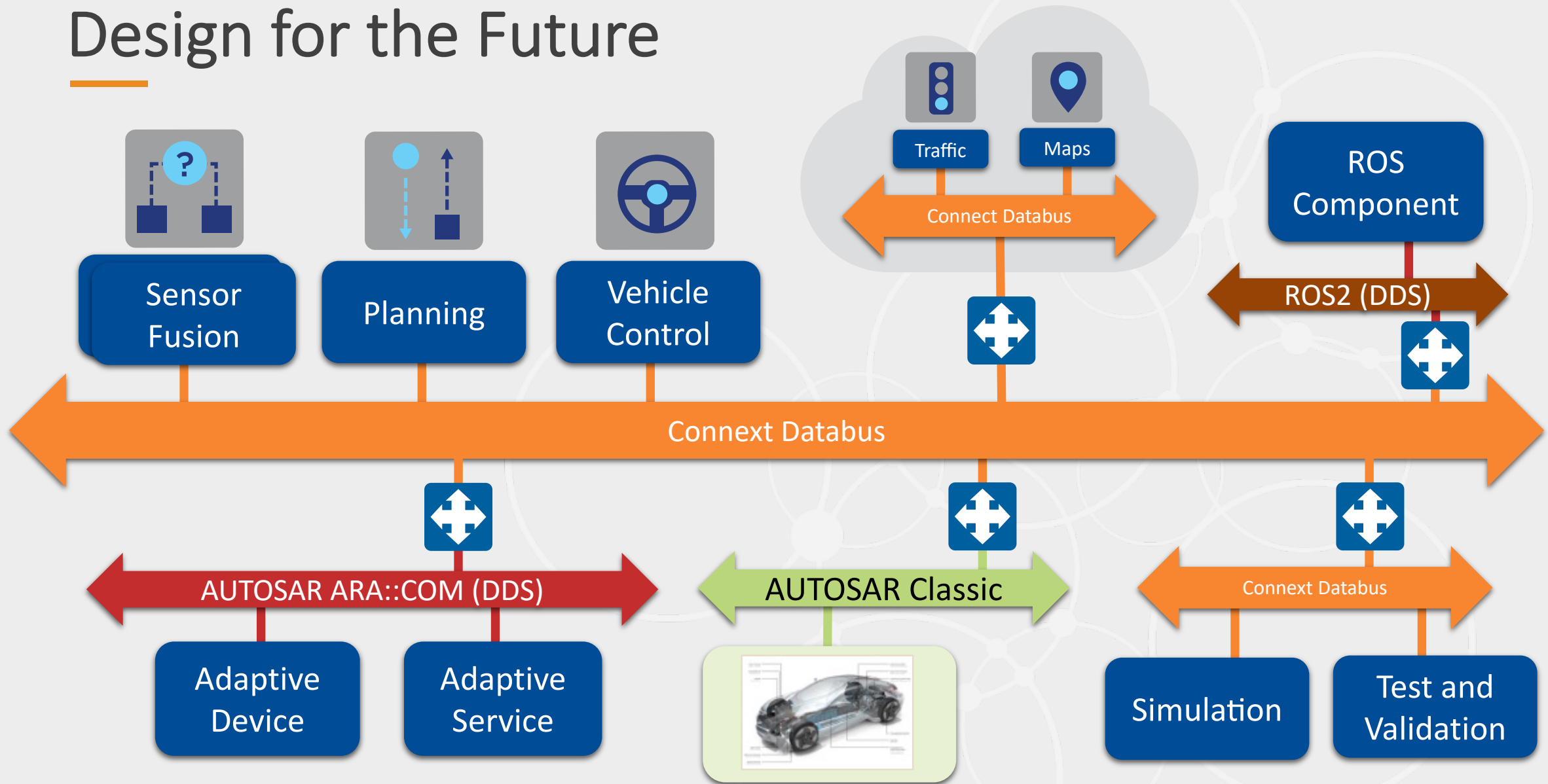


# Autonomous Vehicles

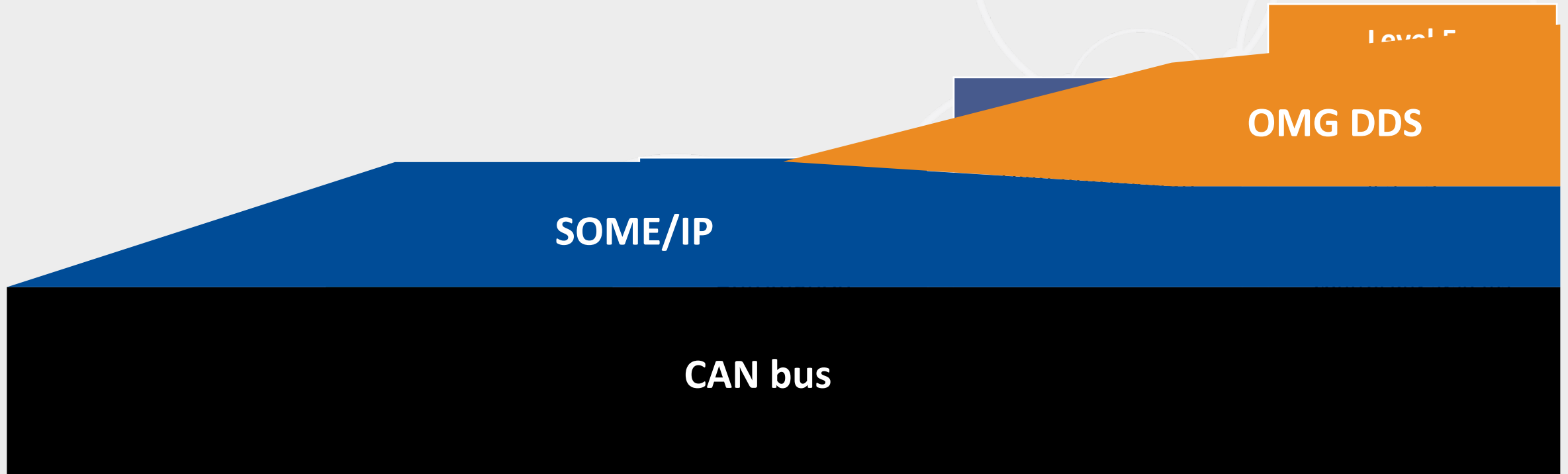
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# Design for the Future



# Connectivity at Different Levels



Single control functions such as speed selection, braking or lane keeping are automated

Driver expected to be available for control at all times and on short notice

control with comfortable transition times



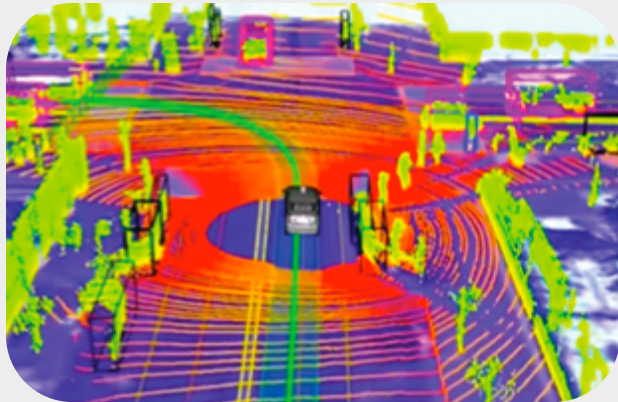
# 200+ RTI Autonomous Vehicle Programs!

