



Inside DDS

Virtual ConnexxCon

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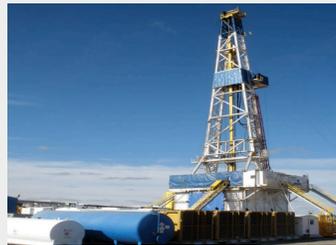
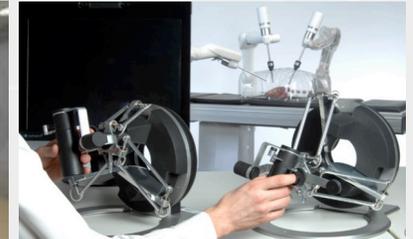
Agenda

A screenshot of the RTI software interface, showing a complex dashboard with multiple windows. The interface includes a sidebar with navigation options, a central data visualization area, and a bottom section with a table of data. The table has columns for 'Host', 'Process', 'Process ID', 'State', 'End', 'Version', 'Demand', 'Health', and 'Update'.

Host	Process	Process ID	State	End	Version	Demand	Health	Update
RTI	RTI	2188	N/A	N/A	0.1	0	Healthy	N/A
RTI	RTI	2188	N/A	N/A	0.1	0	Healthy	N/A

RTI Applications, Consortia

Autonomous Vehicles/Transportation



Healthcare

Energy

Aerospace & Defense





Kennedy Space Center

Challenges when building such a system

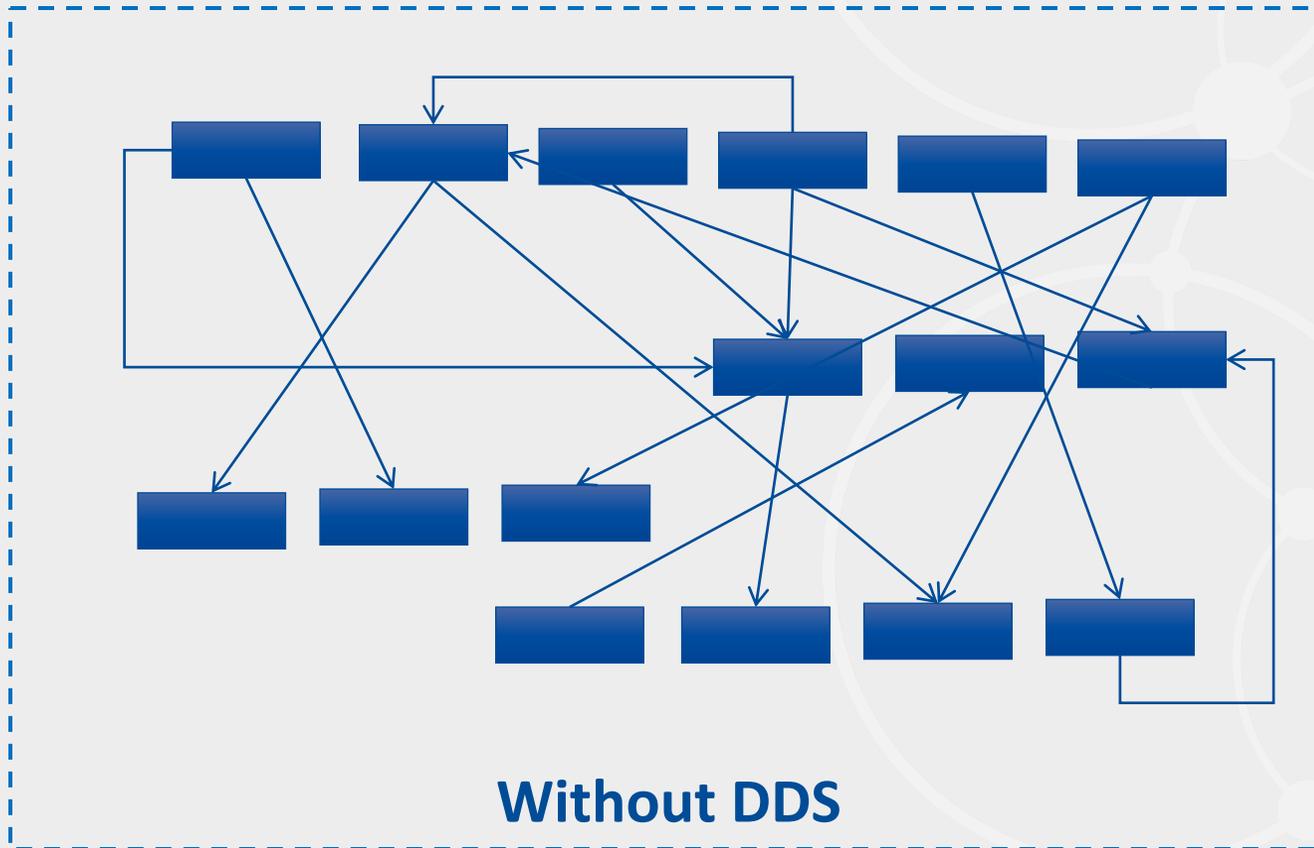
- Scale: need to integrate thousands of subsystems
- Modularity / flexibility: lots of subsystems change with different launch vehicles
- Needs to accommodate very different dataflows
- Must be robust
- Must be cost-effective

Kennedy Space Center

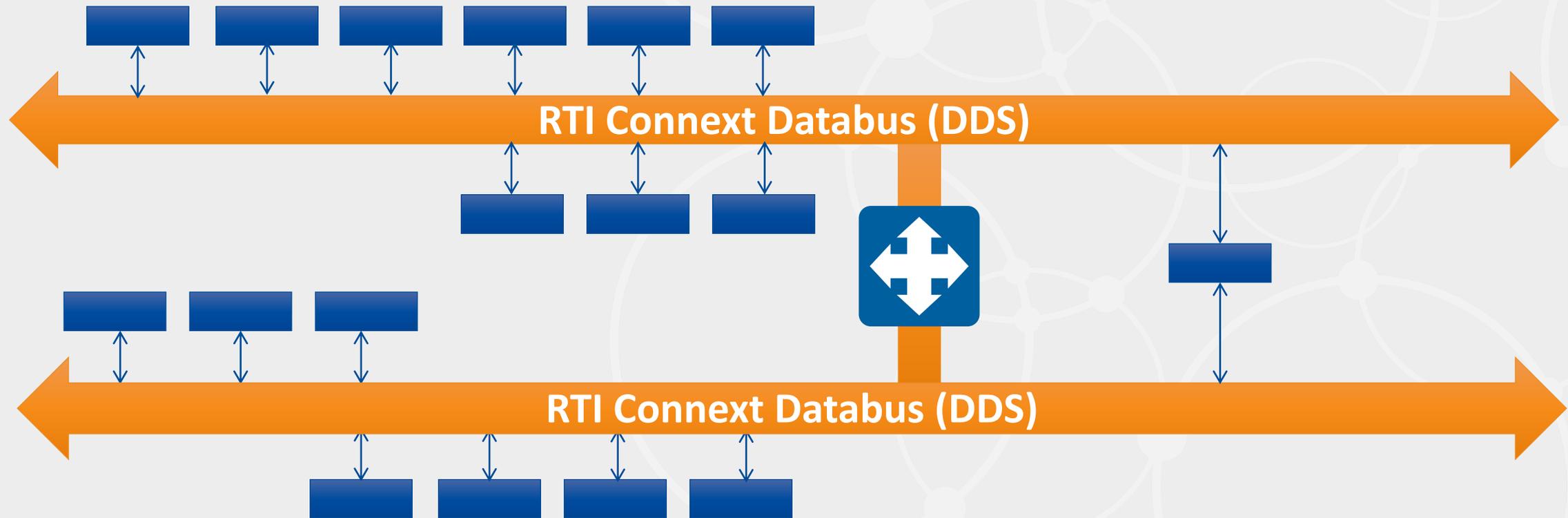
Challenges:

