Inside DDS

Virtual ConnextCon

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Thijs Brouwer

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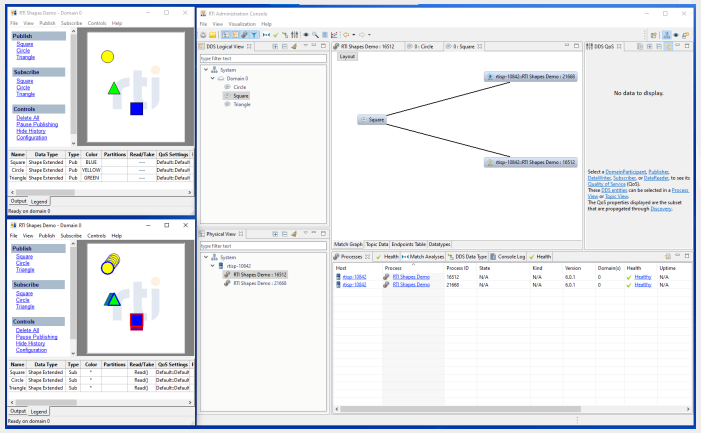
Sara Granados, PhD

Principal FAE - sara@rti.com

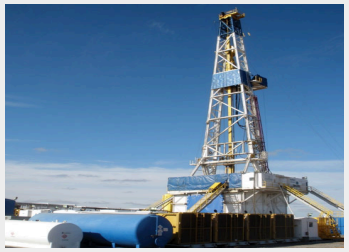
Agenda



RTI Applications, Consortia

Autonomous Vehicles/Transportation

Healthcare



Energy

Aerospace & Defense

OMG OBJECT MANAGEMENT GROUP

AUTOSAR

FACE Future Airborne Capability Environment

industrial internet CONSORTIUM

MEMBER NSTXL NATIONAL SECURITY TECHNOLOGY ACCELERATOR

DDS

avcc AUTONOMOUS VEHICLE COMPUTING CONSORTIUM

2

Smart Electric Power Alliance

MD PnP Getting Connected for Patient Safety™

rti

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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

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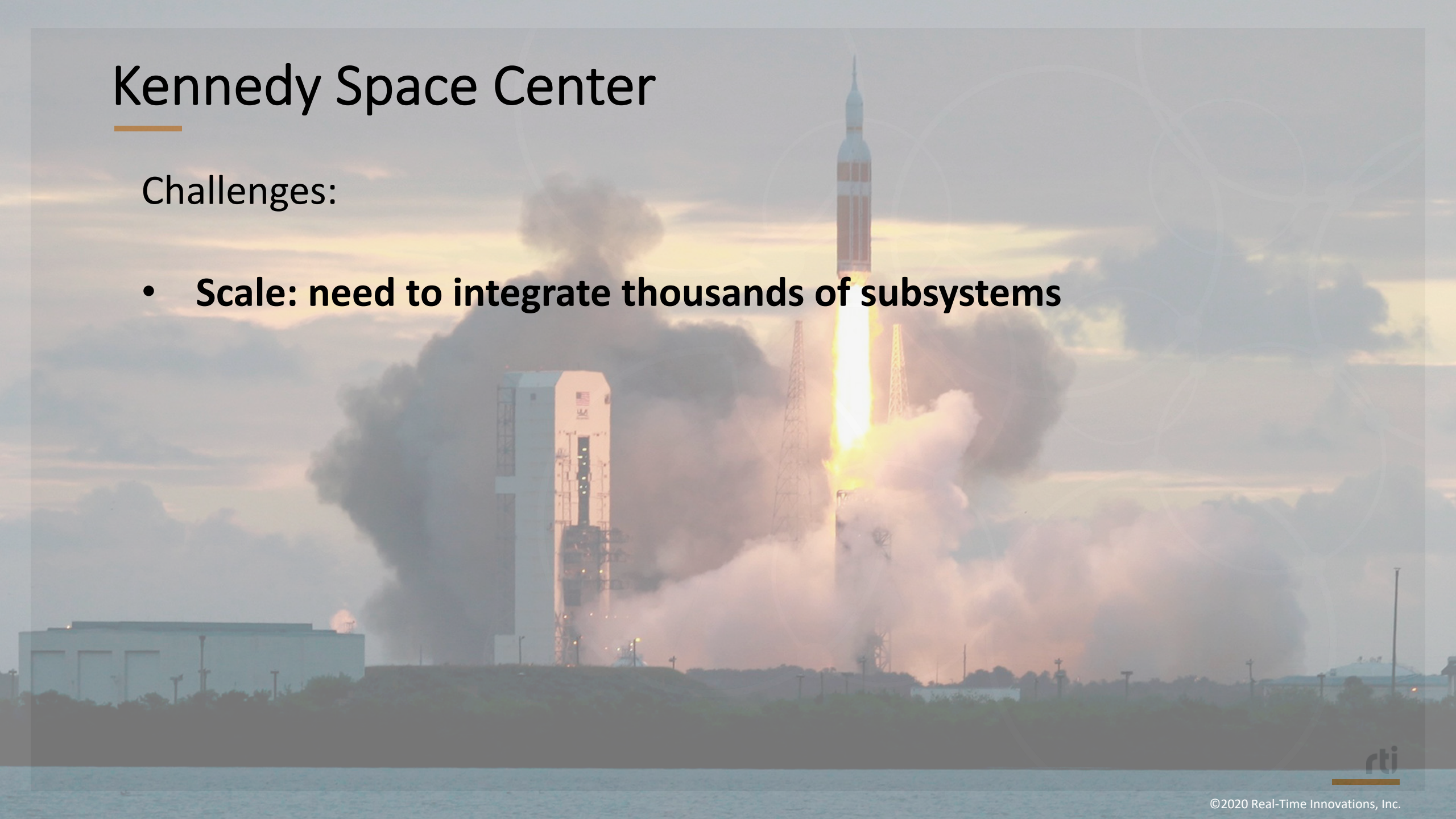
Kennedy Space Center



Challenges:

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

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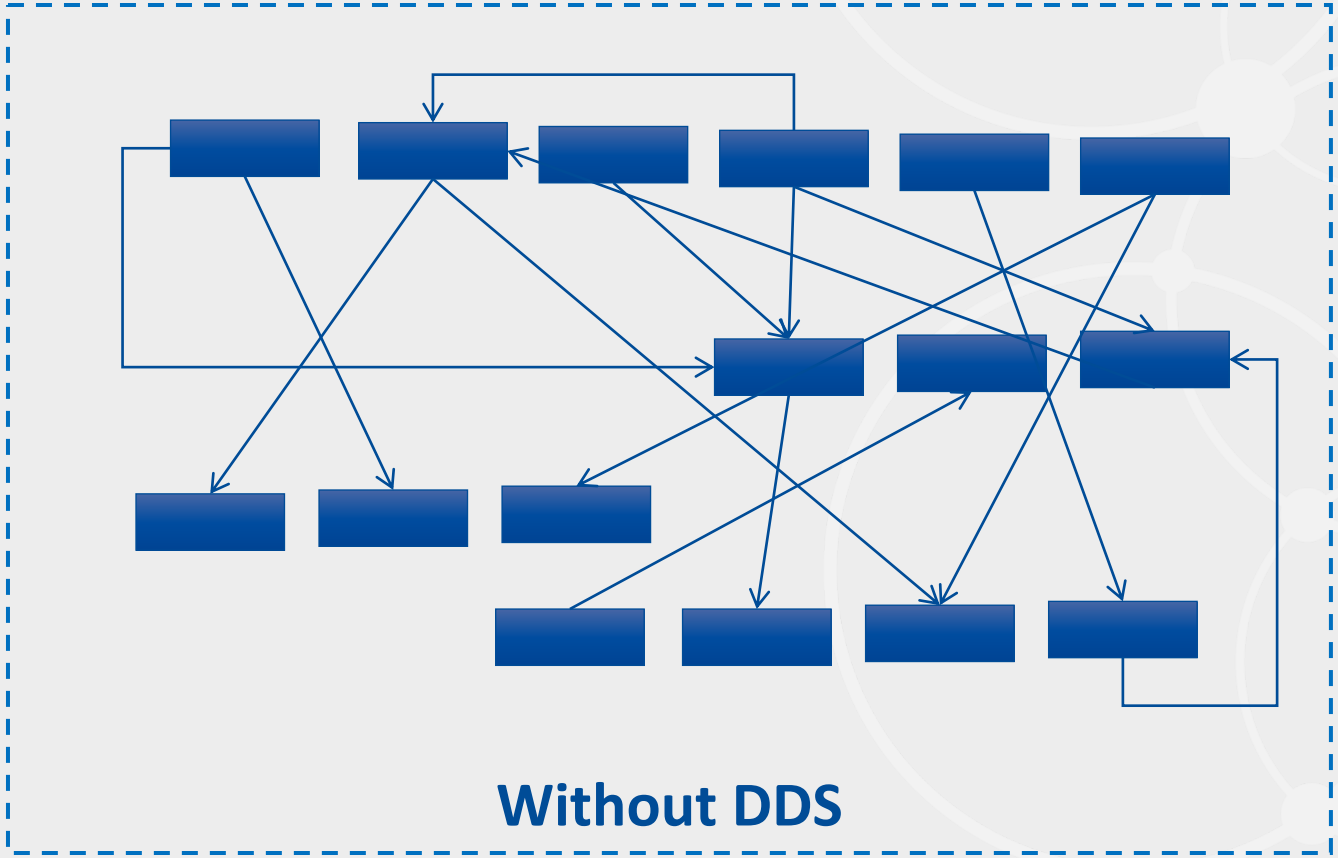
Scalability