- 40+ commercial systems
  - 8+ Passenger vehicles
  - 8+ EV startups
  - 5+ Software platforms
  - 7+ Trucks, mining vehicles, forklifts
  - 2 Flying taxi services
  - 2 Hyperloop & other
  - 2+ Autonomous ships
  - 2+ Underwater robots
- 100+ defense systems (land, sea, air)
- 75+ research programs (companies, universities, etc.)



# Driving RTI Product Direction & Priorities

Functionality



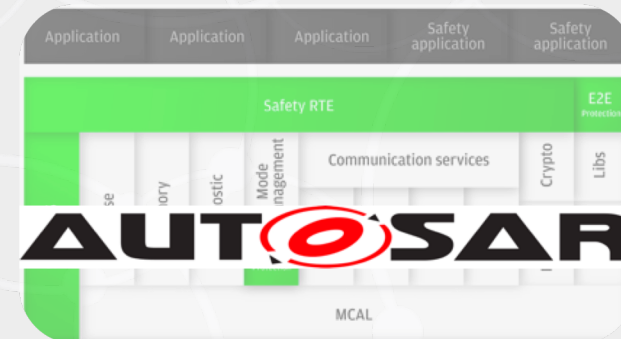
Safety

**ISO 26262**  
Road Vehicles - Functional Safety

Business Models



Demonstrators & Data Models



Platforms & Partners



RTI @ CES 2020



Save the Date  
**CES**  
**2020**

**January 7-10**  
**Las Vegas**

# Aerospace & Defense

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# Supporting Hundreds of A&D Programs



# Key Product Initiative: FACE TSS

- Future Airborne Capability Environment (FACE™) Transport Services Segment (TSS) based on RTI Connex DDS
- Latest release May 2019
- Enables rapid interoperability for FACE avionics stacks
- **First TSS certified conformant to FACE Technical Standard**





# FACE is Coming to Europe in 2020

- Aviation Electronics Europe, usually held in Munich, is now moving to Toulouse for one year in 2020
- Integrated Aerospace TechWeek 2020 supporting 6 segments

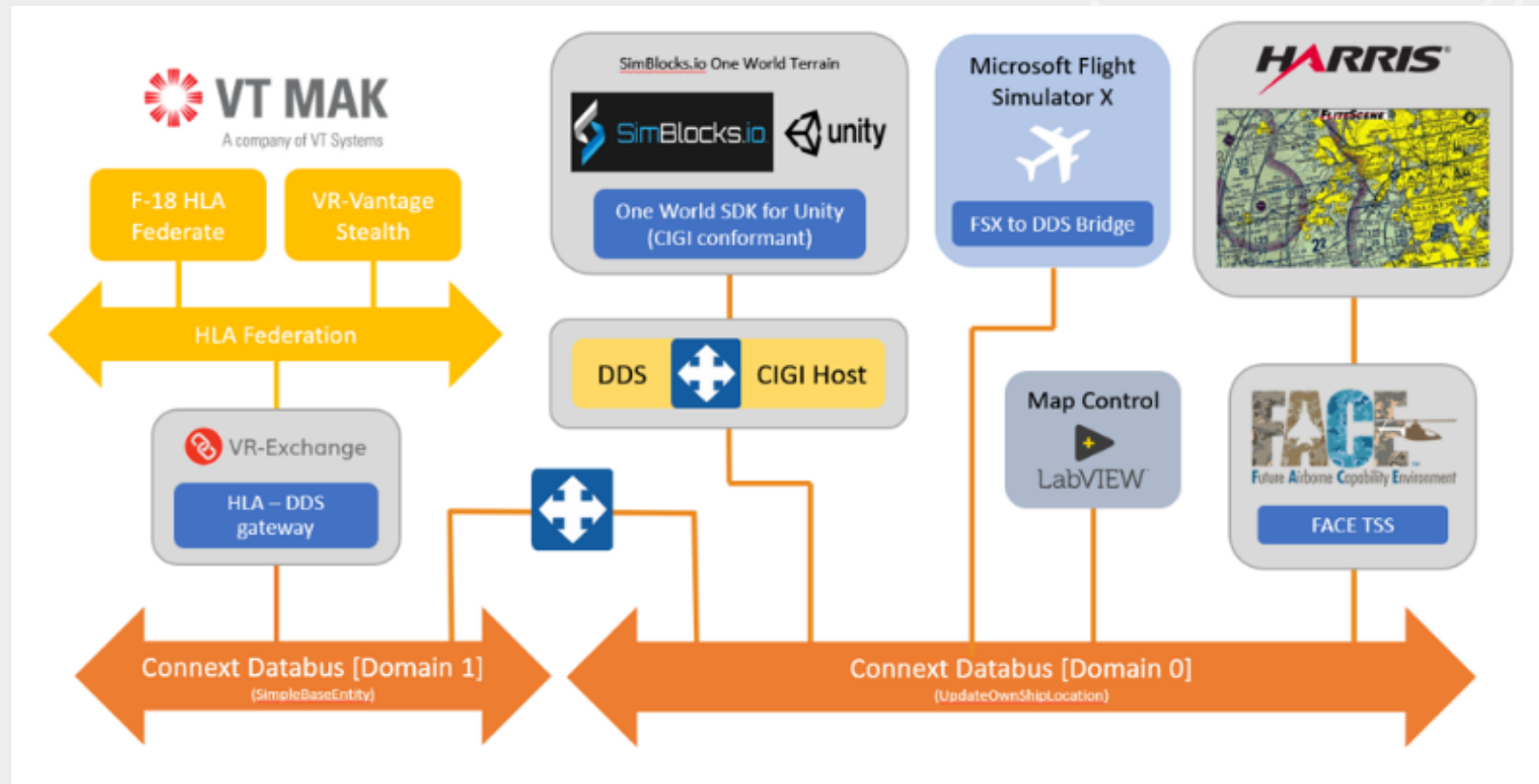


**AEROSPACE  
TechWeek.com**  
18/19 Mar 2020 | Toulouse, France  
6  EVENTS UNDER 1 ROOF  
RTI Booth #805

**Avionics**  
**Connected AIRCRAFT**  
**MRO iT**  
**AEROSPACE testing**  
**Flight Ops iT**  
**FACE**

The graphic consists of a dark blue rectangular area on the left containing the event title and details. To its right is a 2x3 grid of interlocking puzzle pieces in various colors (blue, light blue, red, orange, green, brown) representing different industry segments. Each piece contains text and a small icon related to that segment.