- **Scale: need to integrate thousands of subsystems**

Scalability



Scalability

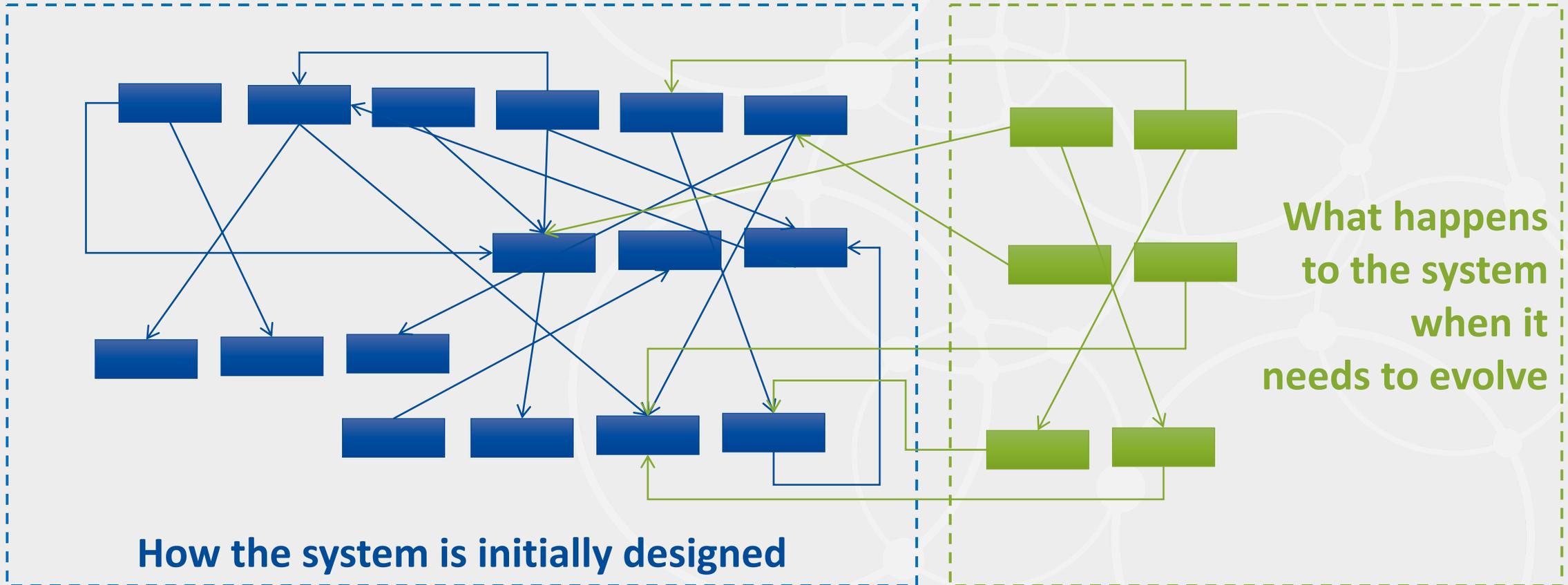


Kennedy Space Center

Challenges:

- Scale: need to integrate thousands of subsystems
- **Modularity / flexibility: lots of subsystems change with different launch vehicles**

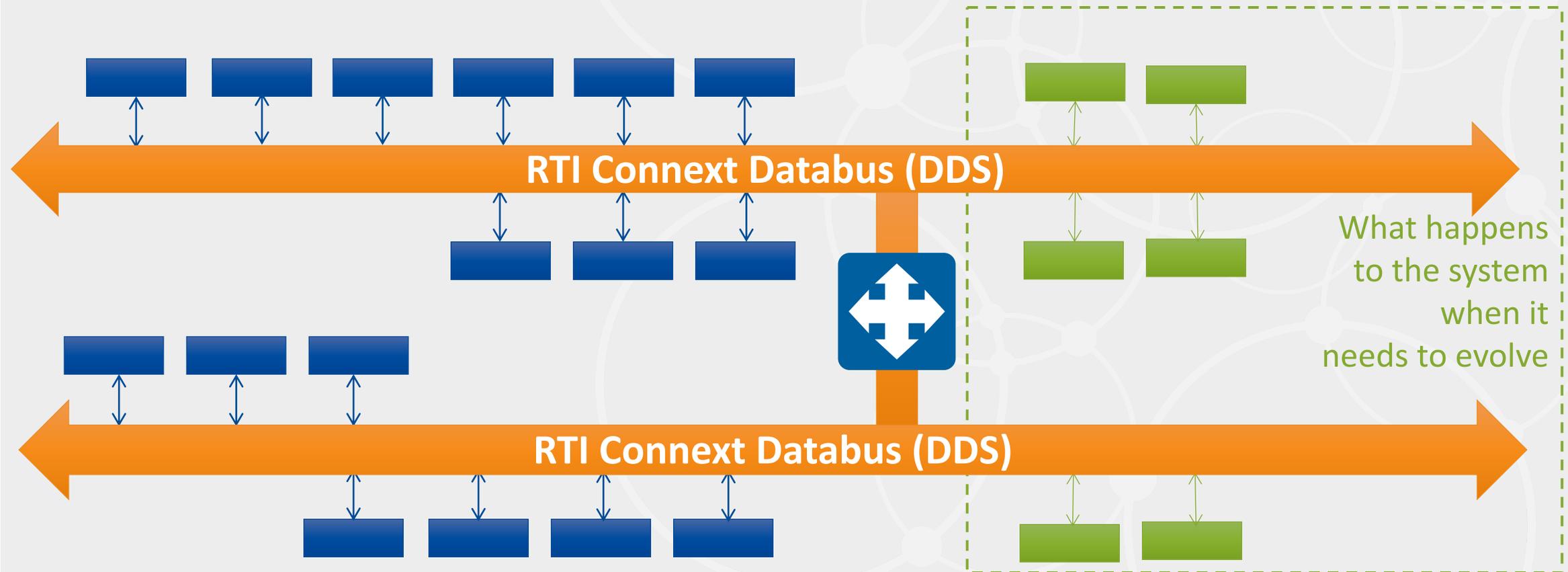
Modularity, Flexibility



How the system is initially designed

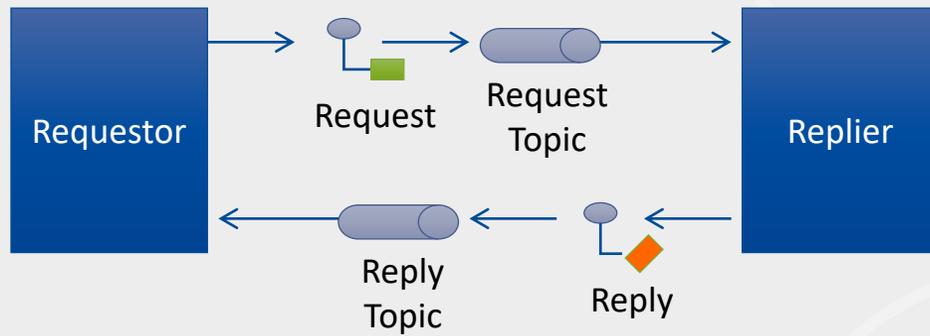
What happens to the system when it needs to evolve