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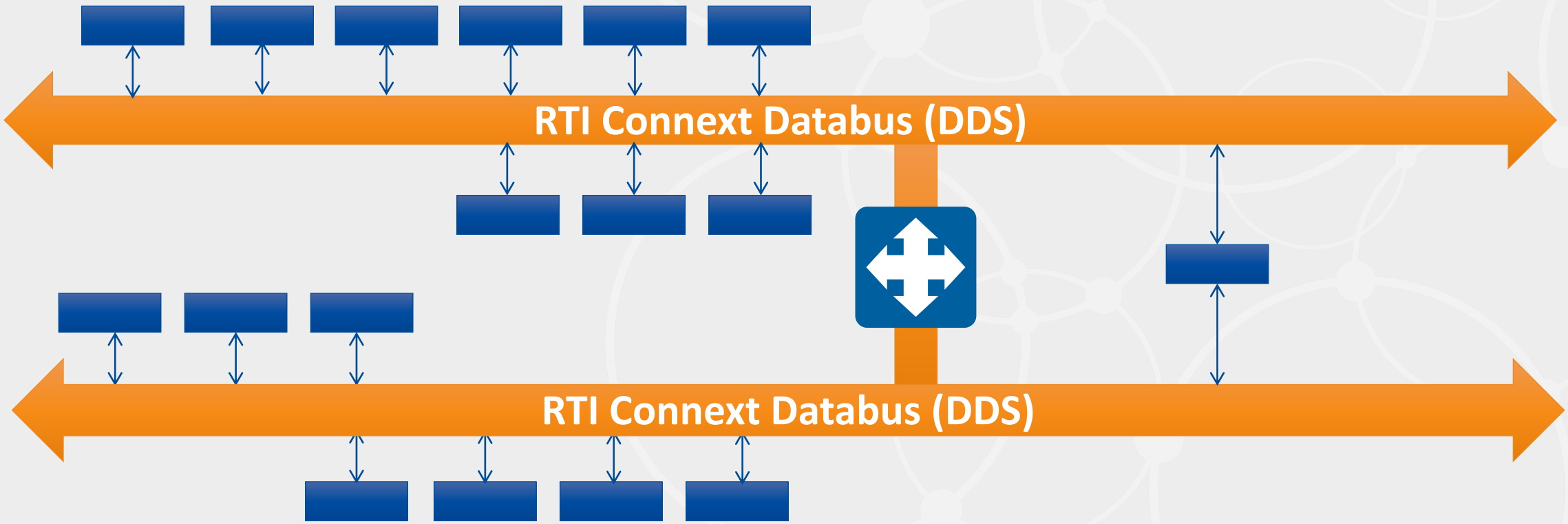
Scalability



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Kennedy Space Center

Challenges:

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

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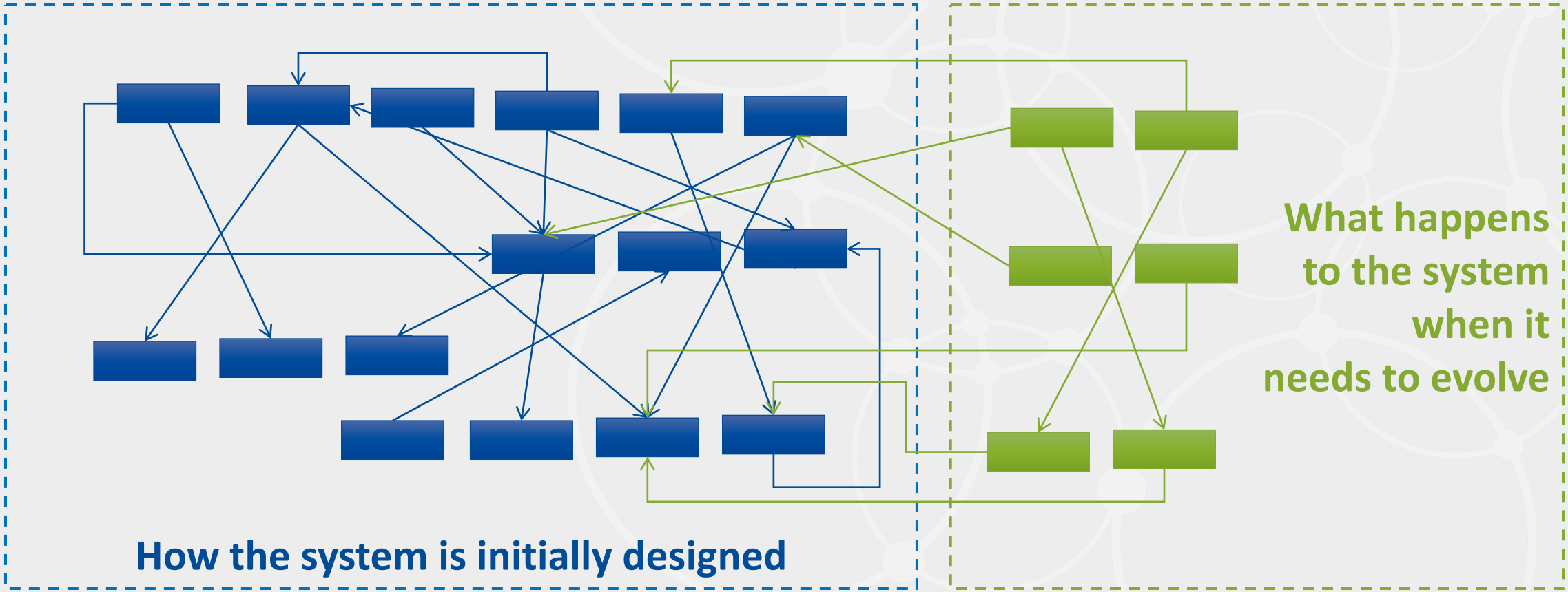
Modularity, Flexibility



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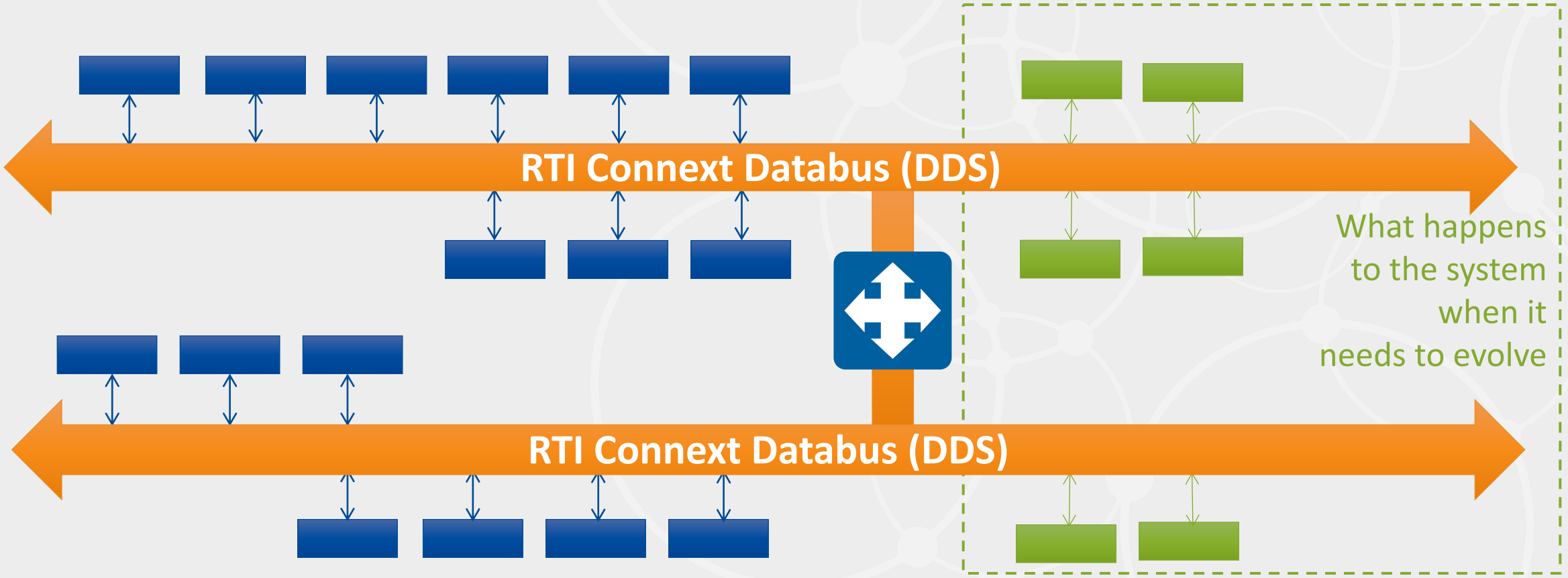
Modularity, Flexibility