# Demonstrating Rapid MS&T Integration



Blog: <https://www.rti.com/blog/i/itsec-2018-demonstrating-interoperability-using-connex-dds>

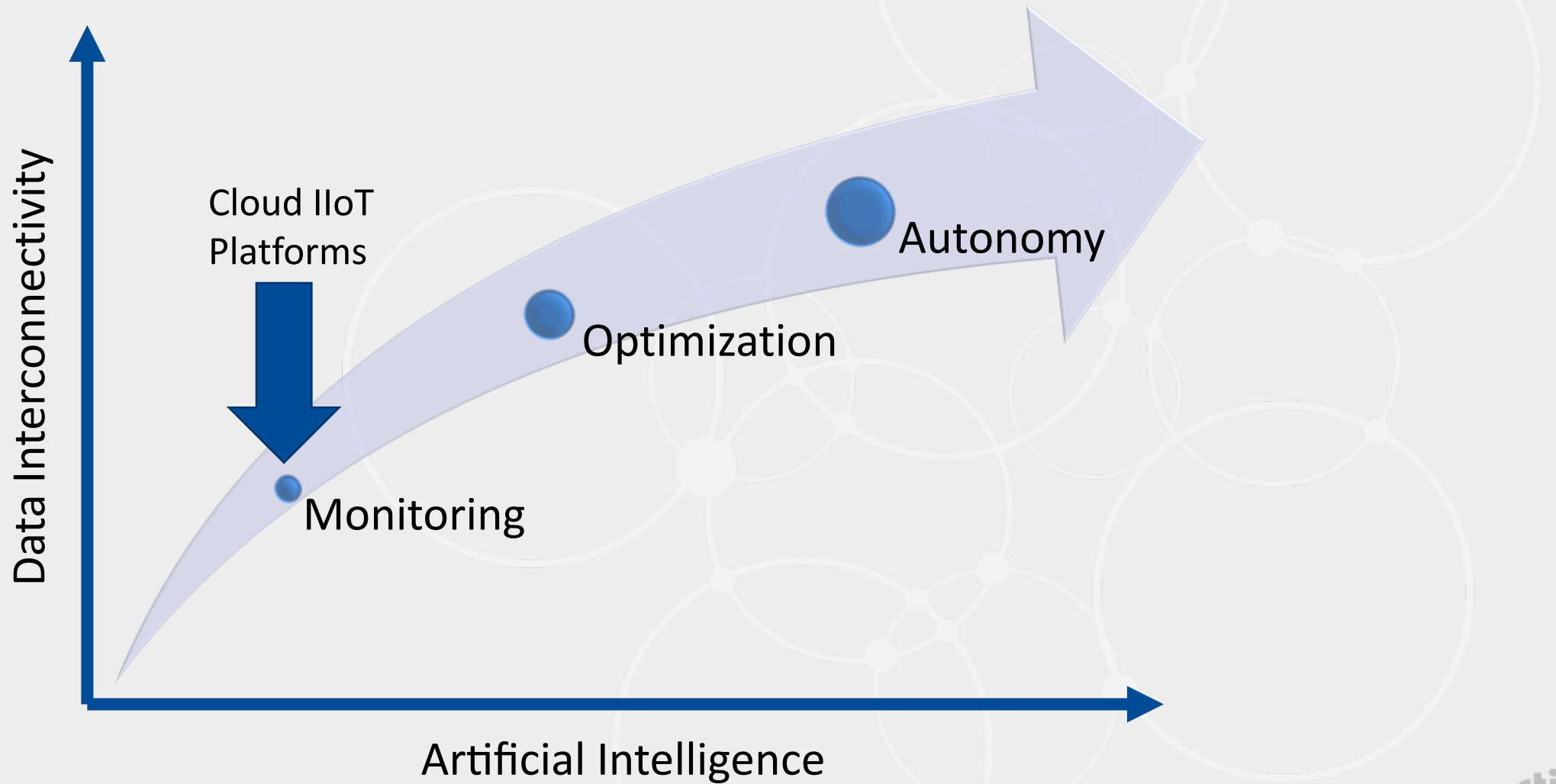
New White Paper: <https://www.rti.com/modernizing-modeling-simulation-training-systems-whitepaper>

# Evolution of IIoT Systems

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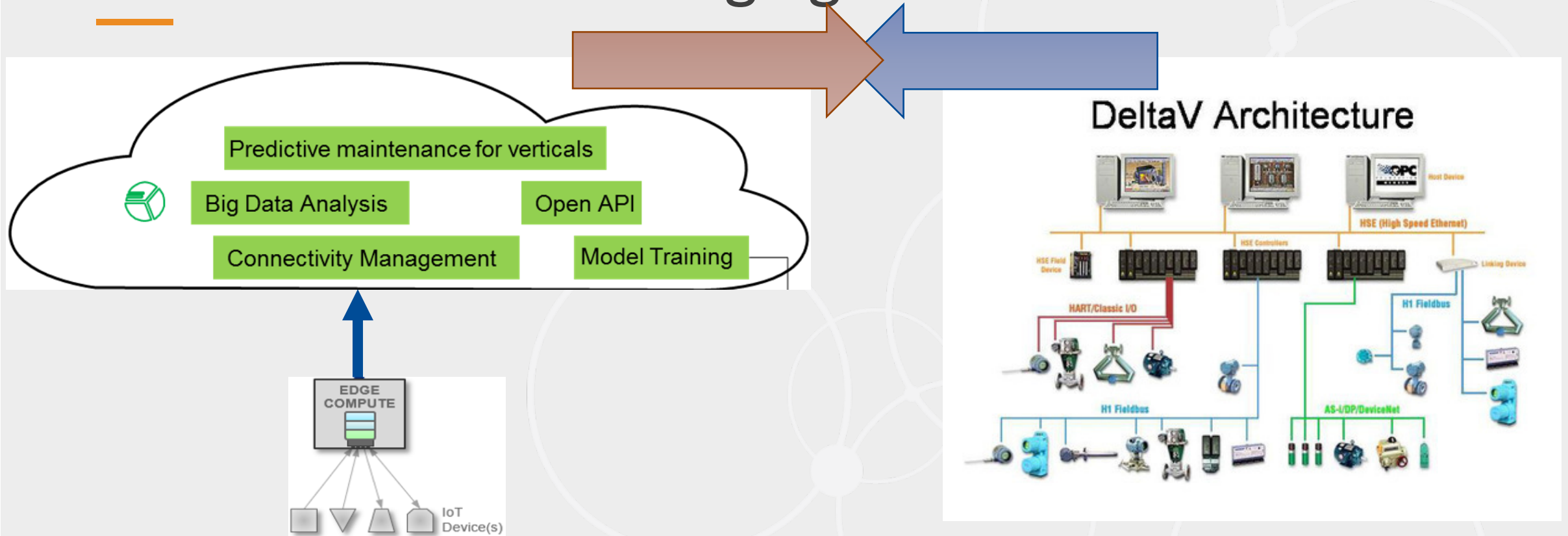