Modularity, Flexibility

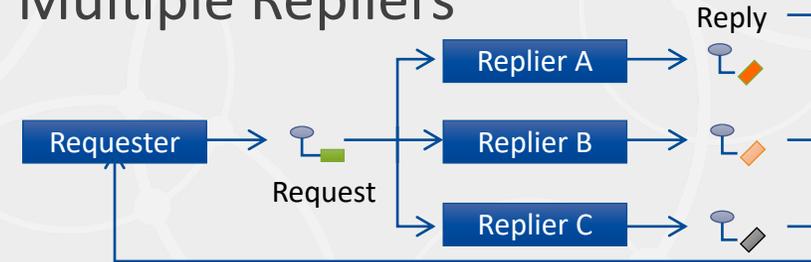


Communications Model: Not only Pub/Sub

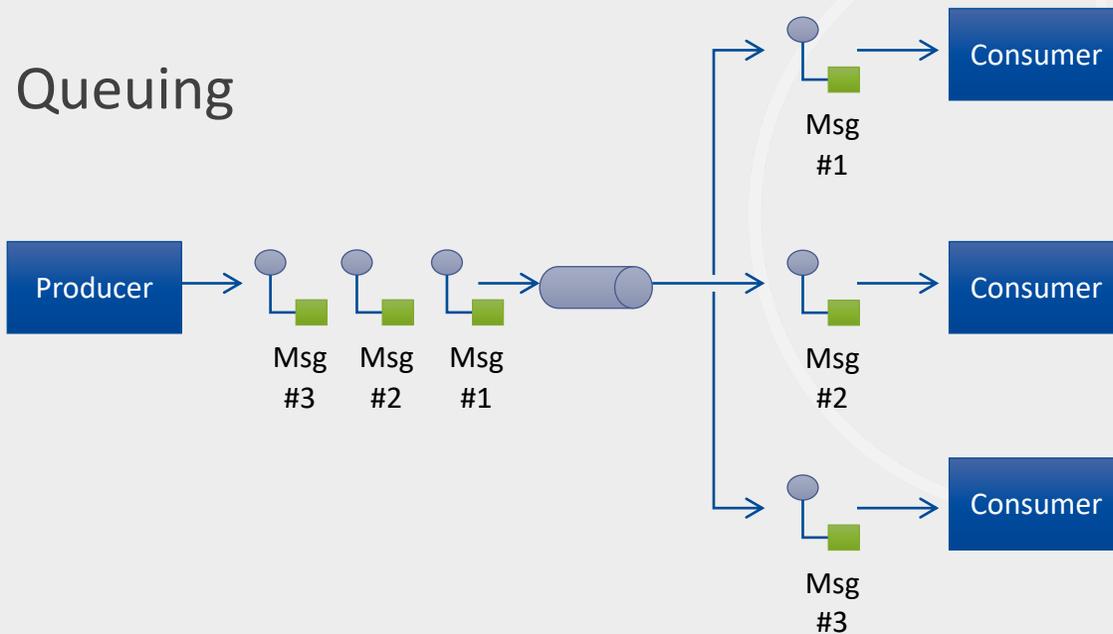
Request/Reply



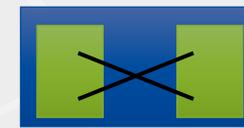
Multiple Repliers



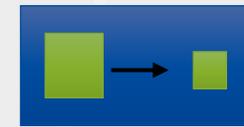
Queuing



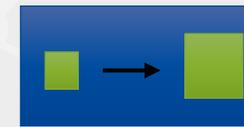
Transformation



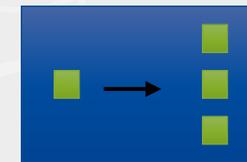
Message Translator



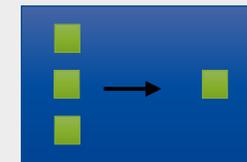
Content Remover



Content Enricher



Splitter



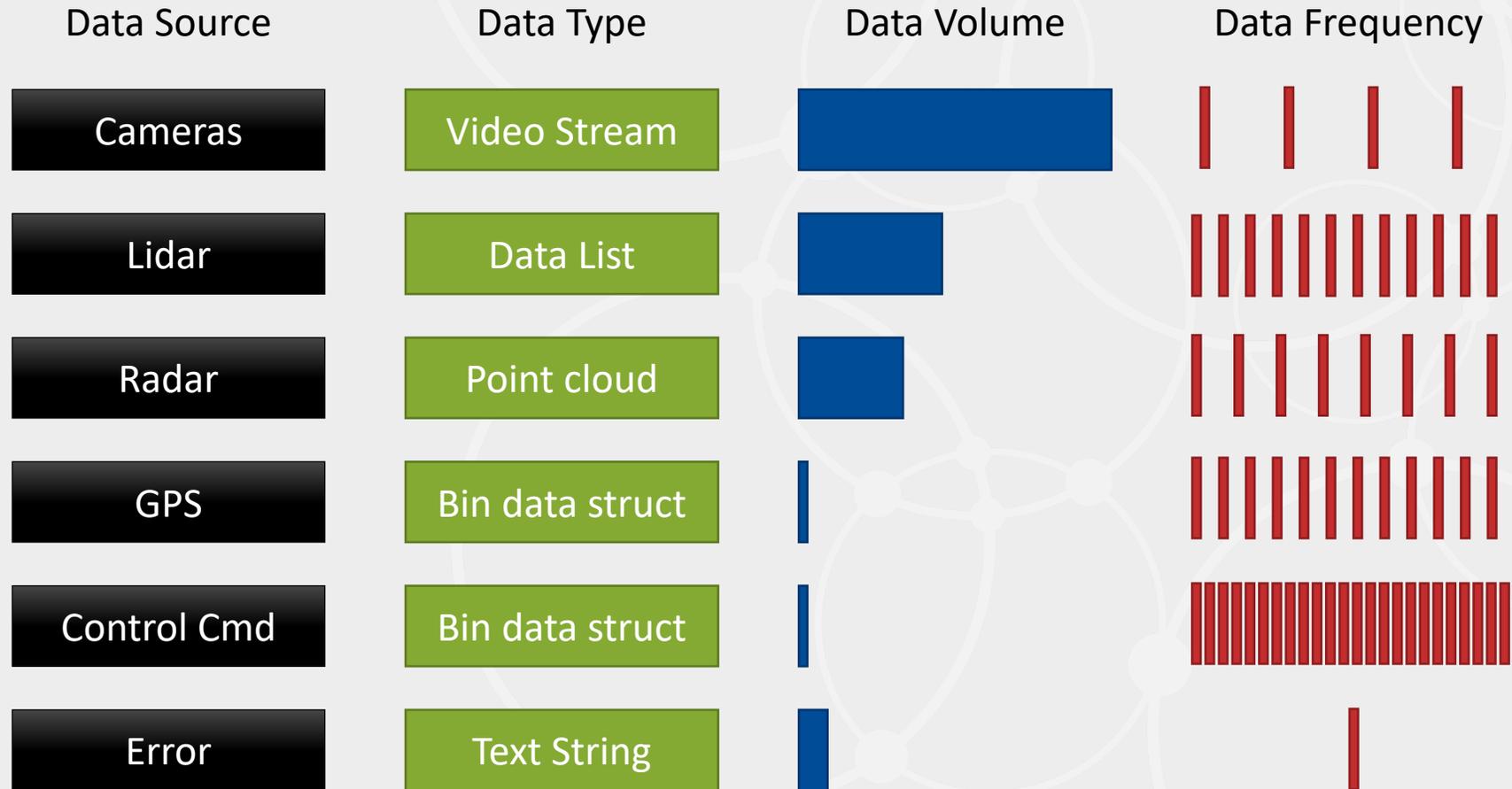
Aggregator

Kennedy Space Center

Challenges:

- Scale: need to integrate thousands of subsystems
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- **Need to accommodate very different dataflows**

Dataflow Challenge



What if you could use a **single solution** for all your dataflows?