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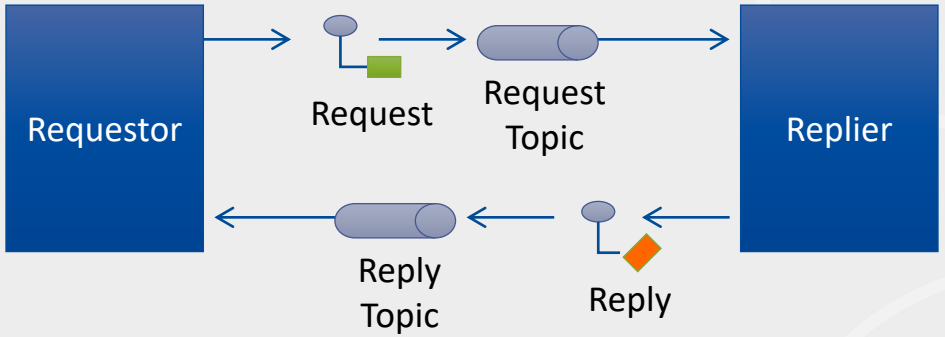
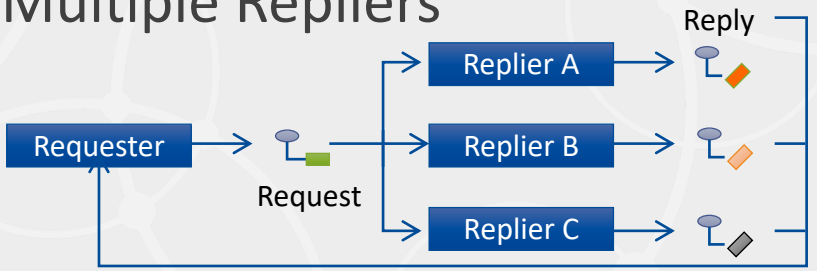
Communications Model: Not only Pub/Sub

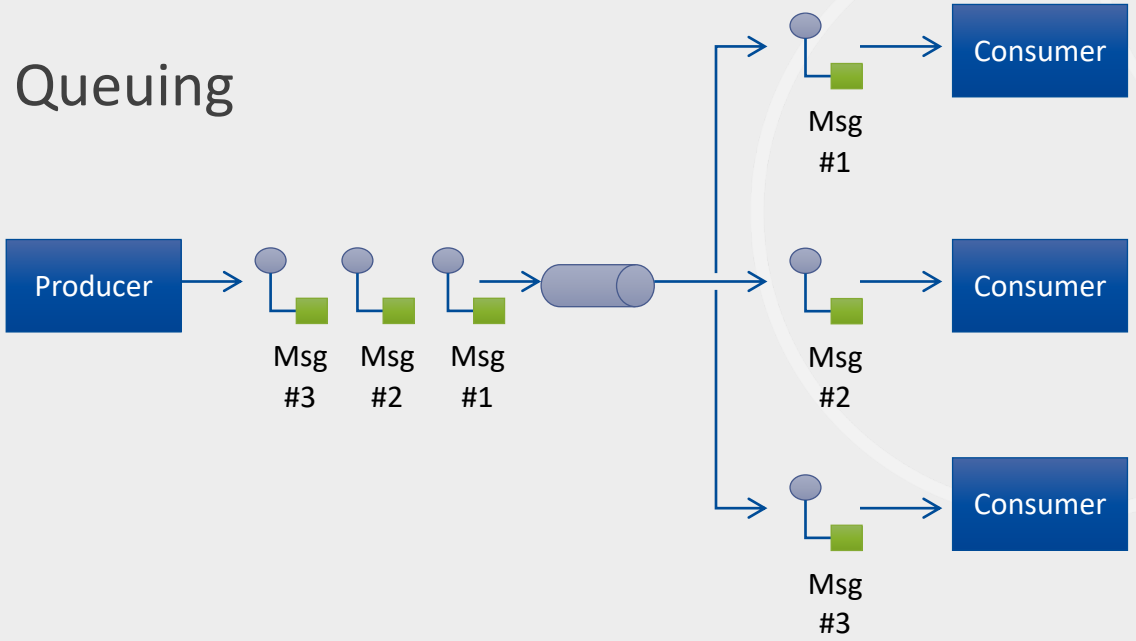
Request/Reply



Multiple Repliers

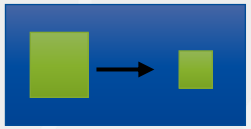


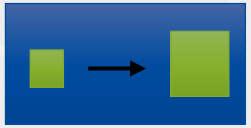
Queuing

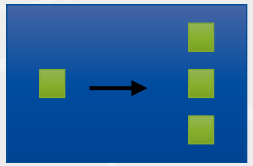


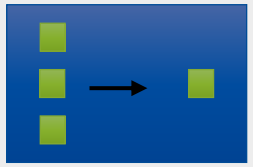
Transformation

Message Translator


Content Remover


Content Enricher


Splitter


Aggregator

Kennedy Space Center

Challenges:

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

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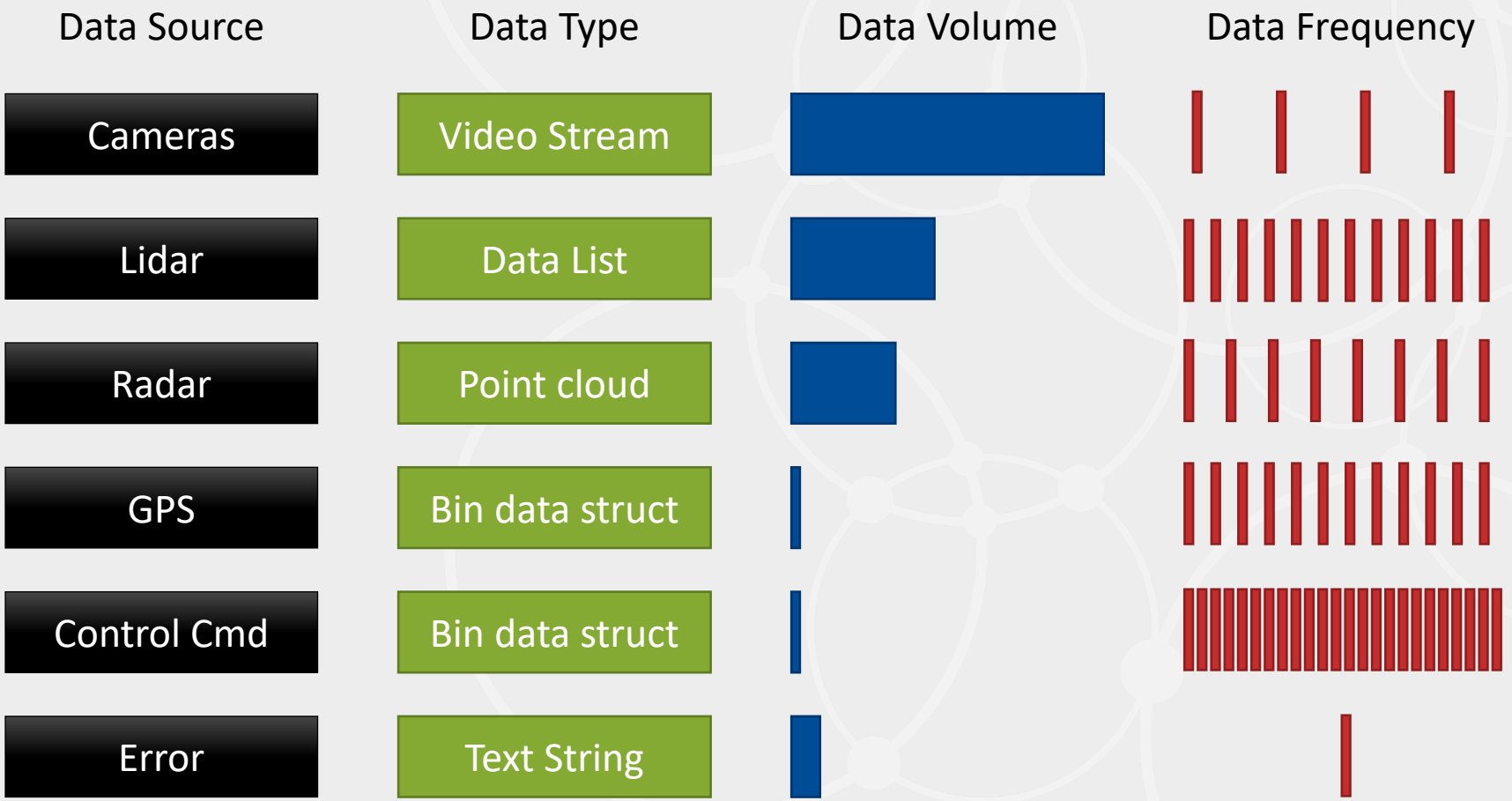
Dataflow Challenge