# Spectrum of IIoT System Use Cases





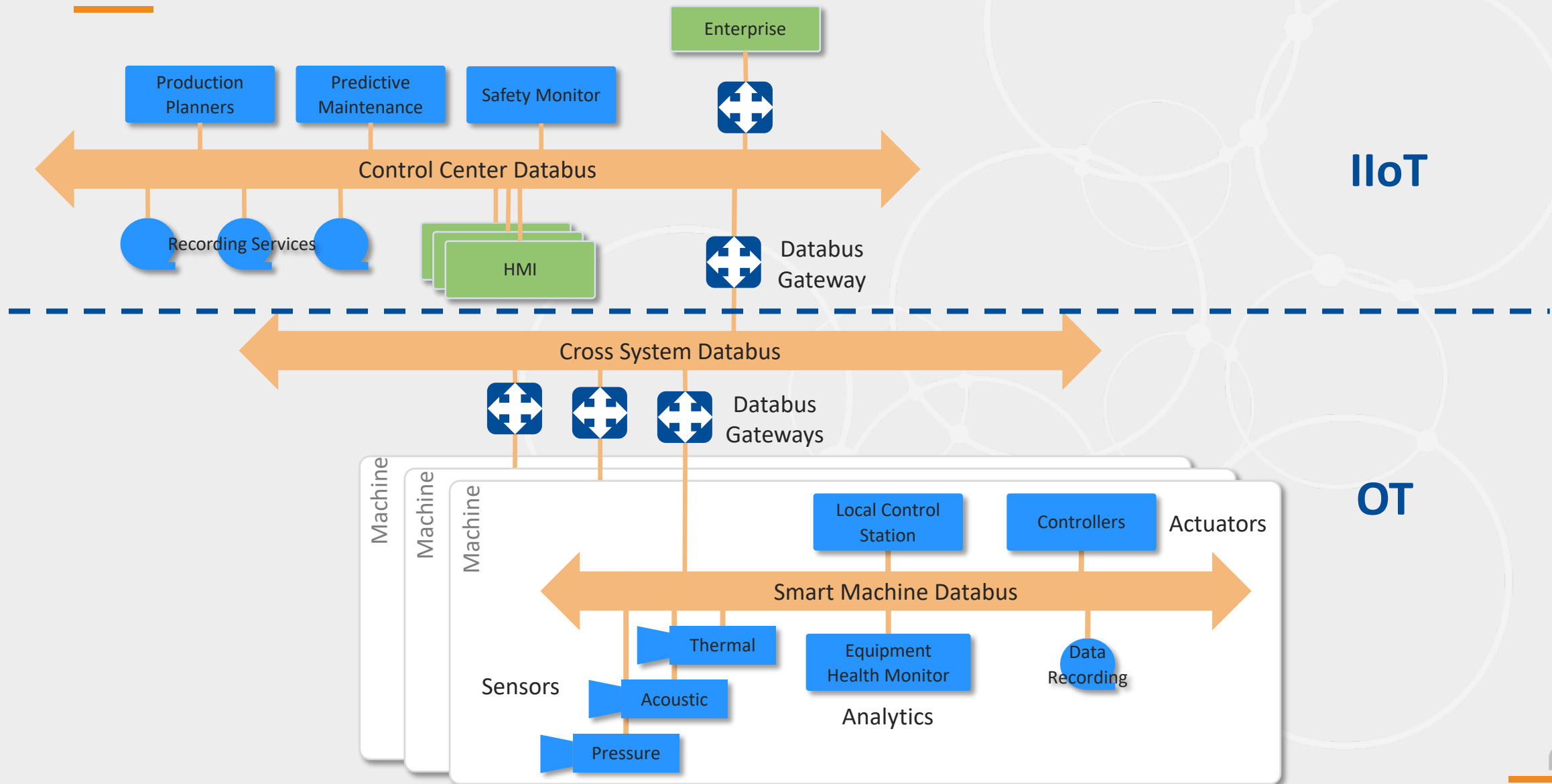
# IloT and OT are Converging



- Monitoring → Optimization
- Human speed, nice to have
- Cloud/IT centric
- Edge is add-on to existing systems (e.g., gateways)

- Optimization & Autonomy (Control)
- Physics speed, mission critical
- Edge-centric
- Designed from scratch

# IIoT & OT Converged – Layered Databus Delivers



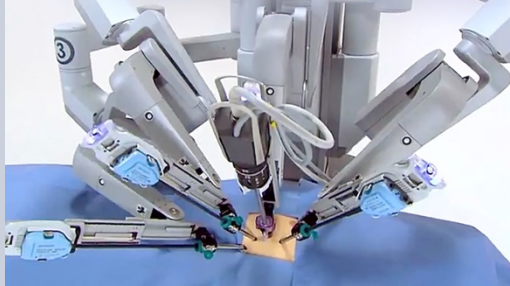
# In Healthcare...

