Leveraging DDS for a Medical IoT-Based Critical Care Ecosystem

VIRTUAL Connext® 2020

PRESENTED BY

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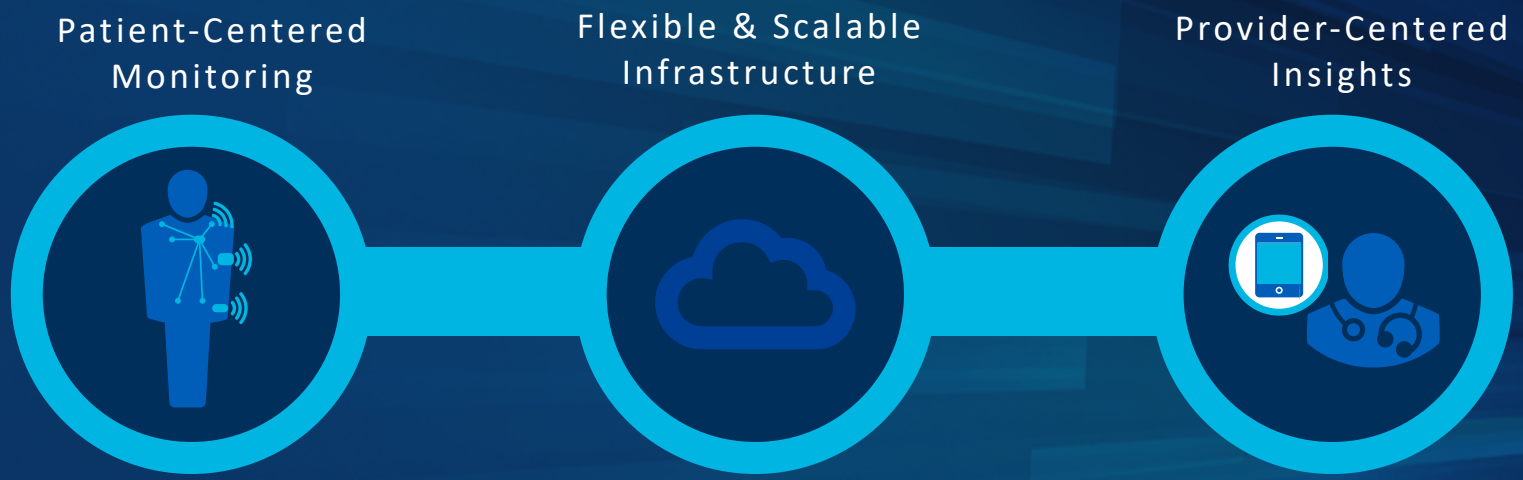
GE Healthcare – Life Care Solution
Wherever there is a patient