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

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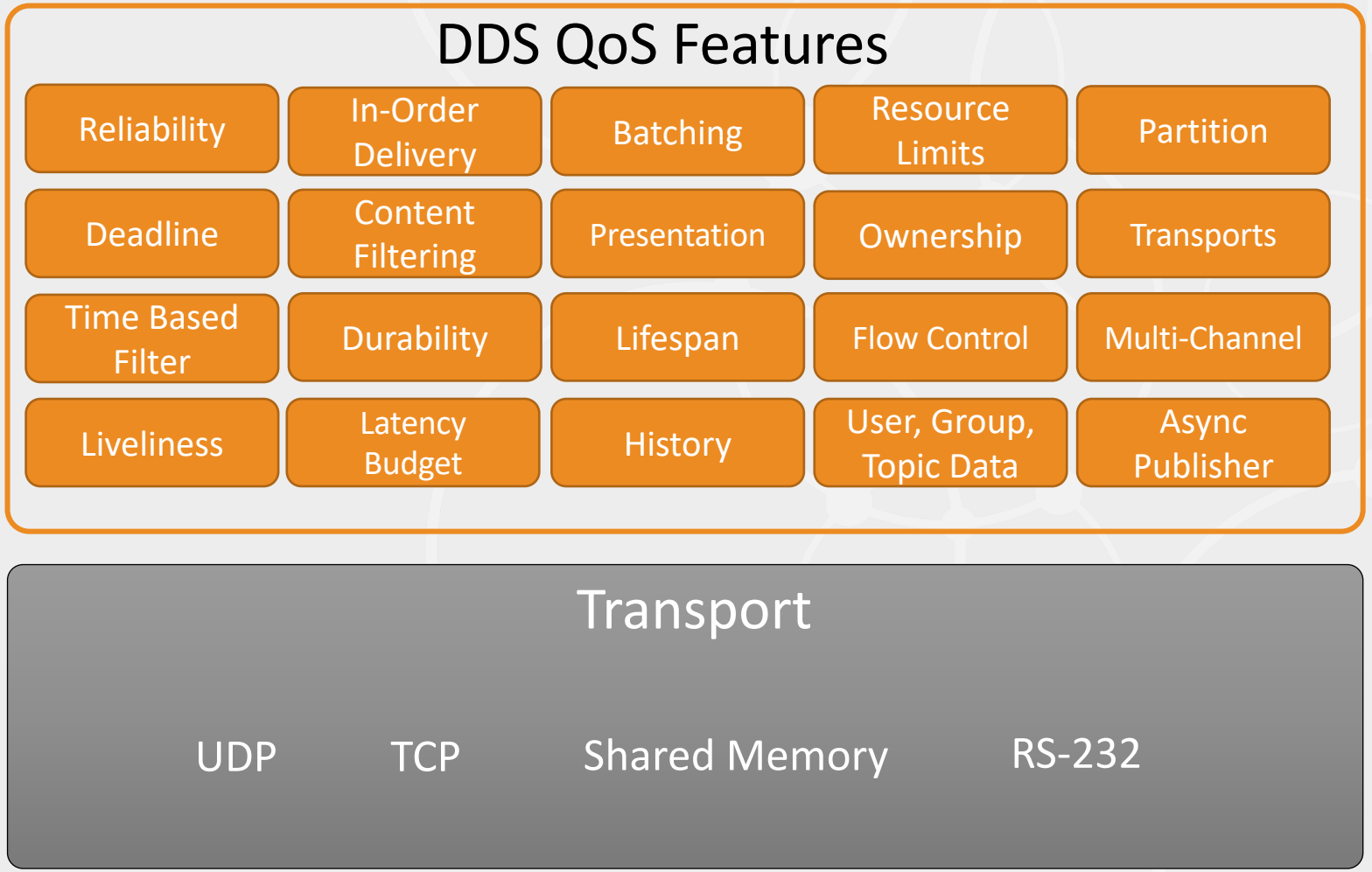
Solution: Dataflow QoS



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Kennedy Space Center

Challenges:

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- **Must be robust**

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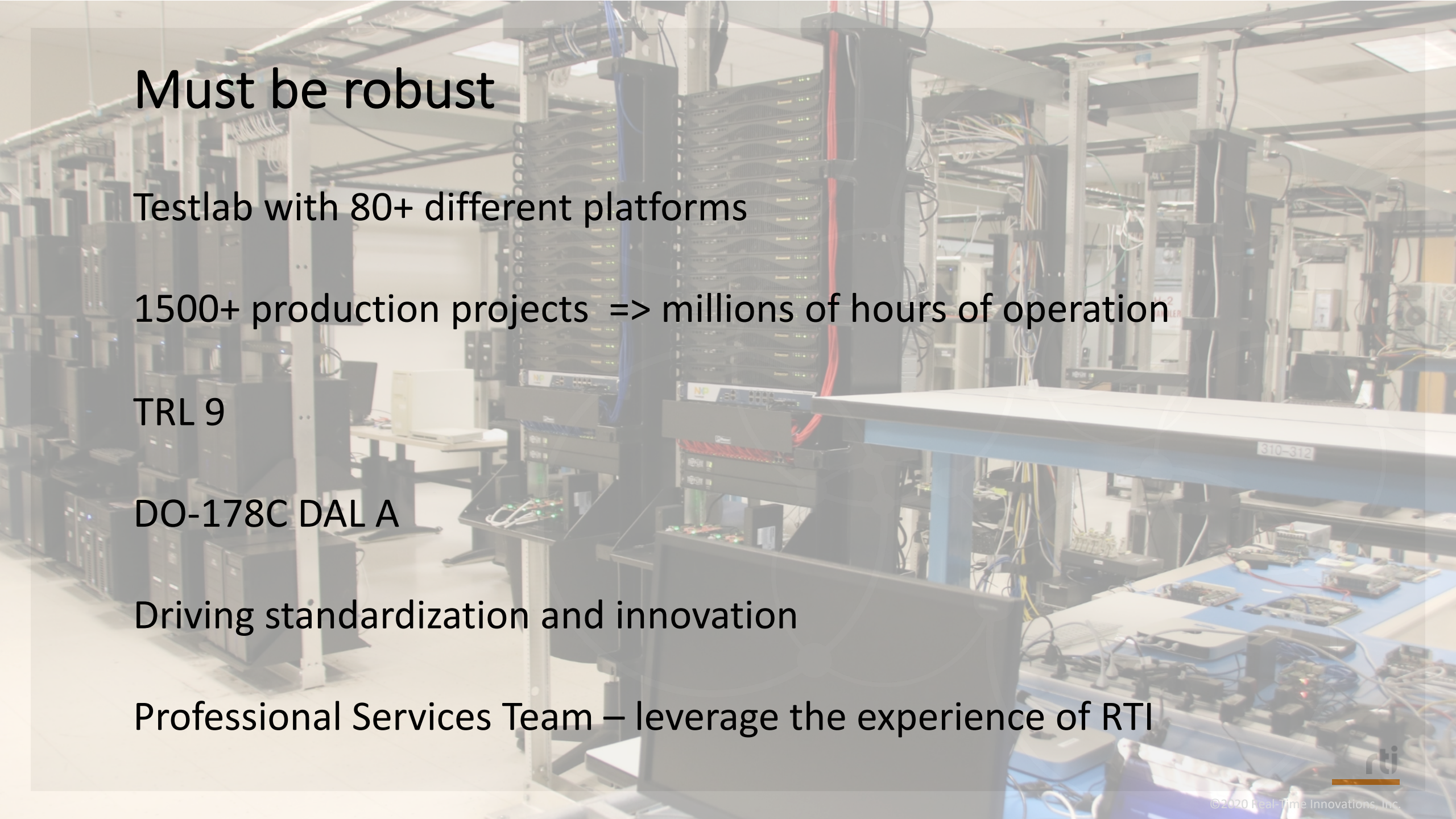
Must be robust