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# Focused Areas for Product Development

## MEDICAL ROBOTICS



## COMPLEX MEDICAL PRODUCTS/SYSTEMS

### Medical Imaging



### Proton Beam Therapy



## INTERNET OF MEDICAL THINGS

### Patient Monitoring



### Infusion Pump



### Cardiac Monitoring



### Data Aggregation

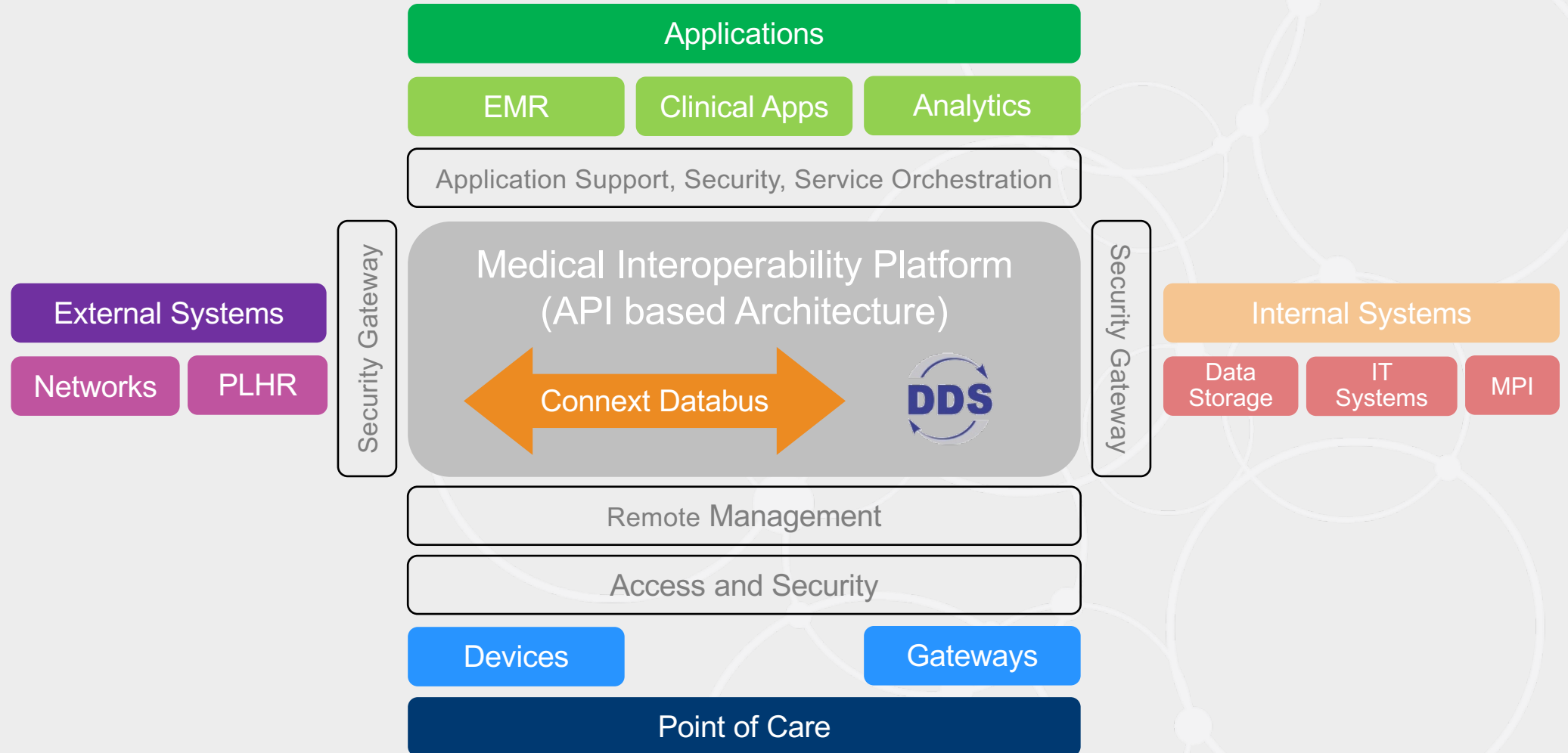


© 2009 CHET Networks, Inc.