Solution: Dataflow QoS

DDS QoS Features

Reliability	In-Order Delivery	Batching	Resource Limits	Partition
Deadline	Content Filtering	Presentation	Ownership	Transports
Time Based Filter	Durability	Lifespan	Flow Control	Multi-Channel
Liveliness	Latency Budget	History	User, Group, Topic Data	Async Publisher

Transport

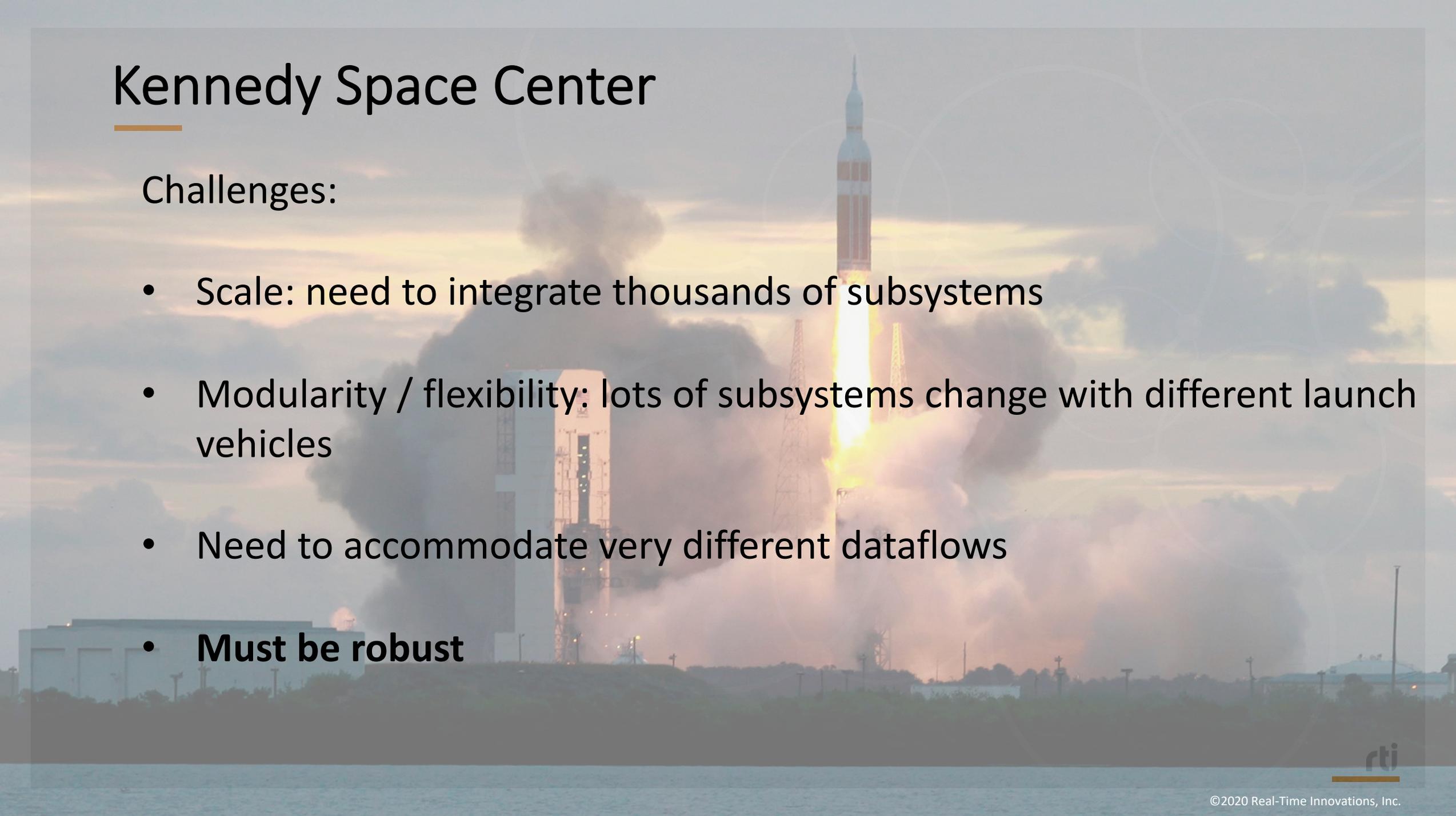
UDP

TCP

Shared Memory

RS-232

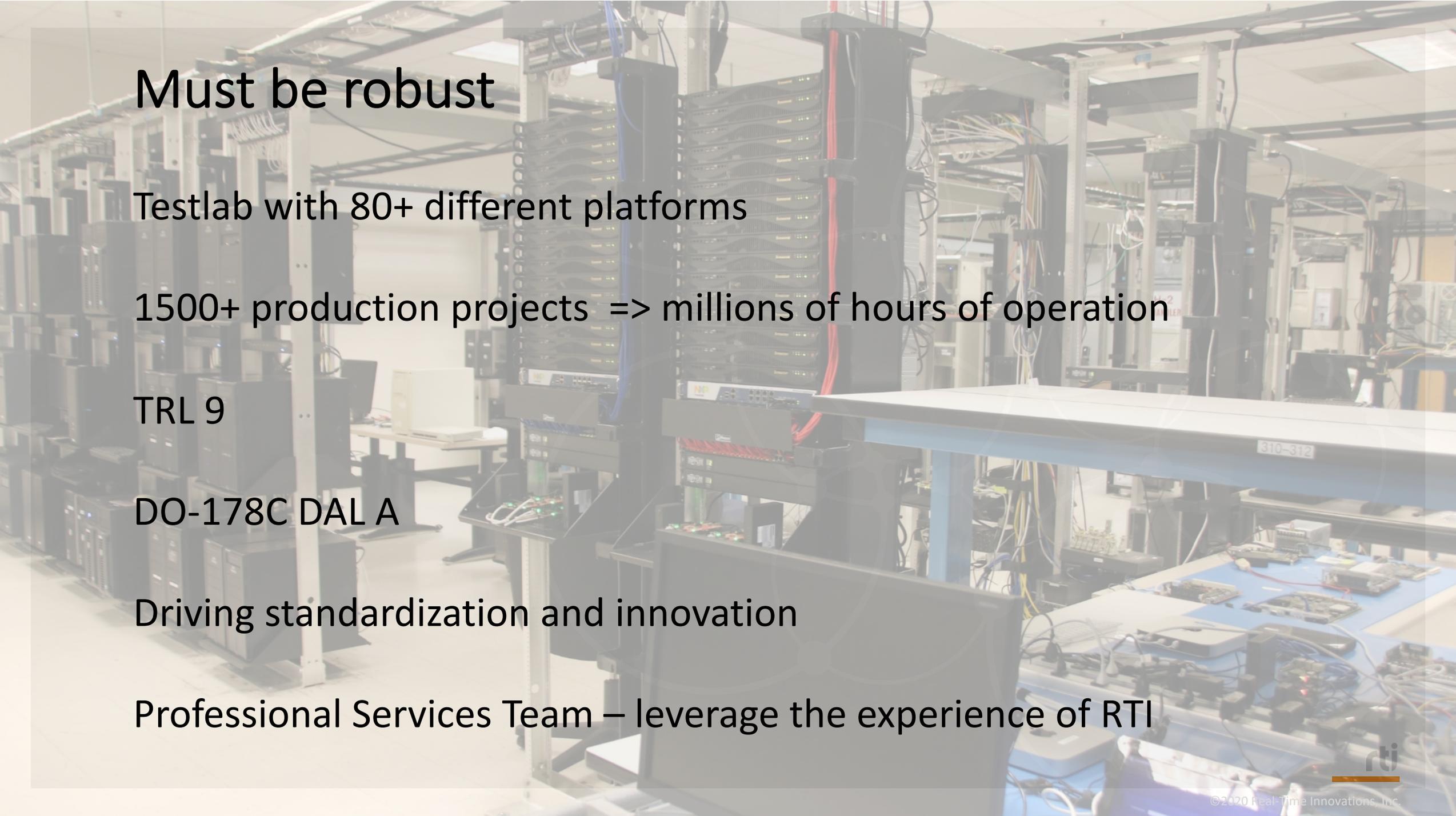
Kennedy Space Center

A background image of a Space Shuttle launching from the Kennedy Space Center. The shuttle is ascending vertically, leaving a large plume of white smoke and a bright yellow-orange fire trail. The launch is taking place at dusk or dawn, with a soft, golden light in the sky. In the foreground, there are silhouettes of launch pad service structures and other facilities. The overall scene is dramatic and captures the power of a major aerospace event.