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

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Kennedy Space Center

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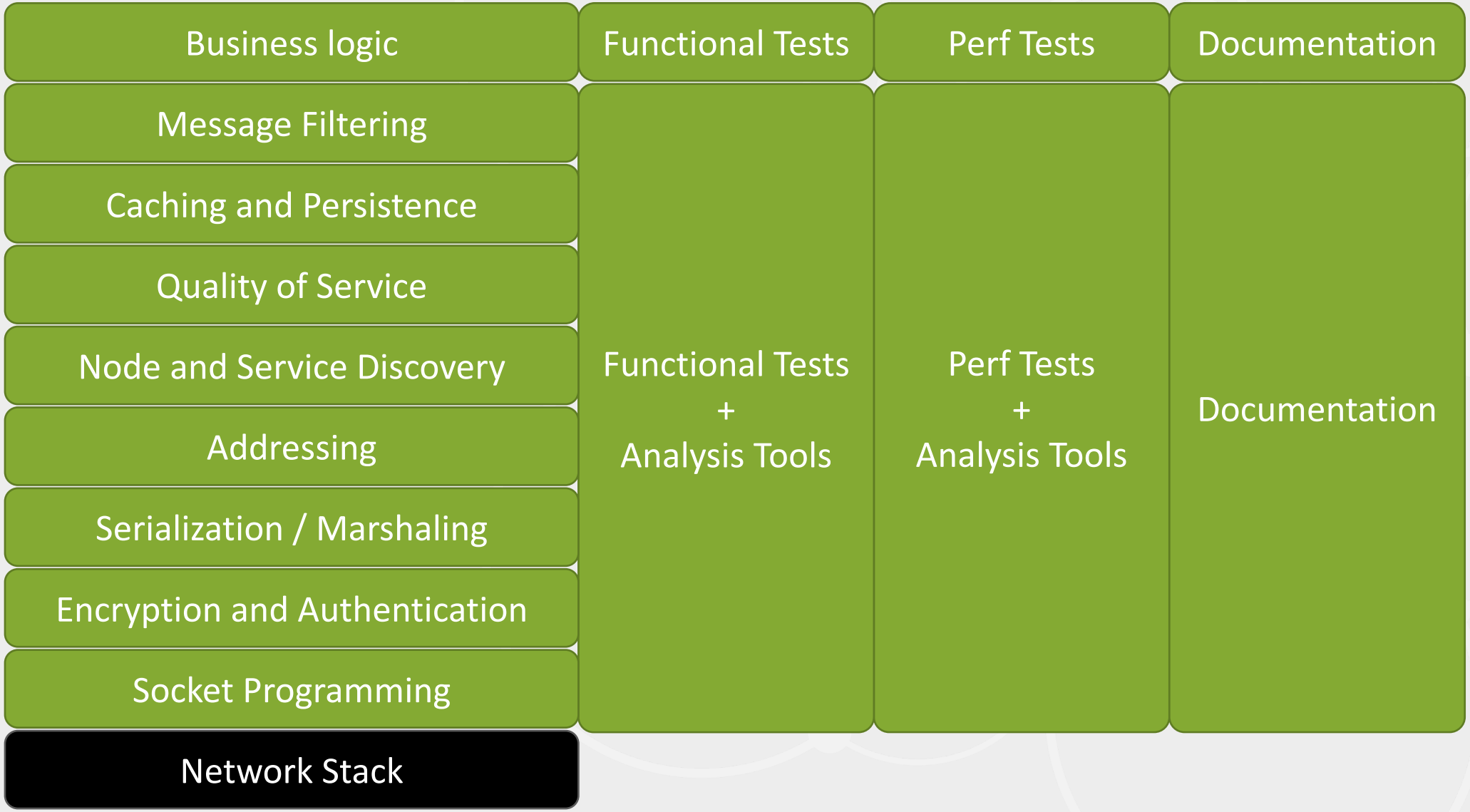

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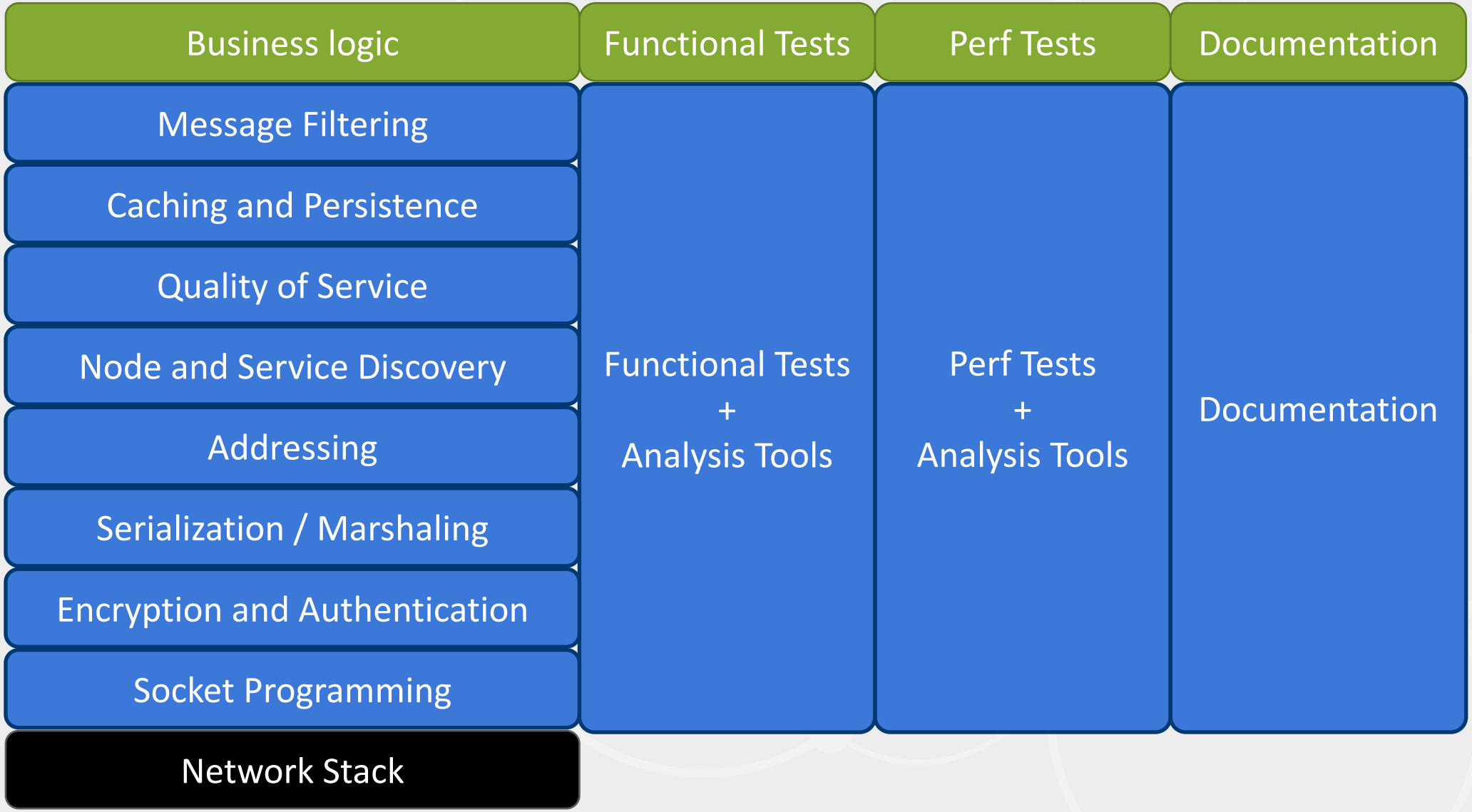