### Other Clinical



# IloT Architecture for Healthcare

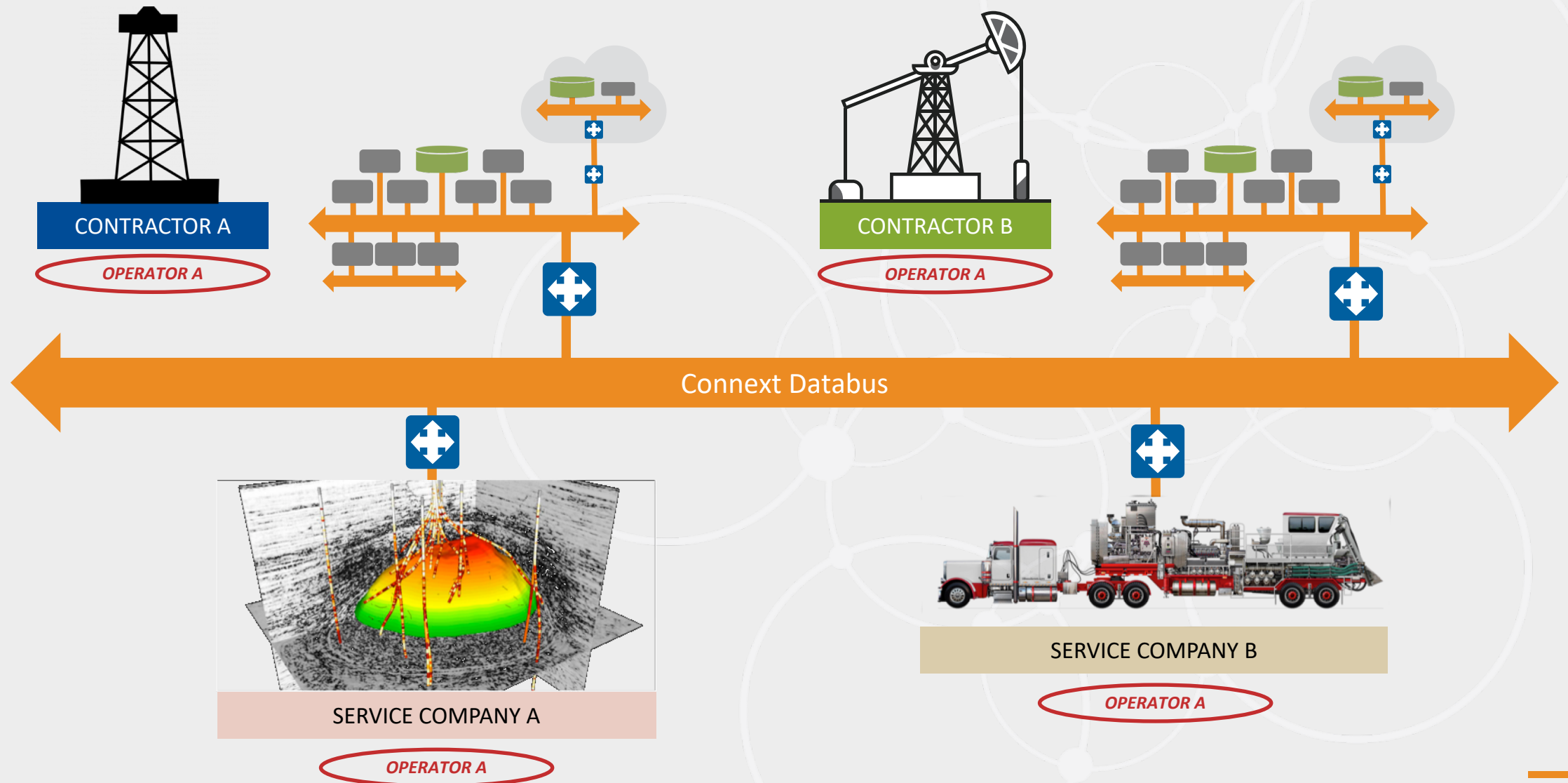


# In Oil & Gas...

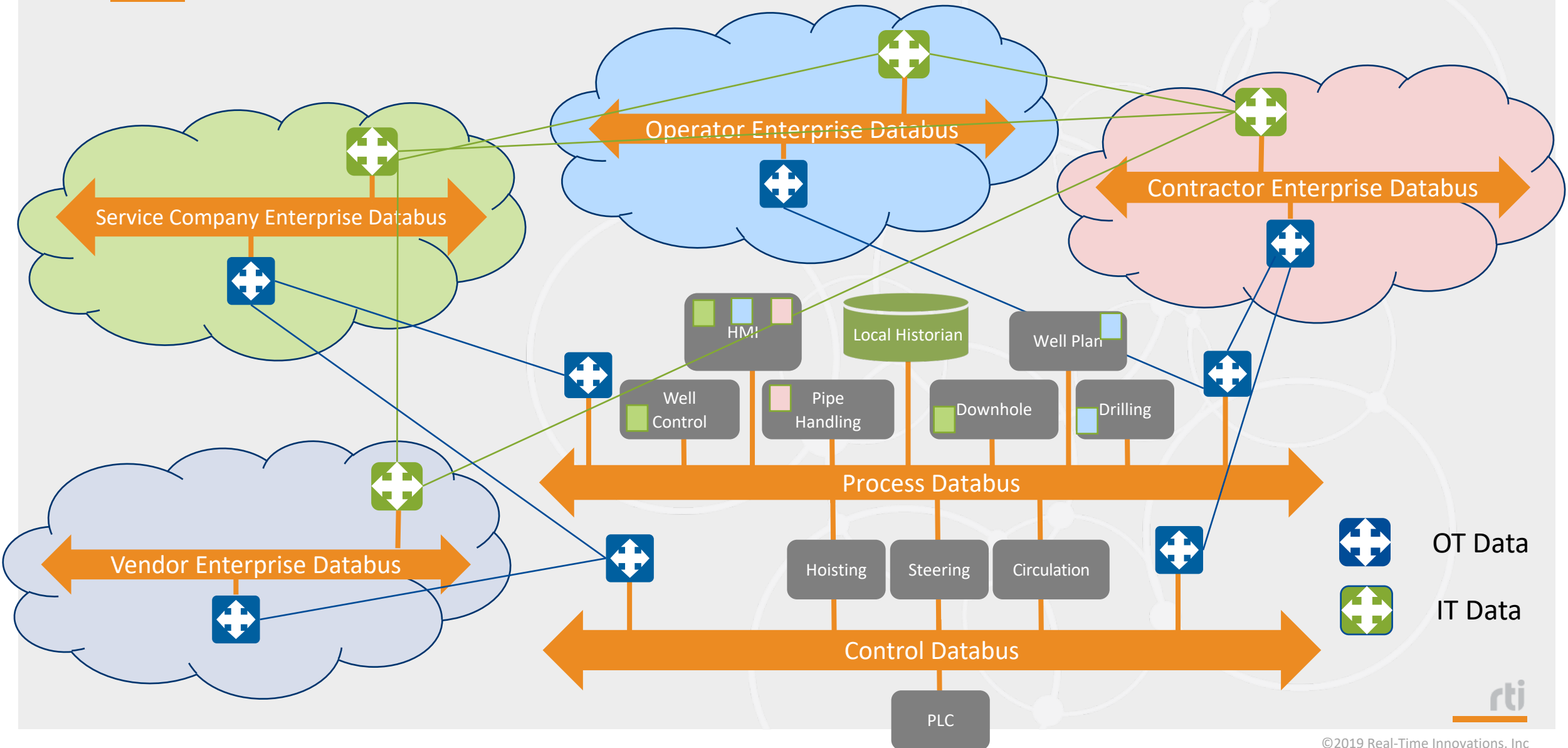
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# A Secure and Scalable Autonomous Oilfield



# Toward Distributed Data Integration





# Partners

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# Expanding Ecosystem of Integration Partners