Challenges:

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- **Must be robust**



A photograph of a server room. In the foreground, there is a workstation with a computer monitor and keyboard on a desk. Behind it, several rows of server racks are visible, filled with various electronic components and cables. The room is well-lit, and the server racks are organized in a structured manner.

Must be robust

Testlab with 80+ different platforms

1500+ production projects => millions of hours of operation

TRL 9

DO-178C DAL A

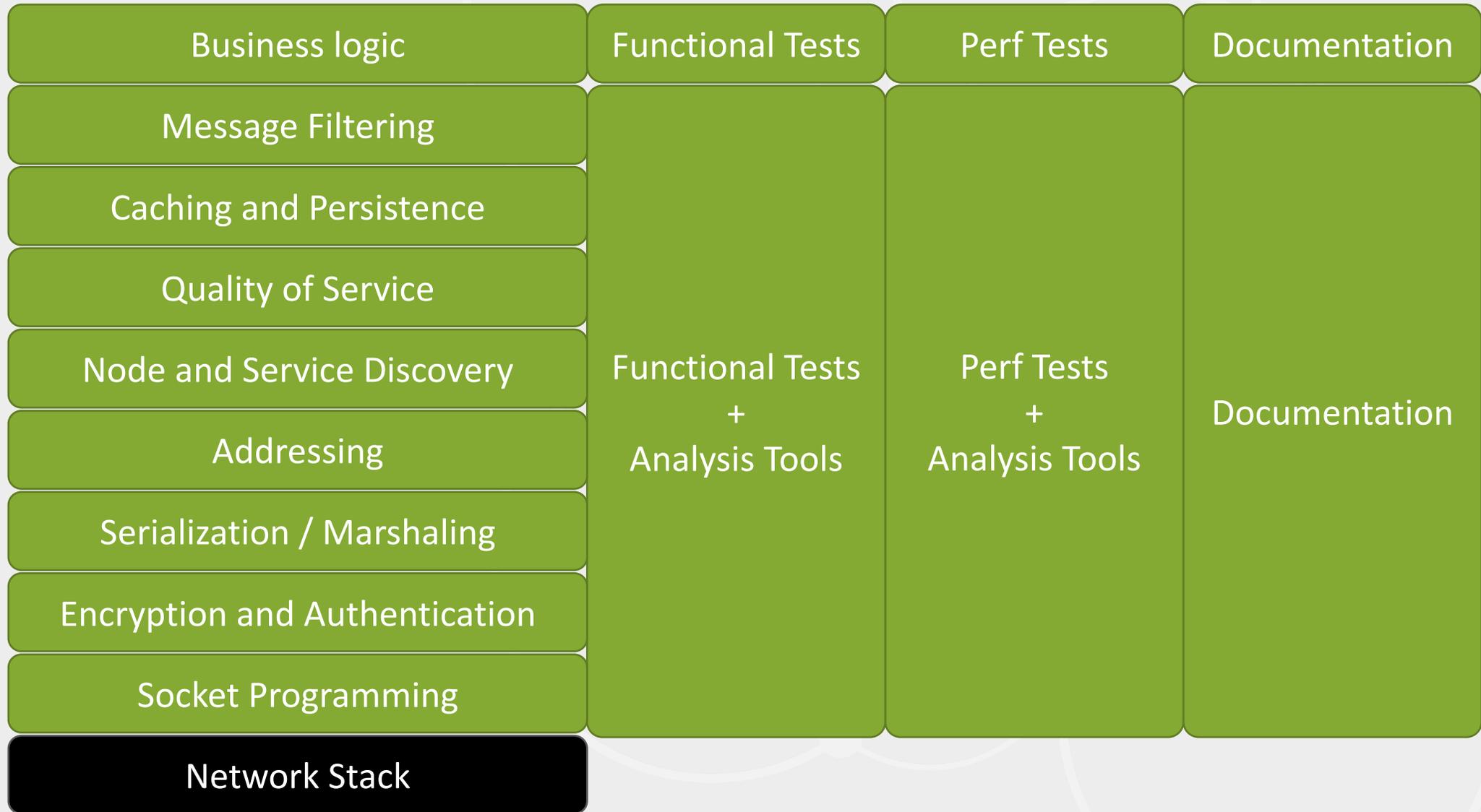
Driving standardization and innovation

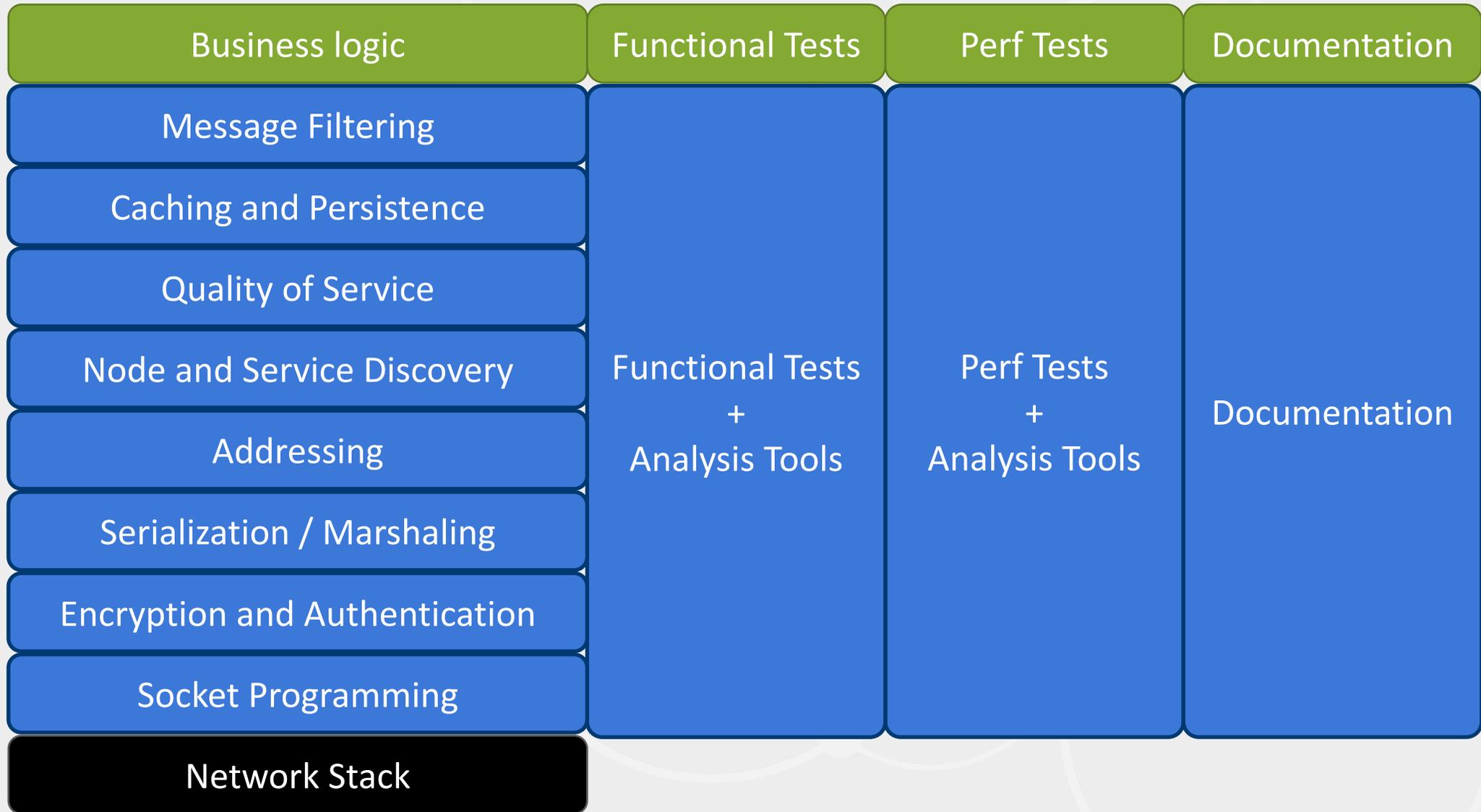
Professional Services Team – leverage the experience of RTI