Patient Monitoring as Medical IoT



A safer and faster care pathway

Edison

- Unobtrusive
- Patient mobility
- Clinical flexibility

- High fidelity data
- Cyber security
- Interoperability

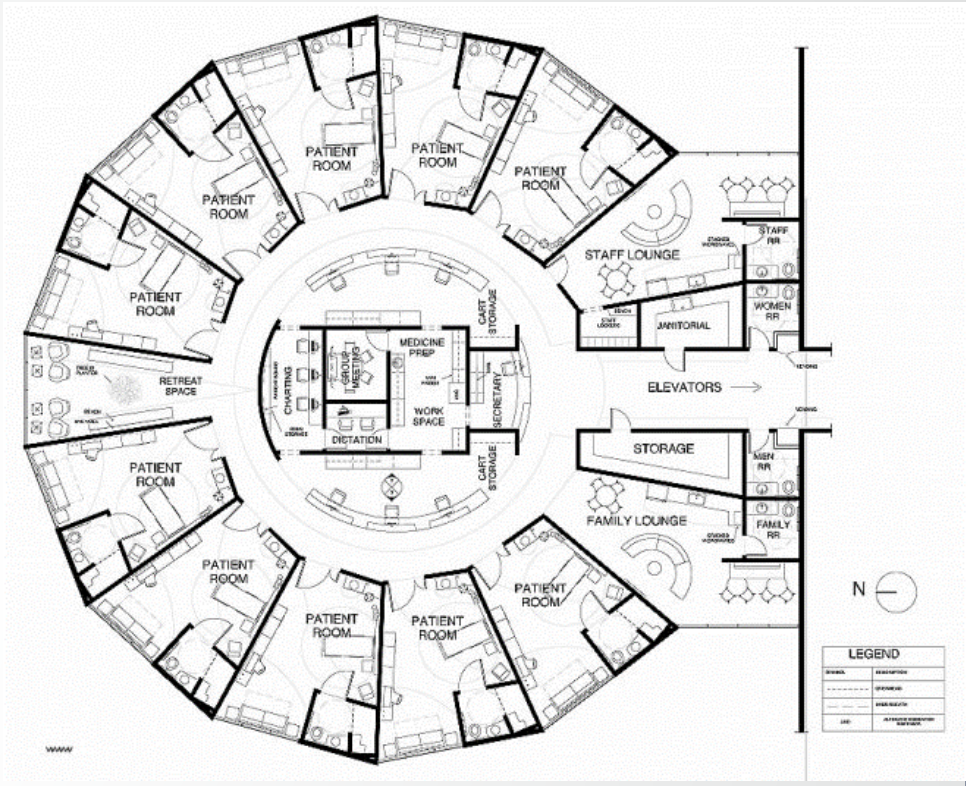
- Personalized
- Workflow oriented
- GE & Partner analytics

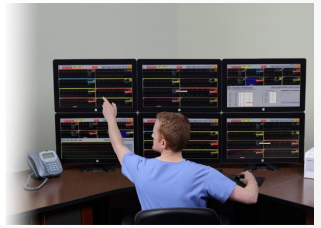
USE CASE

It’s not that patients suddenly deteriorate. It’s that caregivers suddenly notice.

Patient Monitoring

Patient monitoring is more than a device connected to a patient that acquires physiological information and then processes that information to generate an alarm. A Patient Monitoring **system** includes many (often hundreds and sometimes thousands of) devices connected to patients who are geographically dispersed across a hospital campus. Data and processed information from each of these devices are communicated across the hospital ecosystem and are delivered to a variety of data sinks.





Off-site
"War room"

EMR
Mobile Viewing
Diag. Algorithms
Research

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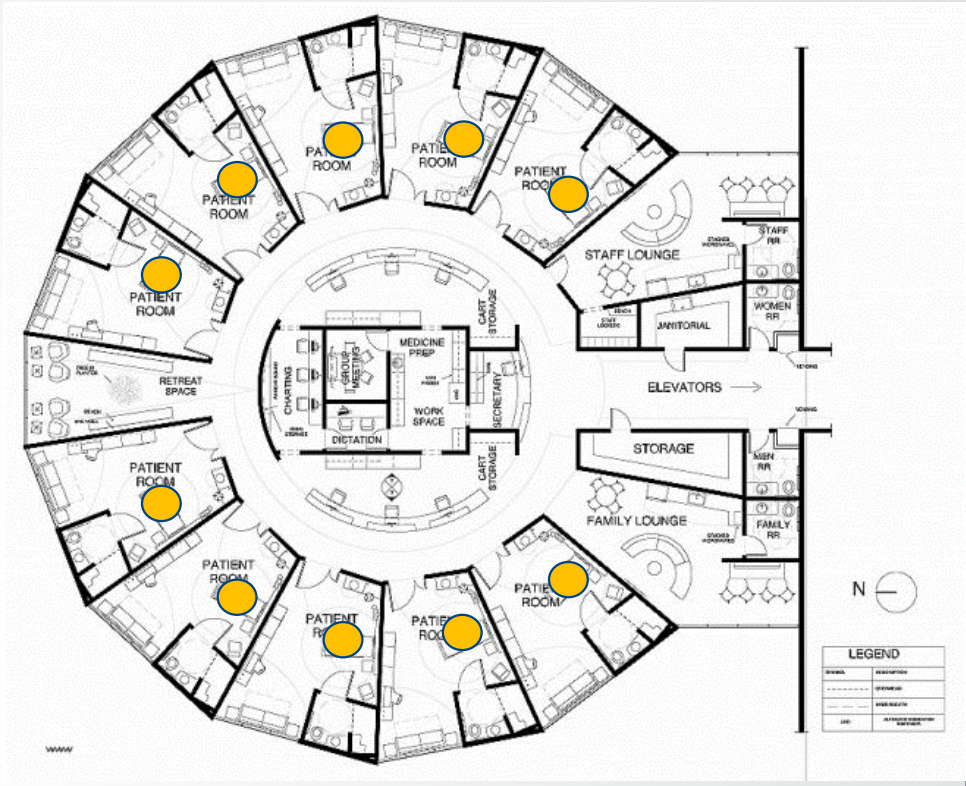