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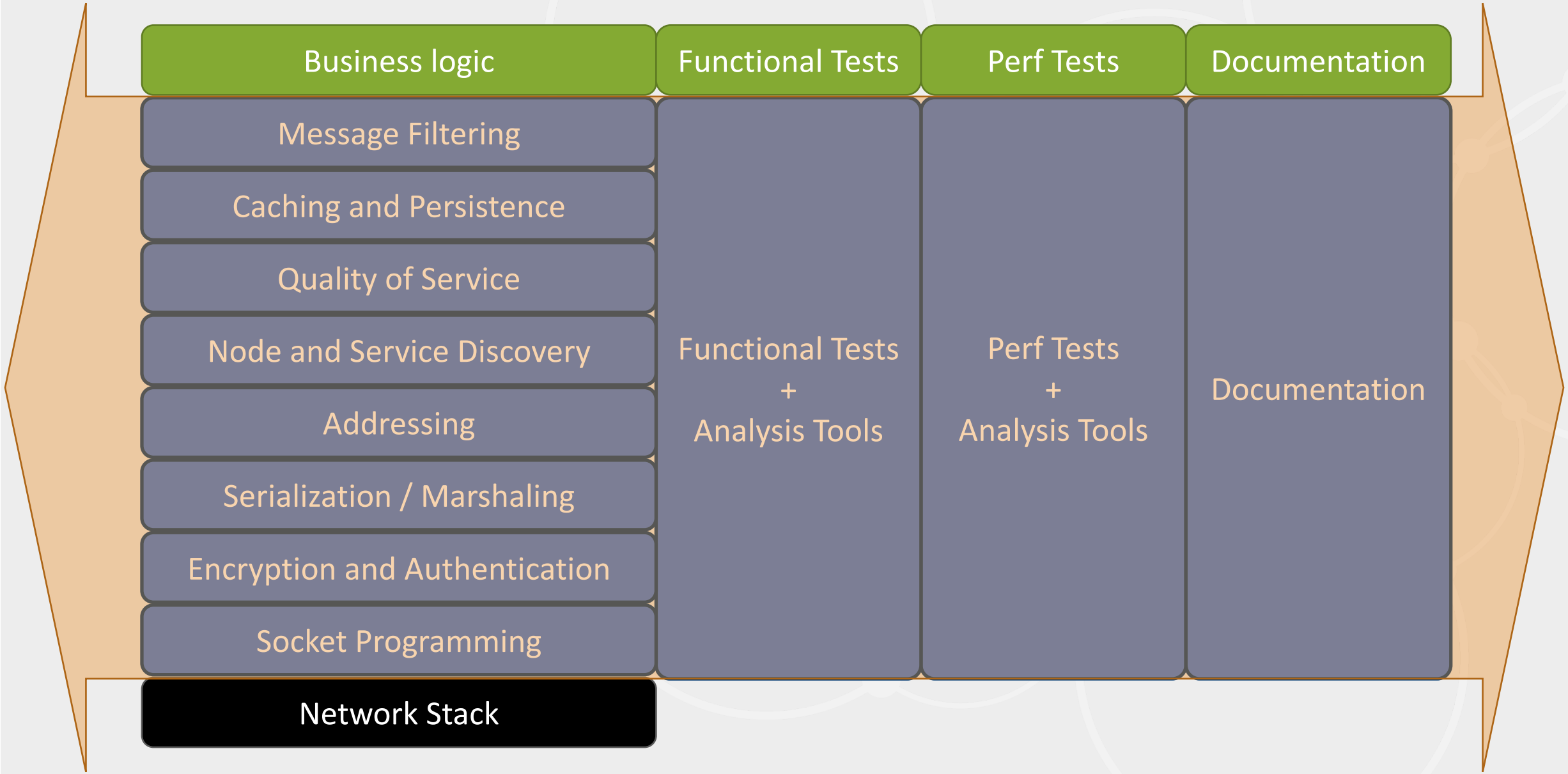

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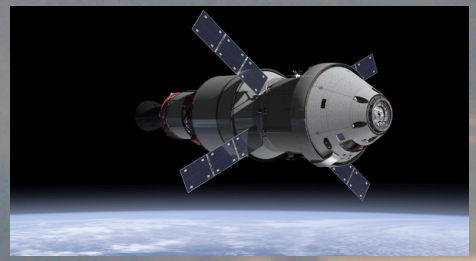
Kennedy Space Center

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



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Demo

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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

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Healthcare

Challenges:

- **Human errors due to alarm fatigue**
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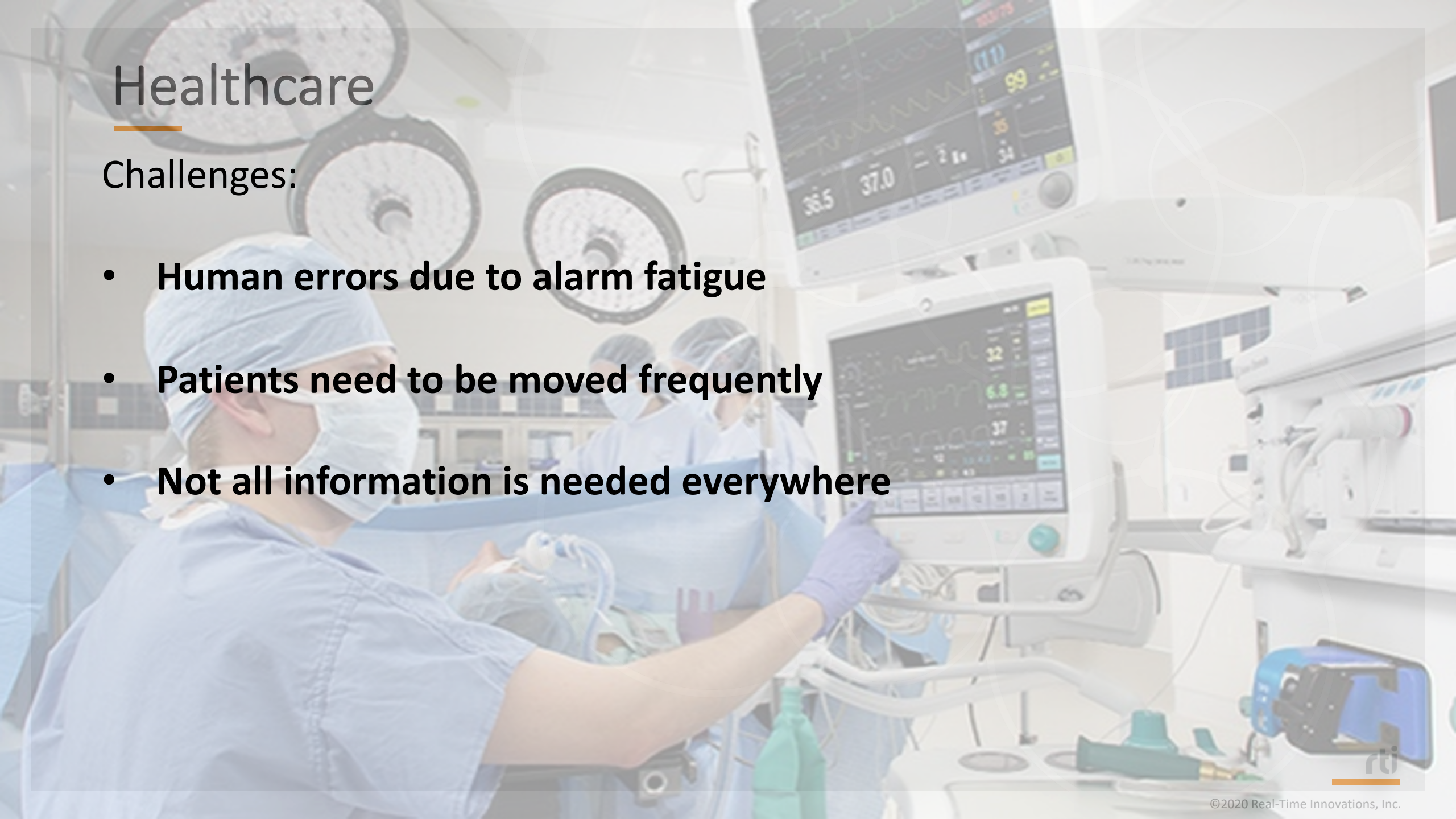

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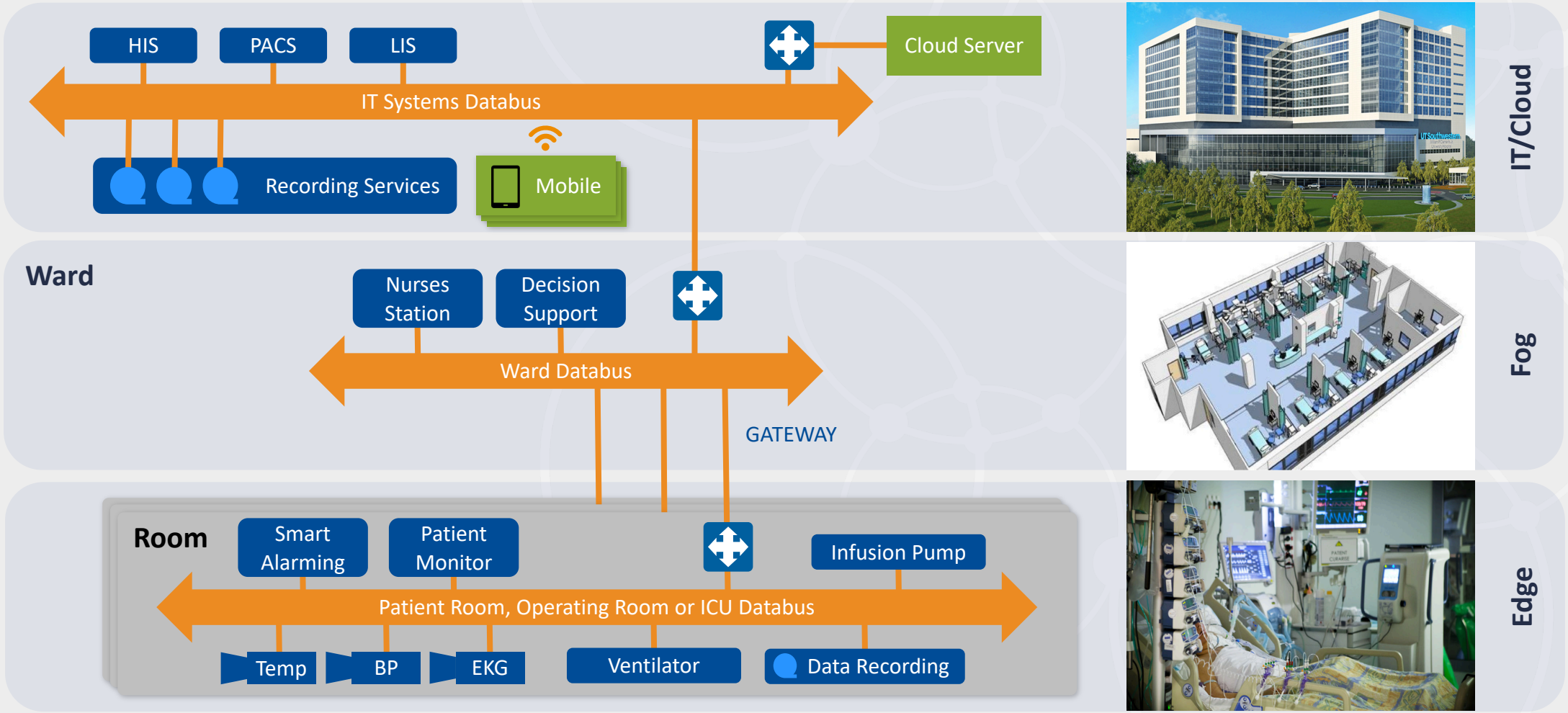
Healthcare System