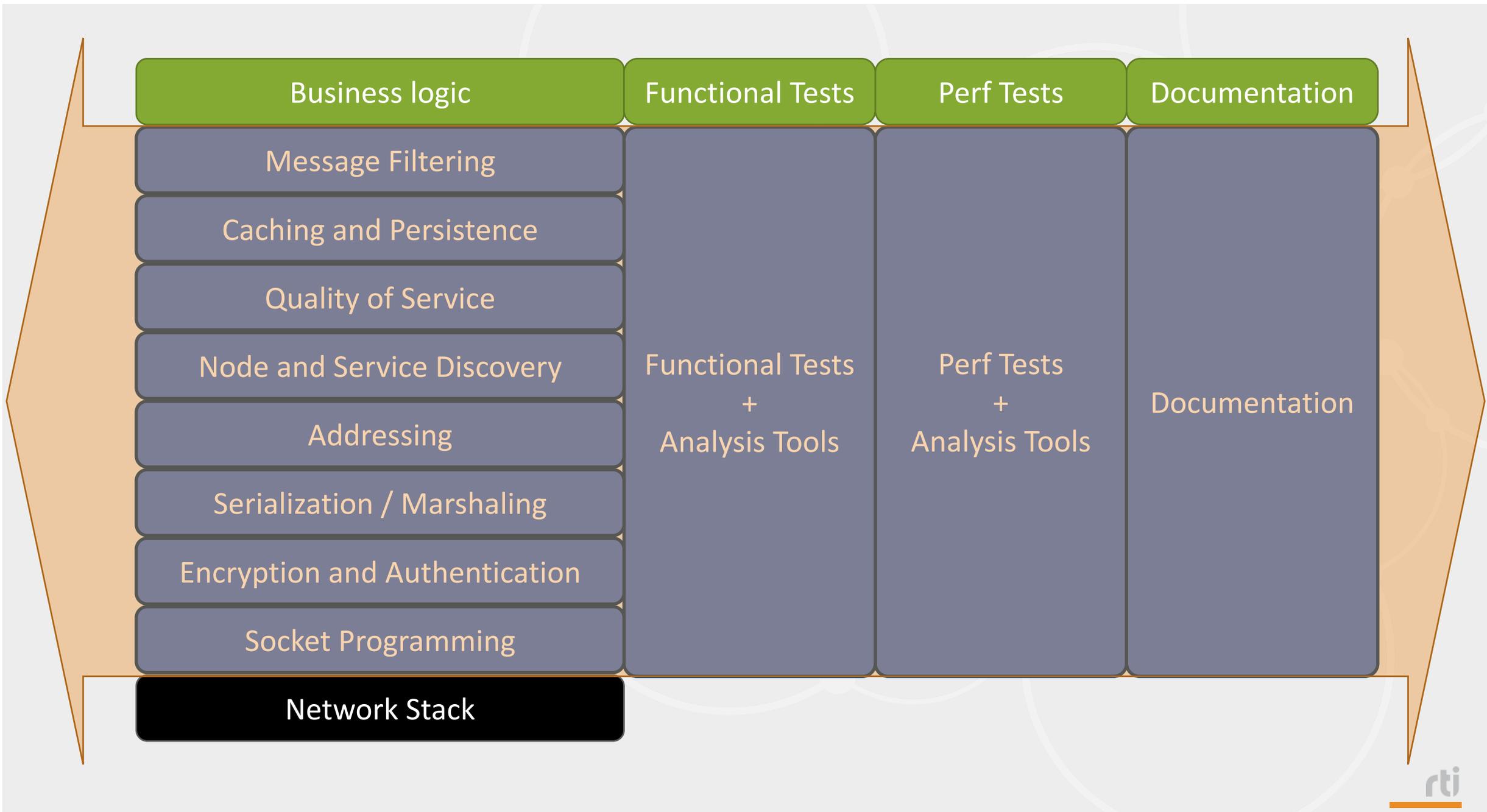
Kennedy Space Center

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Kennedy Space Center

- The NASA KSC launch control is the world's largest single-system SCADA
- It combines 300k points, at 400k msgs/sec
- RTI Connex DDS powers launch control, in-flight monitoring, UAV reentry-tracking ground station, and the recovery ship



Demo





Healthcare

Challenges:

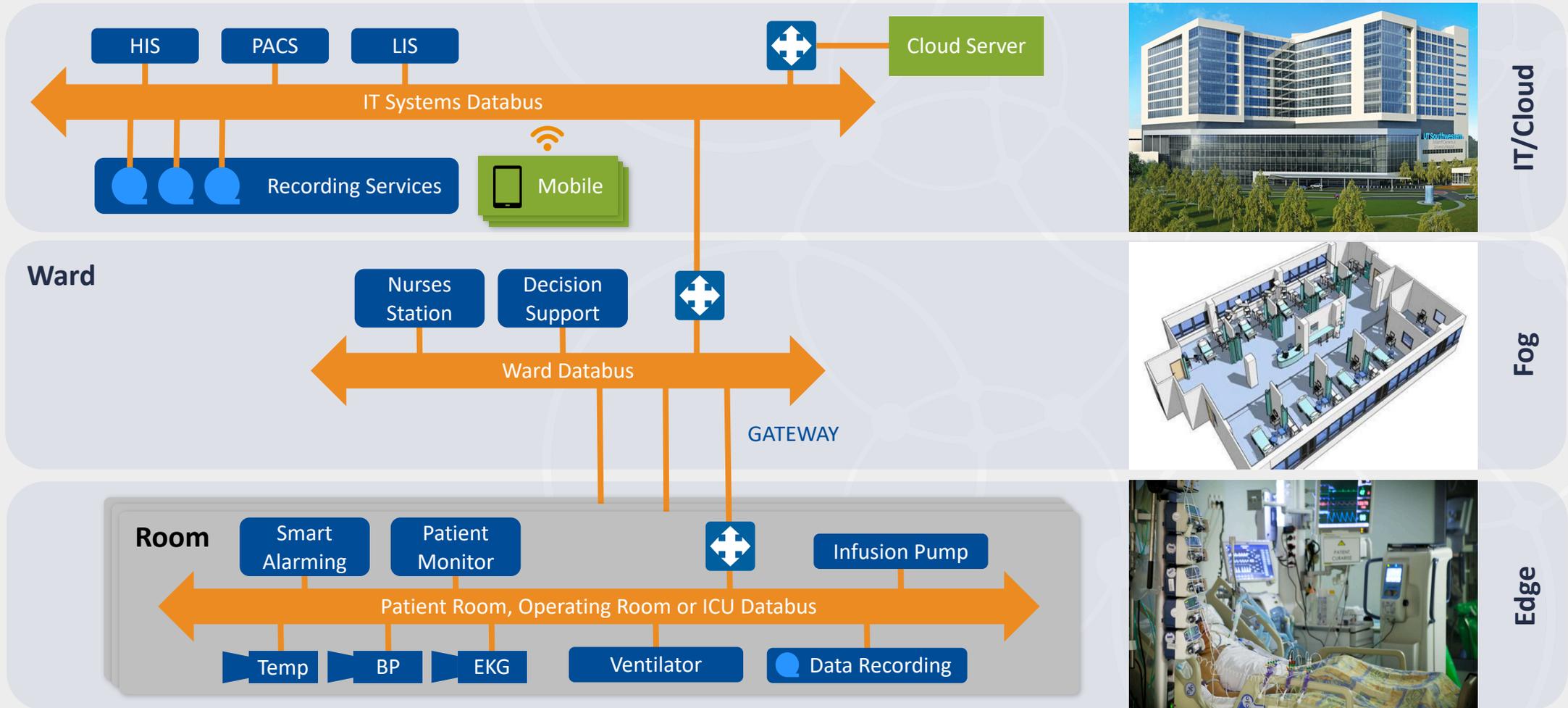
- Human errors due to alarm fatigue
- Patients need to be moved frequently
- Not all information is needed everywhere
- Most information needs to be secured
- Need to integrate existing subsystems
- You may not be a DDS expert