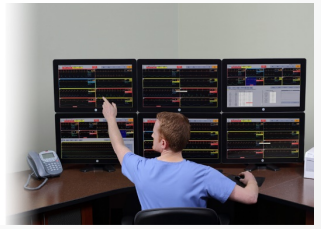

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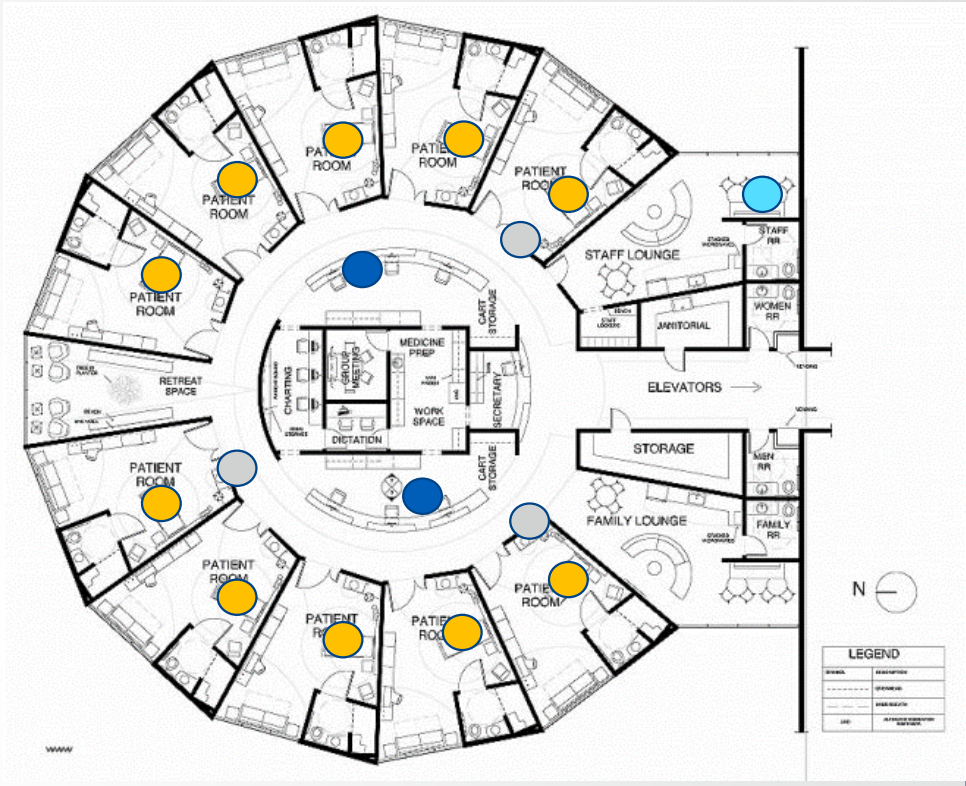