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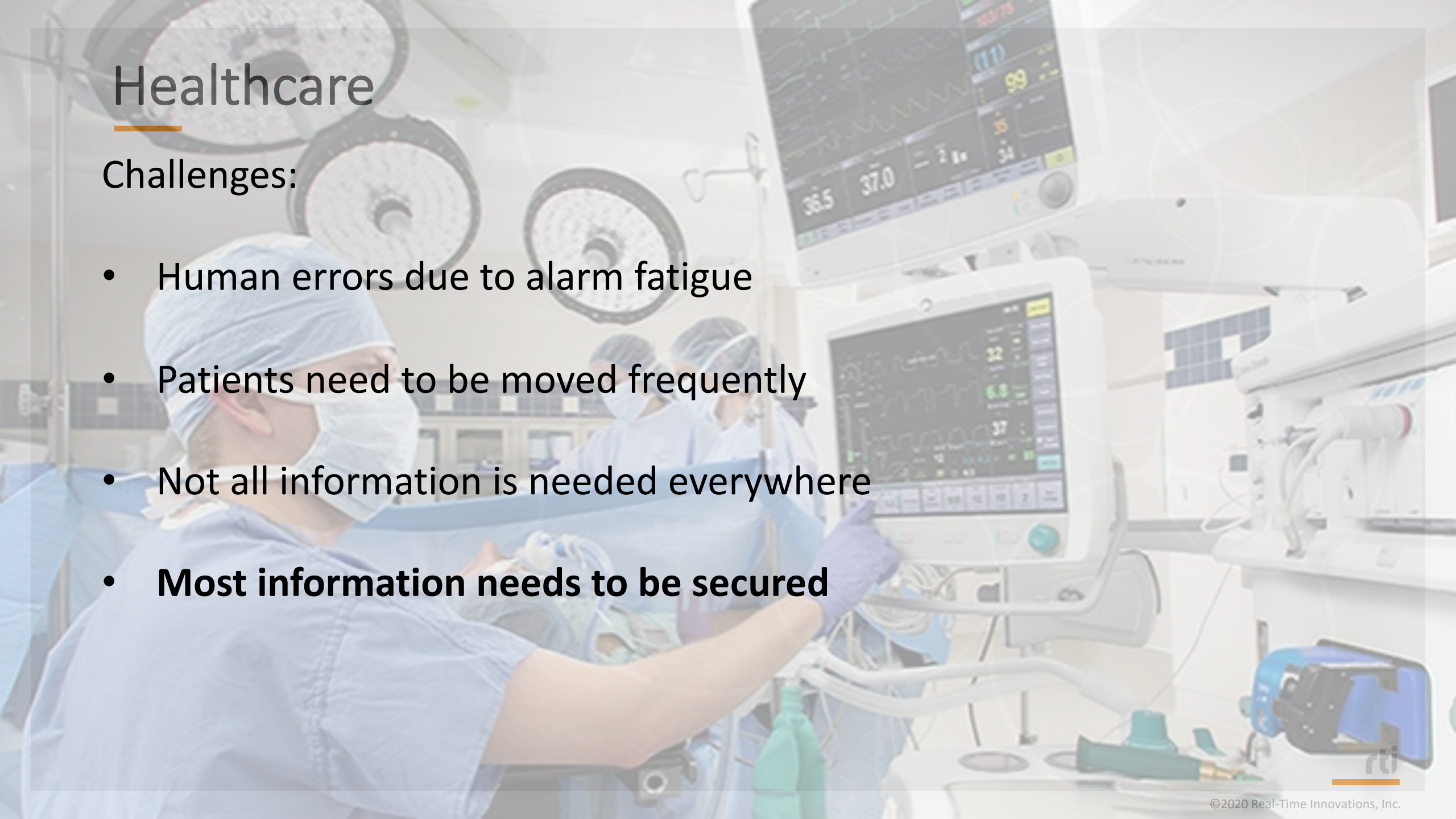

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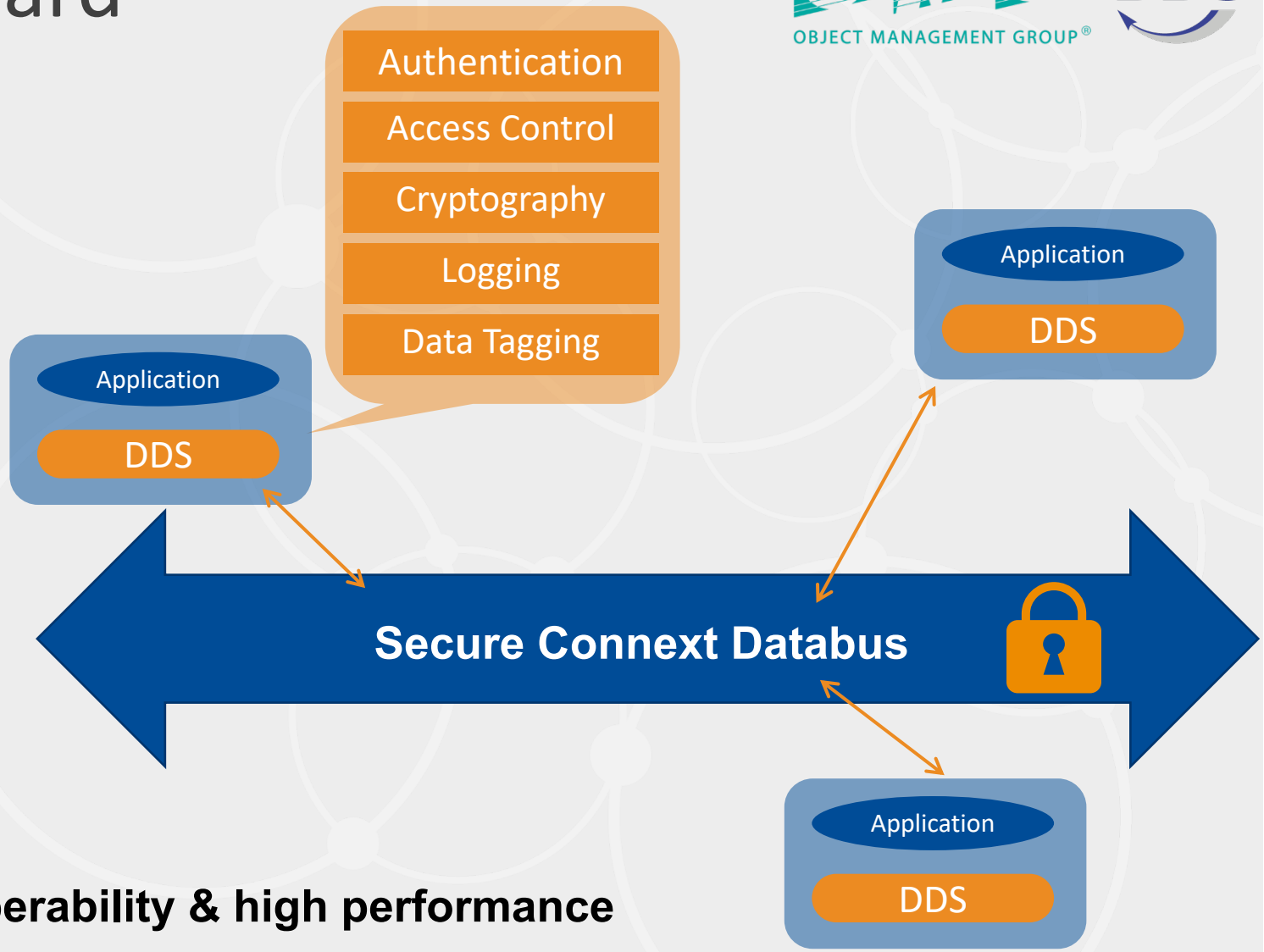
DDS Security Standard