Elektrobit



LabVIEW™



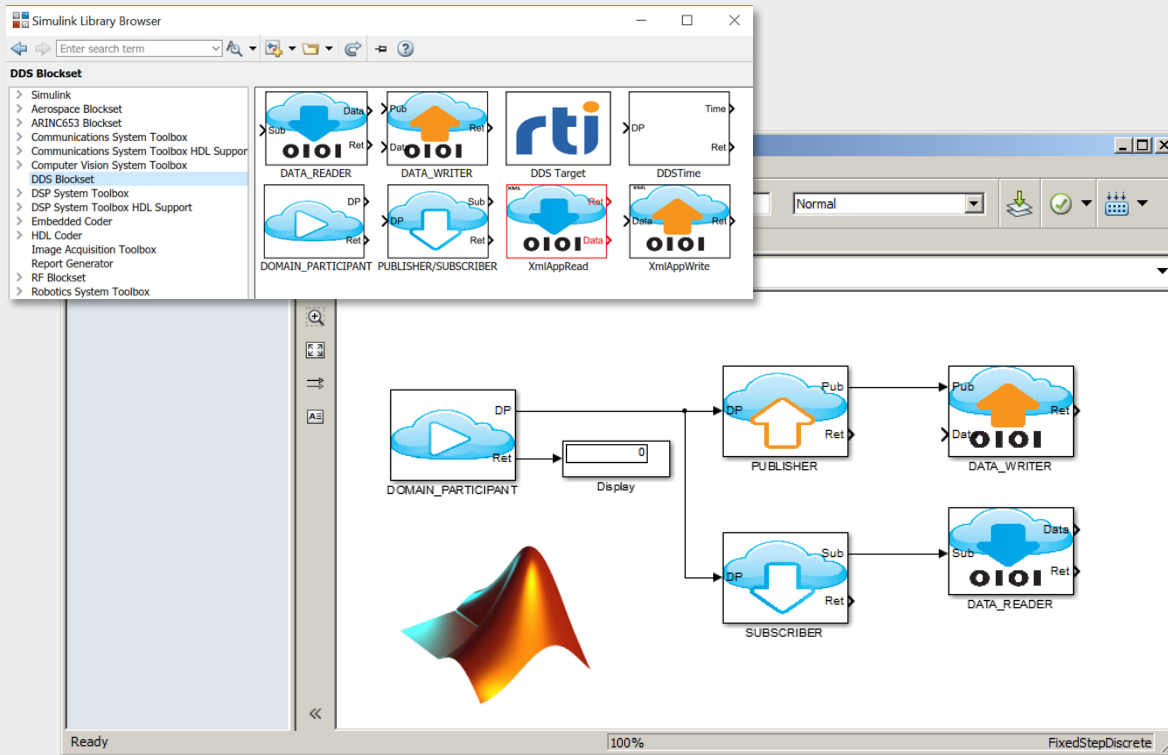
MOCANA



informedDS™



# RTI DDS Support for MATLAB/Simulink



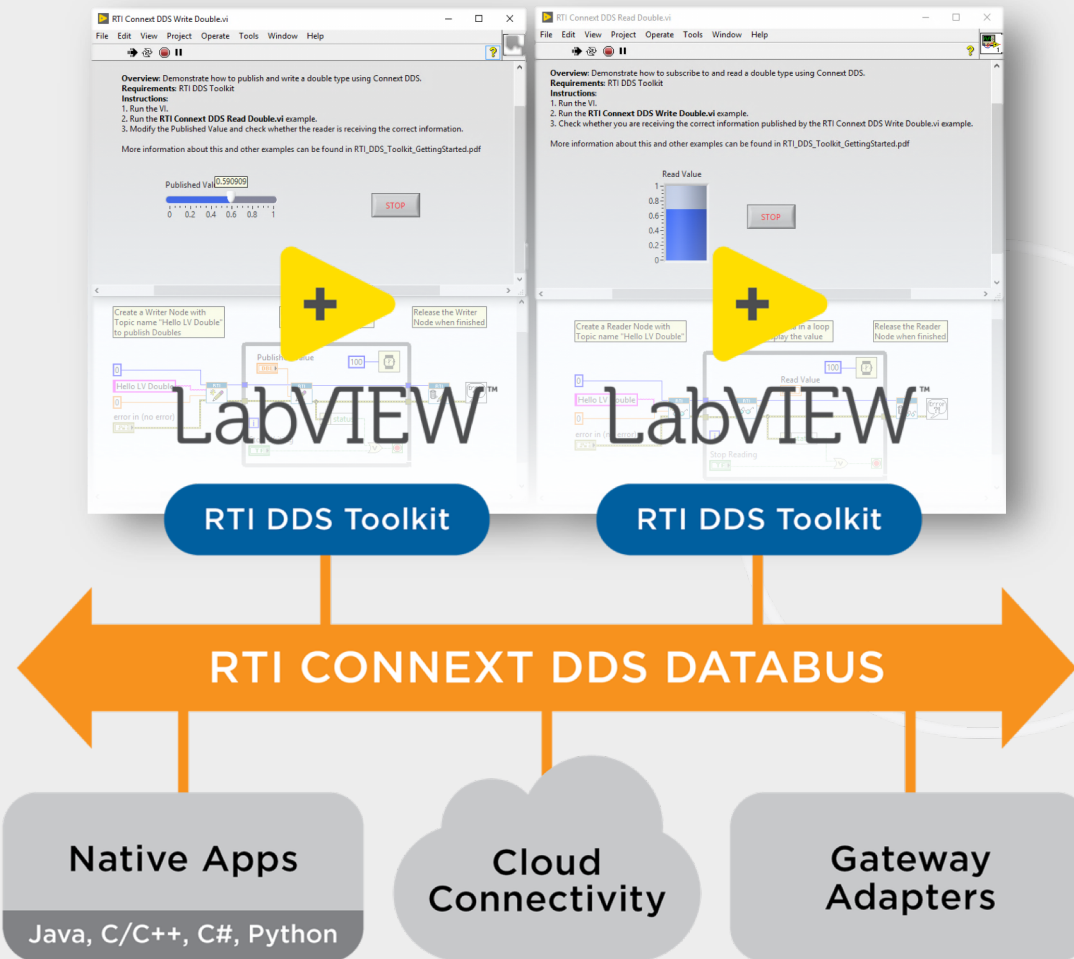
- MathWorks Pilot Support Package connects MATLAB® and Simulink® models through the ConnexT Databus
- Generates C/C++ code from Simulink models and deploy models on a range of supported platforms

## What's New

- MathWorks updating Blockset to support ConnexT 6
- Exploring interest in support for Simulink Real-Time

<https://www.mathworks.com/hardware-support/rti-dds.html>

# RTI DDS Toolkit for NI LabVIEW

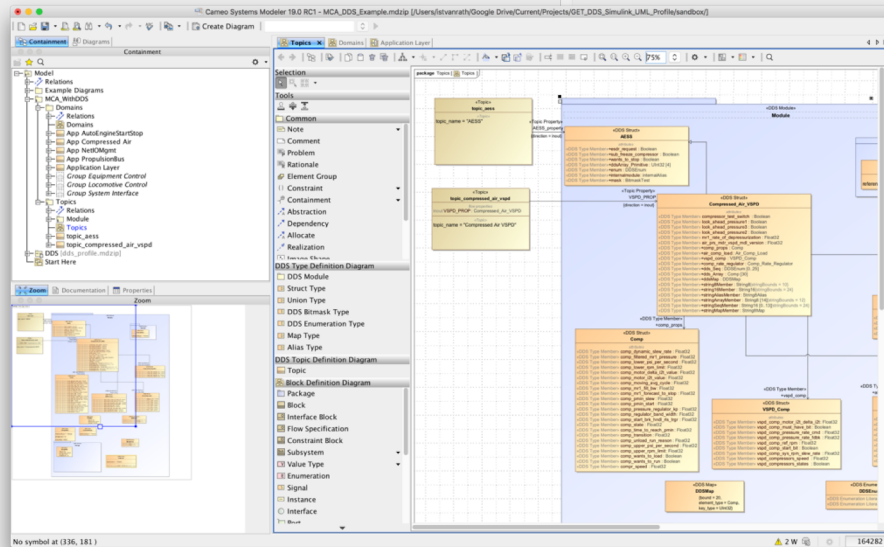
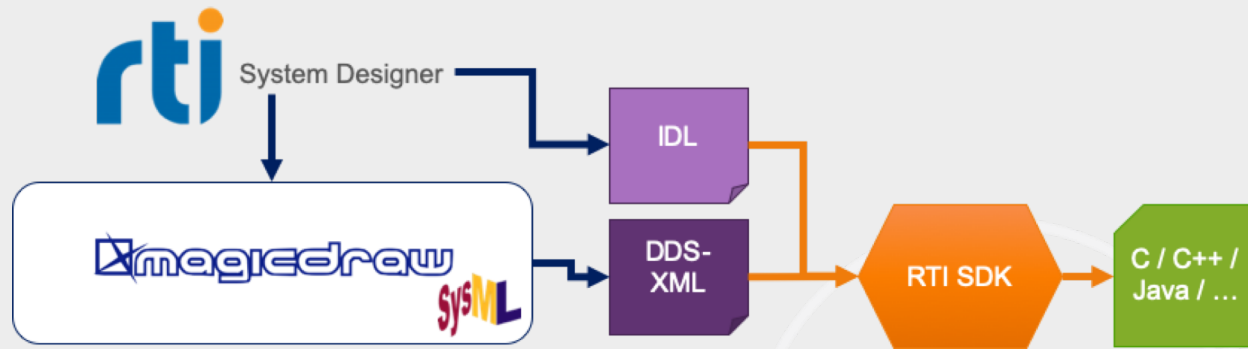