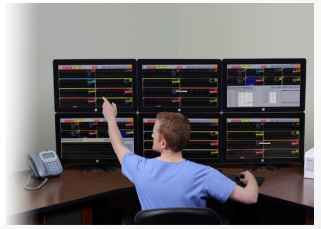

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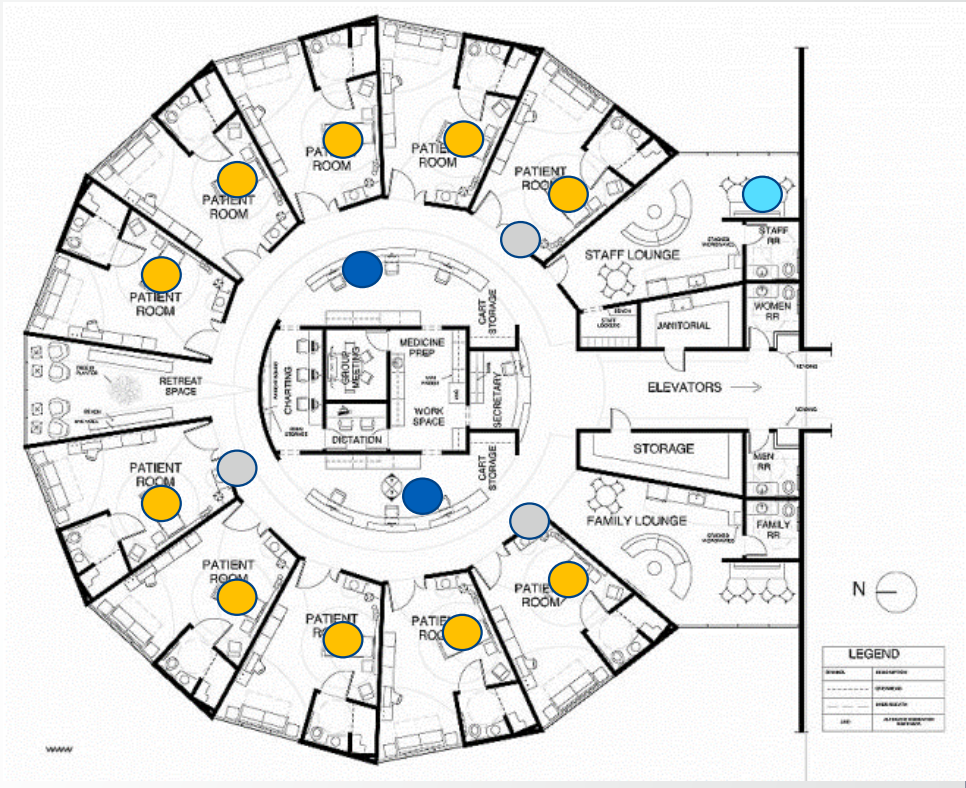

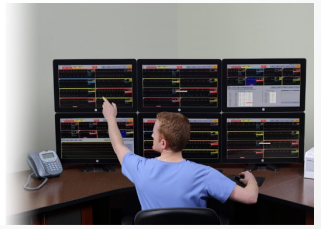

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Patient Monitoring

Viewing of Physiological Data

Alarming and Event Management

Device and System Management

Patient Management

Analytical Processing

Availability, Fault Tolerance, State Consistency

The Grand Challenge

The Grand Challenge of a Patient Monitoring Ecosystem is that the state of the ecosystem is **massively distributed**, and is **always** expected to be in an ***inconsistent*** state, desiring a state of consistency.

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Why is *inconsistency* expected?

Consider an **average** hospital with 200 patient monitors, 10 clinical units, and 40 central stations.

It is **expected** that if a 1) Monitor becomes disconnected during transport 2) An entire Unit disconnects from the rest of the hospital 3) A building is cut off from the Edge Platform 4) The Edge Platform fails;

The state of the device, the unit, the building can be **safely** changed while *disconnected*.

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Safe and expected state *reconciliation*:

Allowing disconnected state changes is simple, but as the elements of the system reconnect, the patient monitoring ecosystem must **reconcile** state safely, and reflect the clinical users' *intentions* based on their practice of caregiving.

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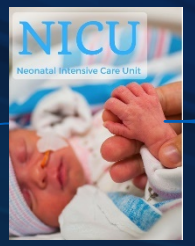

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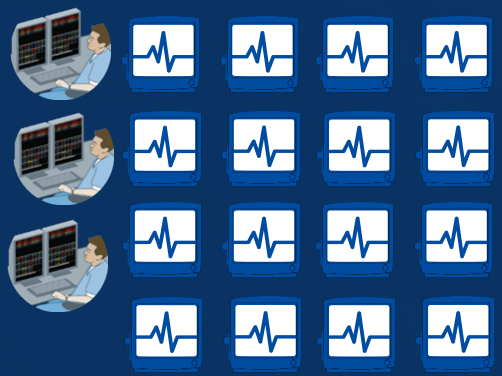

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- Software defined domains and topics