Healthcare

Challenges:

- **Human errors due to alarm fatigue**
- **Patients need to be moved frequently**
- **Not all information is needed everywhere**

Healthcare System



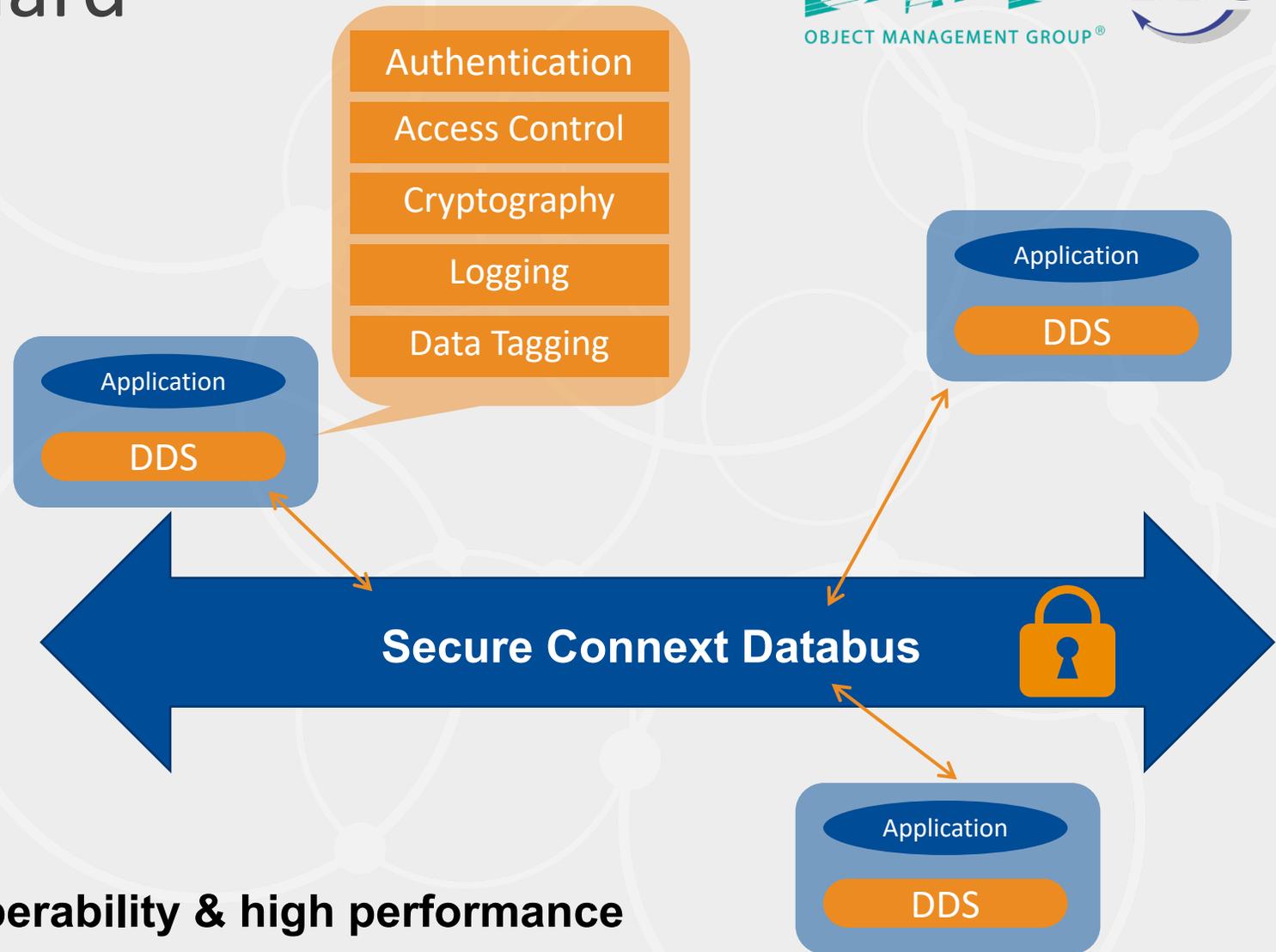
Healthcare

Challenges:

- Human errors due to alarm fatigue
- Patients need to be moved frequently
- Not all information is needed everywhere
- **Most information needs to be secured**

DDS Security Standard

- DDS entities are **authenticated**
- DDS enforces **access control** for domains/Topics/...
- DDS maintains data **integrity** and **confidentiality**
- DDS provides **availability** through reliable access to data



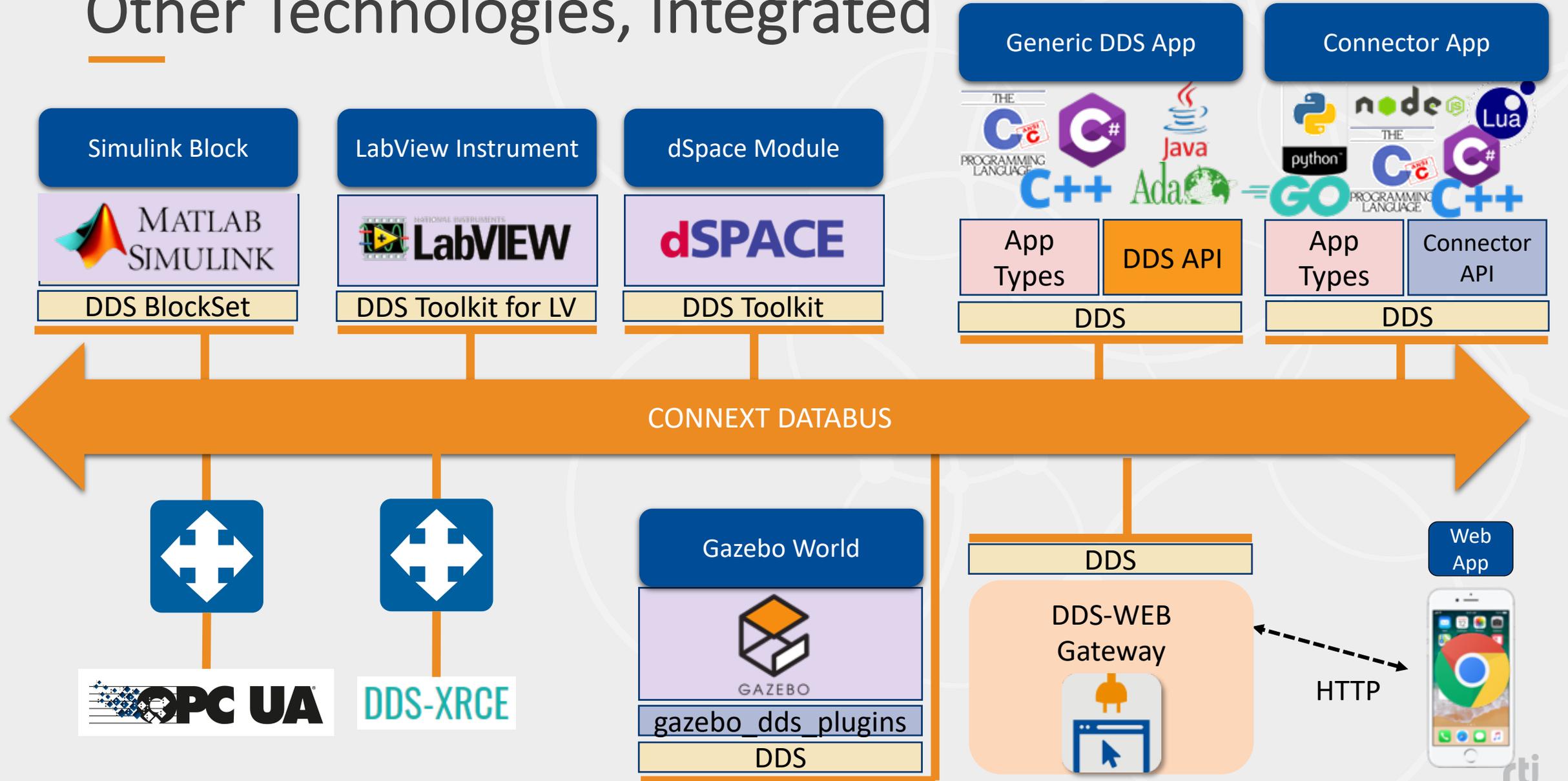
...while maintaining DDS interoperability & high performance