- Library of blocks for implementing DDS-based communications in LabVIEW applications
  - Built on RTI Connex DDS
- Supports Windows and LabVIEW Real-Time targets
- Bundled with LabVIEW 2017 and higher, distributed through LabVIEW Tools Network
- Free for non-commercial use

## What's New

- Latest release of the Toolkit for LabVIEW 2019 – coming in May 2019

# RTI DDS Plugin for DS MagicDraw



- Enables path from SysML design to implementation and deployment for distributed systems
- Automatic generation of DDS-XML configuration; flow integrated with RTI System Designer
- SysML profile supports
  - Interface definition
  - App definition
  - QoS definition

## What's New

- Demo available for evaluation
- DS planning public release in Q4 2019 (with support for Connex 6)
- Extended flow integrates with Simulink



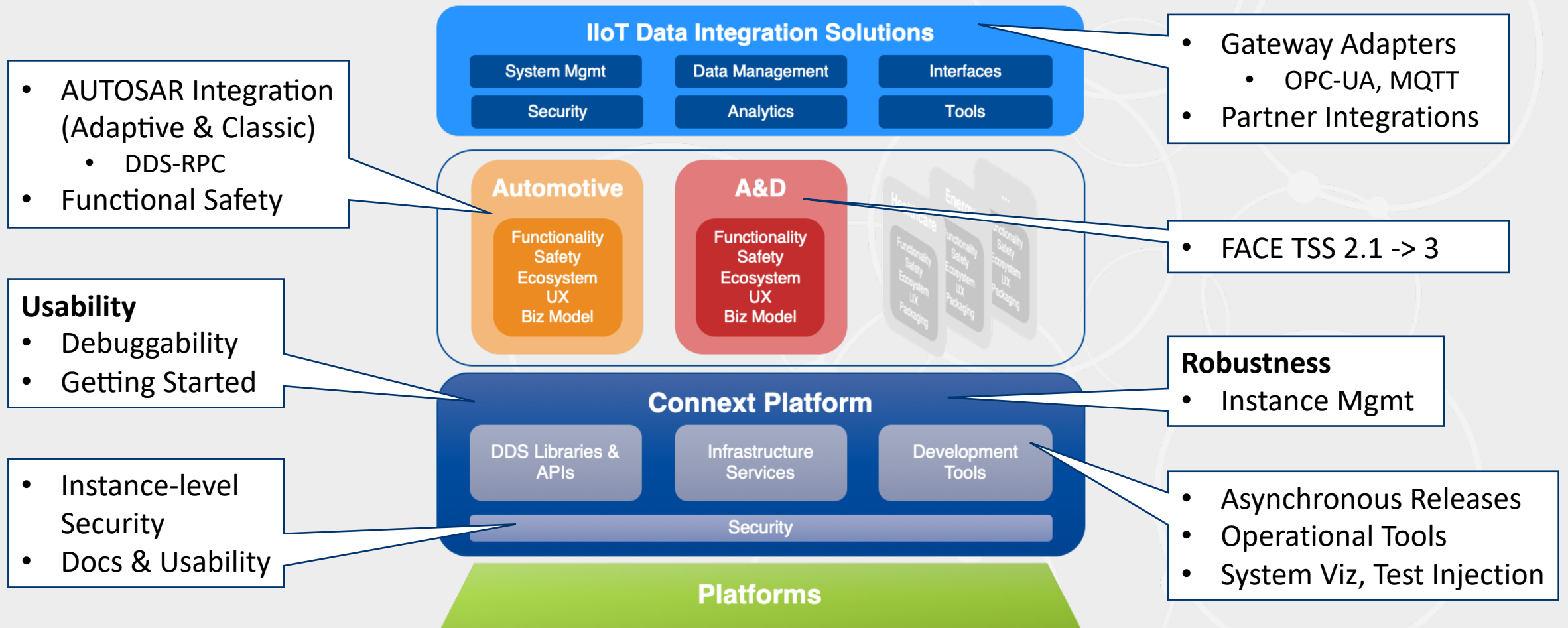
# Looking Ahead

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# Looking Ahead: 2019-2020 Priorities

**Upcoming Releases:**  
Connex 6 Update: ~late 2019  
Next major Connex Release: 2020



# RTI Labs: Incubating Future Products

Path to Product in 2019



## Connector

Access Connex DDS through a simplified interface using Python, JavaScript, Lua and **Go** scripting



## System Designer

Graphically design and configure Connex DDS applications



## Cloud Discovery Service

A discovery solution for Connex DDS applications when UDP multicast is not available

**New!**



## Log Parser

Simplify the detail of Connex DDS log files for quicker debugging



## Telegraf Plugin

Subscribe to metrics, events, and logs and store them in InfluxDB for visualization and alerts

Check them out  
[www.rti.com/labs](http://www.rti.com/labs)



# Summary

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- Connex 6 is available!
  - This Afternoon: Technical Deep Dive
- Partner ecosystem is growing – driving more & deeper integrations
- Continuing focus on Connex Platform -> satisfying needs of Vertical Specializations

# Thank You!

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**Lee Johnson**

leej@rti.com





# Stay Connected



[rti.com](https://rti.com)  
*Free trial of Connex DDS*



[@rti\\_software](https://twitter.com/rti_software)



[@rti\\_software](https://www.instagram.com/rti_software)



[rtisoftware](https://www.facebook.com/rtisoftware)



[connexpodcast](#)



[rti.com/blog](https://rti.com/blog)