- 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

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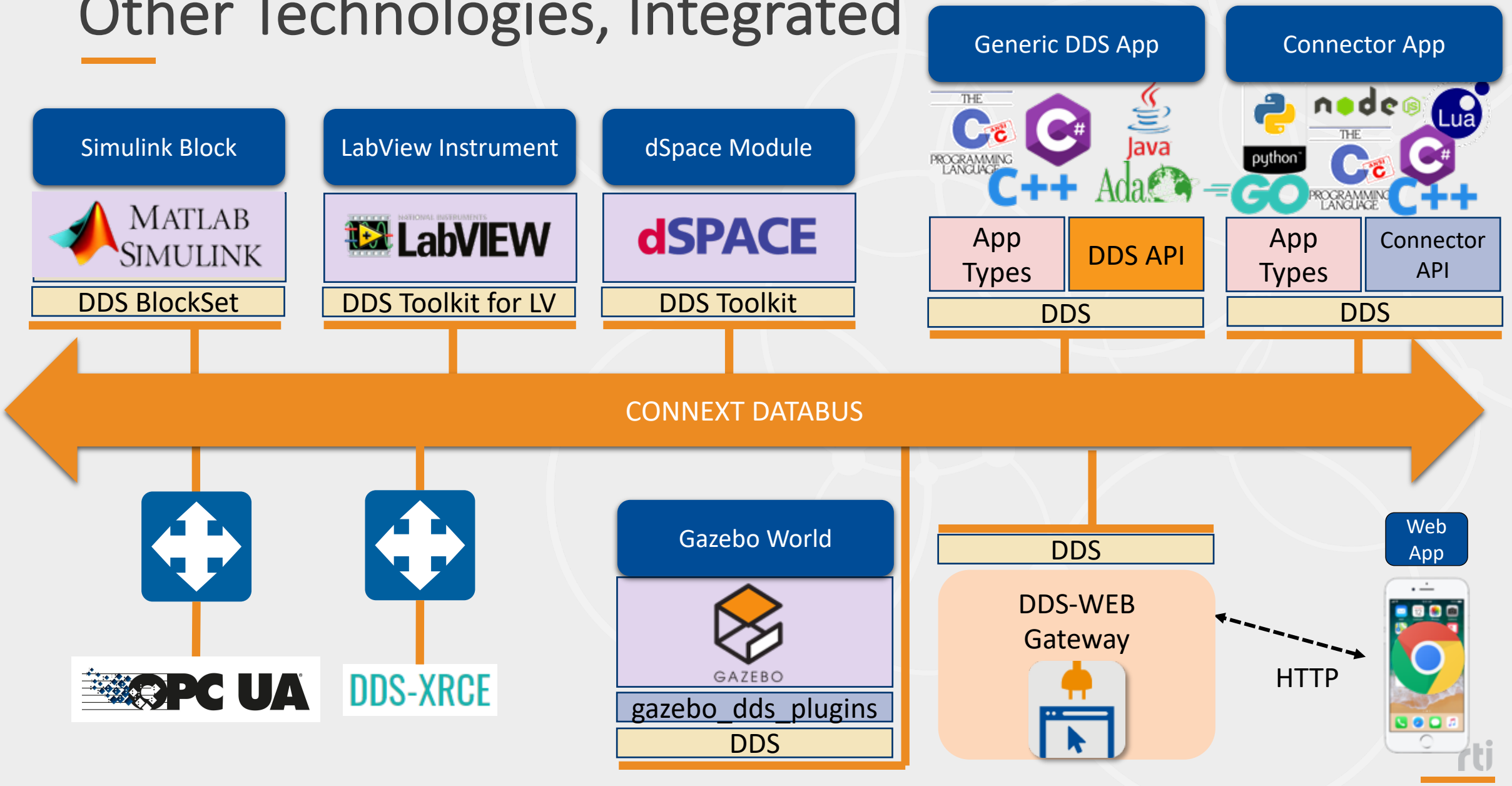
Other Technologies, Integrated



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DDS experts – Start Off on the Right Track

Architecture, Security & System Planning

Performance Characterization & Tuning

Application Development Team Training

Proof of Concept Development & Custom Projects

Design Mentoring & Best-practices

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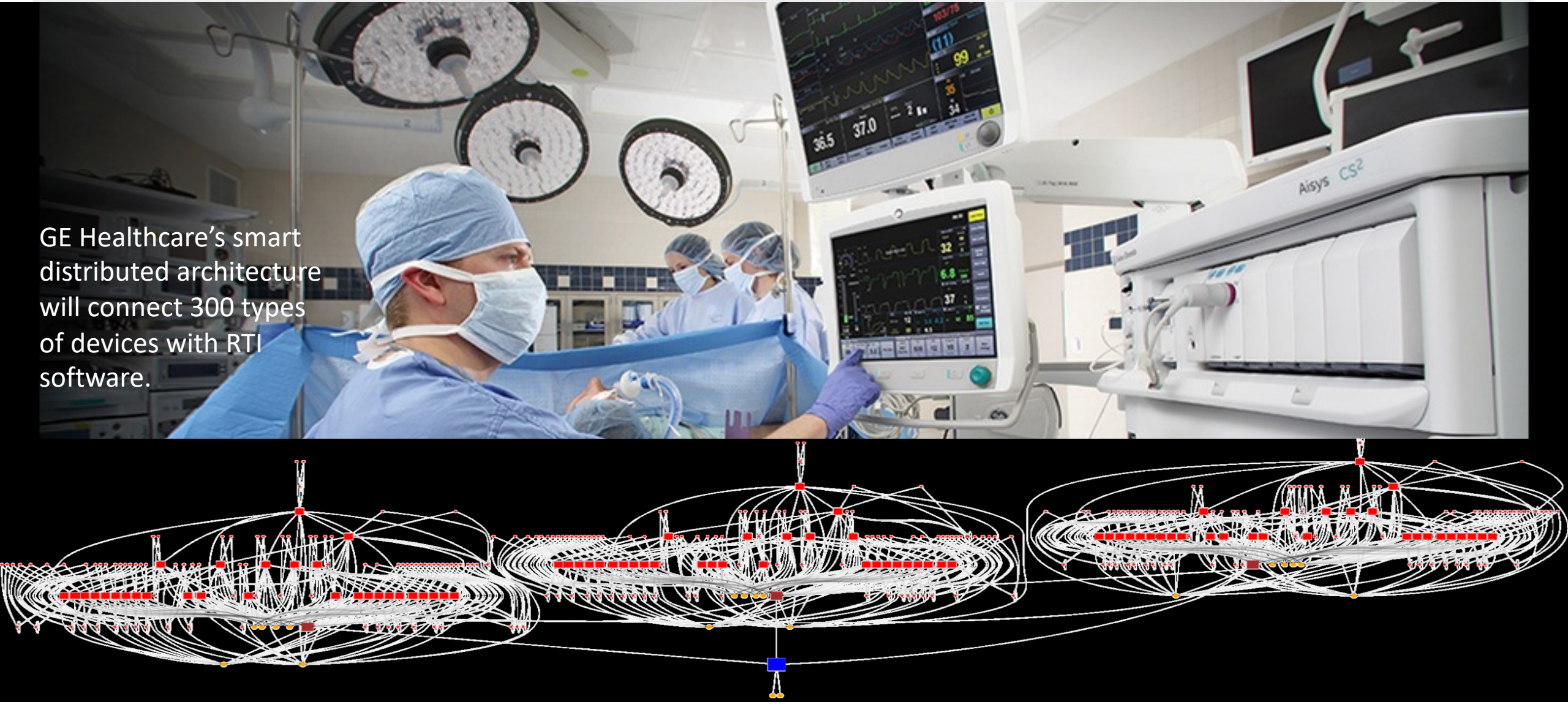
Smart Machines Join the Care Team



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Connext 6: Platform for Distributed System Connectivity

Connext DDS Professional
Connectivity software for developing and integrating IIoT systems.

Connext DDS Secure
Designed for systems requiring robust, fine-grained security.

Connext DDS Micro
Designed for resource-constrained systems.

Connext DDS Cert
Designed for safety-certifiable systems.

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