Healthcare

Challenges:

- Human errors due to alarm fatigue
- Patients need to be moved frequently
- Not all information is needed everywhere
- Most information needs to be secured
- **Need to integrate existing subsystems**

Other Technologies, Integrated



Healthcare

Challenges:

- Human errors due to alarm fatigue
- Patients need to be moved frequently
- Not all information is needed everywhere
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- Need to integrate existing subsystems
- **You may not be a DDS expert**

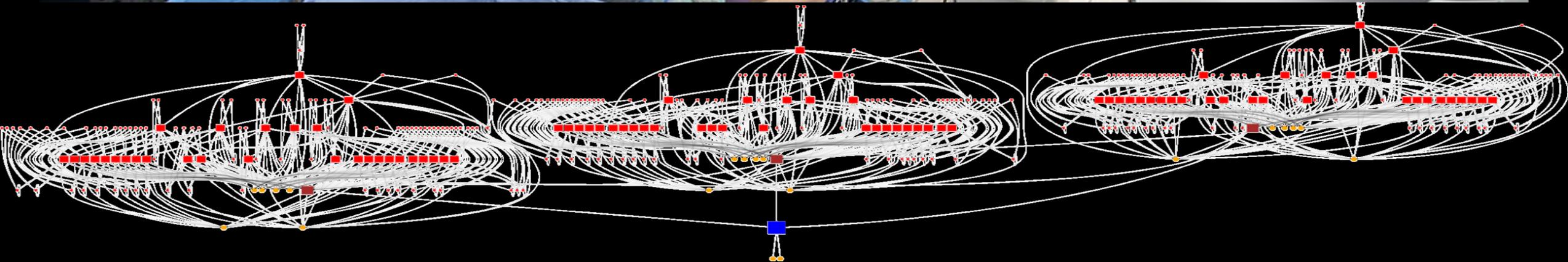
DDS experts – Start Off on the Right Track





Smart Machines Join the Care Team

GE Healthcare's smart distributed architecture will connect 300 types of devices with RTI software.



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



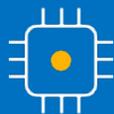
Web Integration



Spreadsheet Integration



3rd Party Integrations



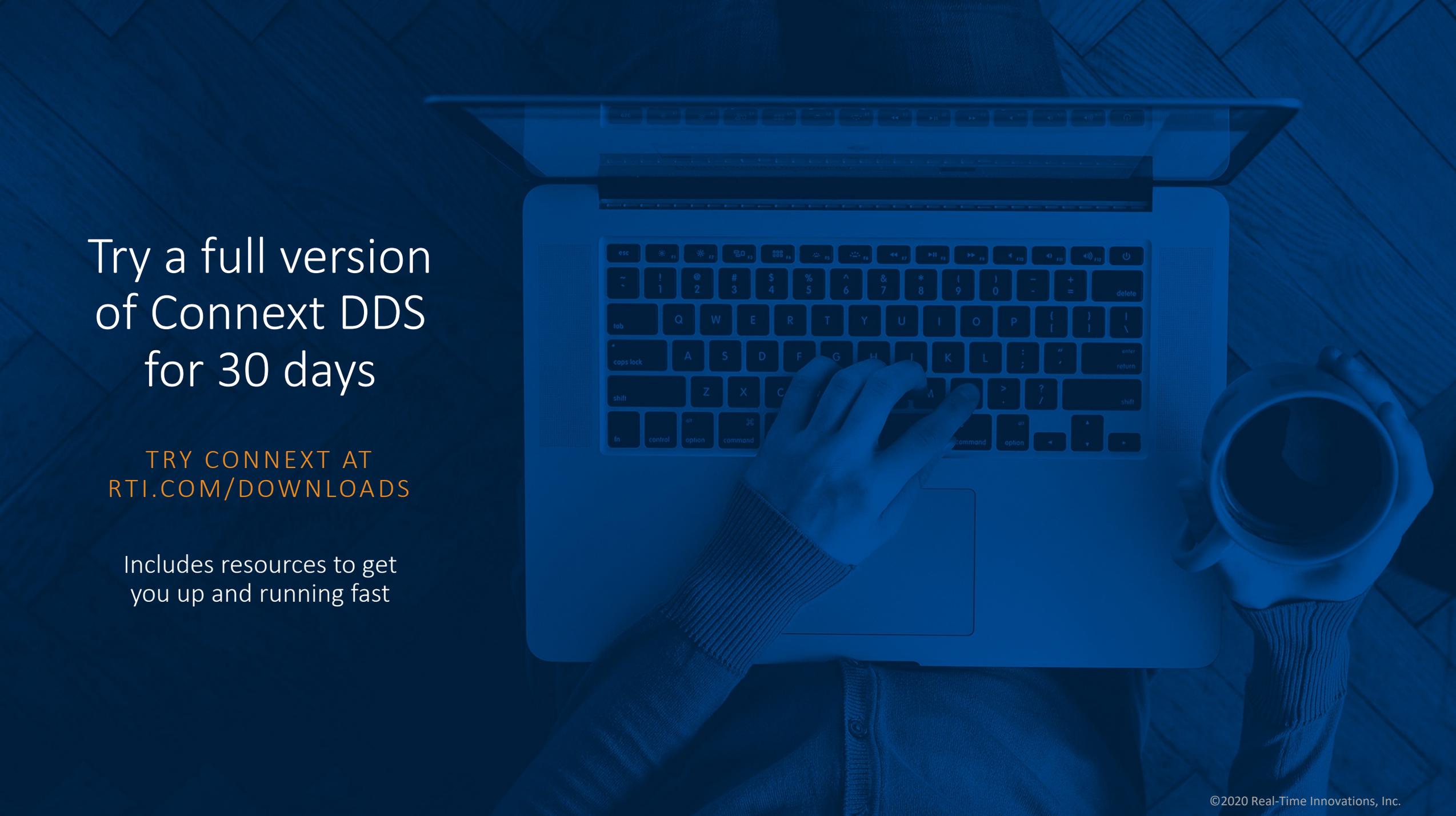
Connex DDS Micro

Designed for resource-constrained systems.



Connex DDS Cert

Designed for safety-certifiable systems.



Try a full version of Connex DDS for 30 days

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