Rural Communities Reimagined with the Innovation in Modular Construction and Digital (AI) Technologies

CHALLENGES

- Indigenous and other rural communities have little/poor access to healthcare professionals/systems.

- Telehealth has been recommended for years as a technological solution to mitigate health care disparities, however, telehealth alone has, in most cases, not had a significant increase in patient outcomes.

- With recent technological advances, new solutions have evolved that combine AI, digital and modular technologies.

HUB AND SPOKE MODEL FOR HEALTHCARE

Command Center

Centralize action to optimize, prioritize, de-risk & prevent issues

Virtual Healthcare Platform

Digital Central Monitoring Units
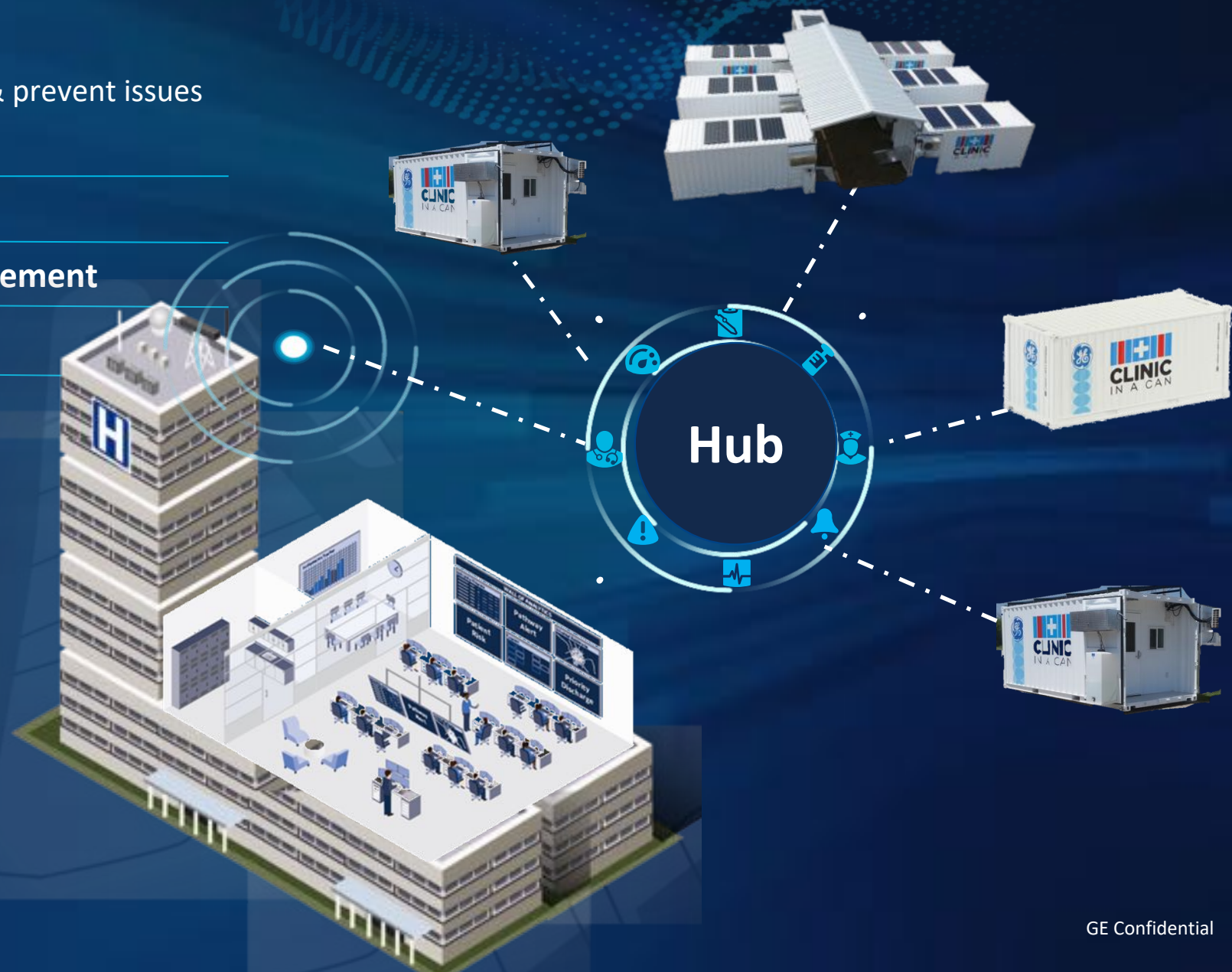
Patient Throughput / Capacity Management
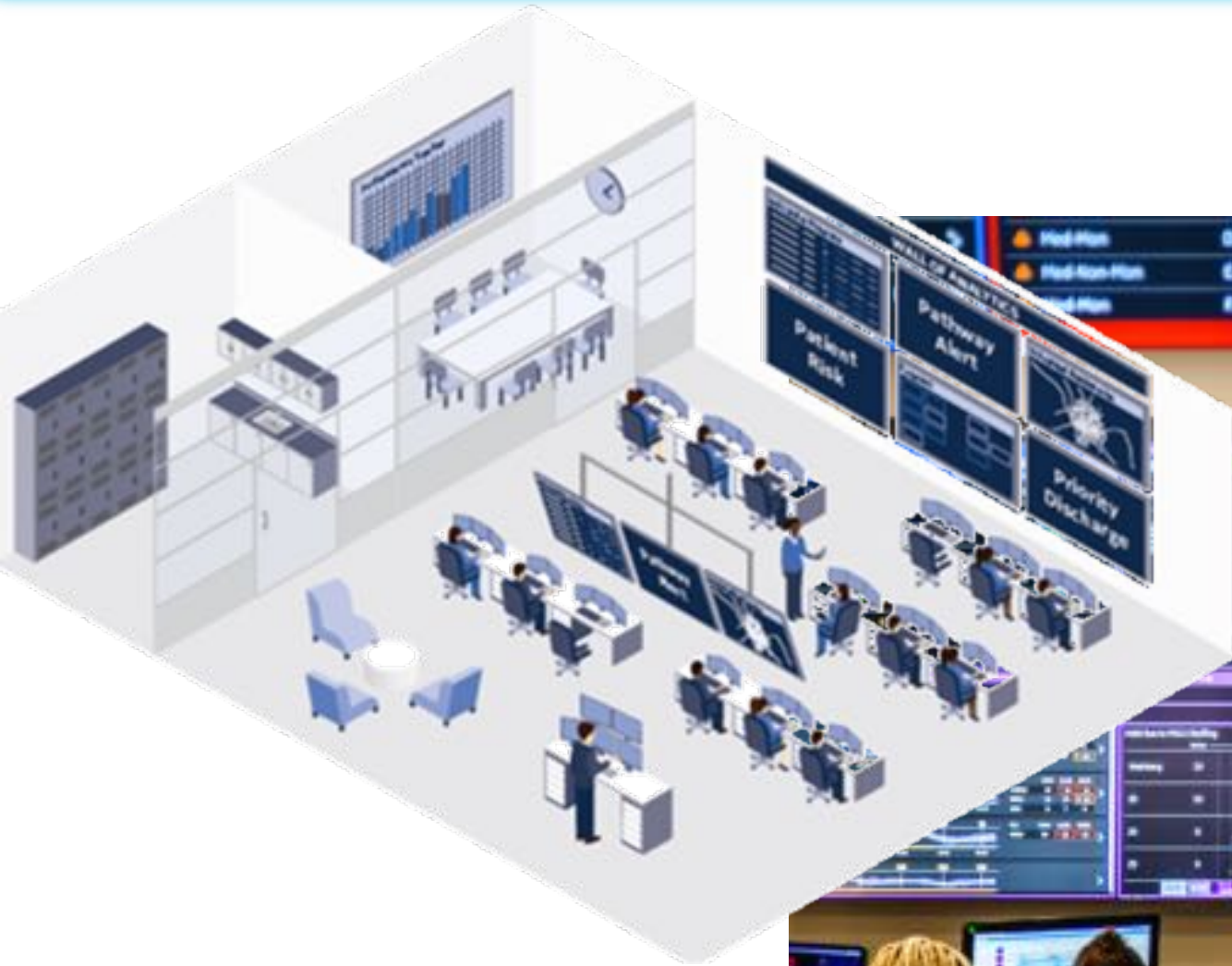
Home Monitoring Unit

Common Design Principles

Alignment around problem statement

Standardize care delivery & minimize variation

Cost containment / growth minded

Increased responsiveness

Technology Infrastructure

Interoperability

Security

Ecosystem integration
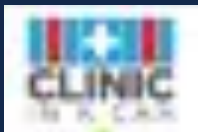
Mobile communication

Hub

PARTNER ECO SYSTEM

Container or modular provider

Logistics & implementation

AI/Digital Technology

Communications Provider

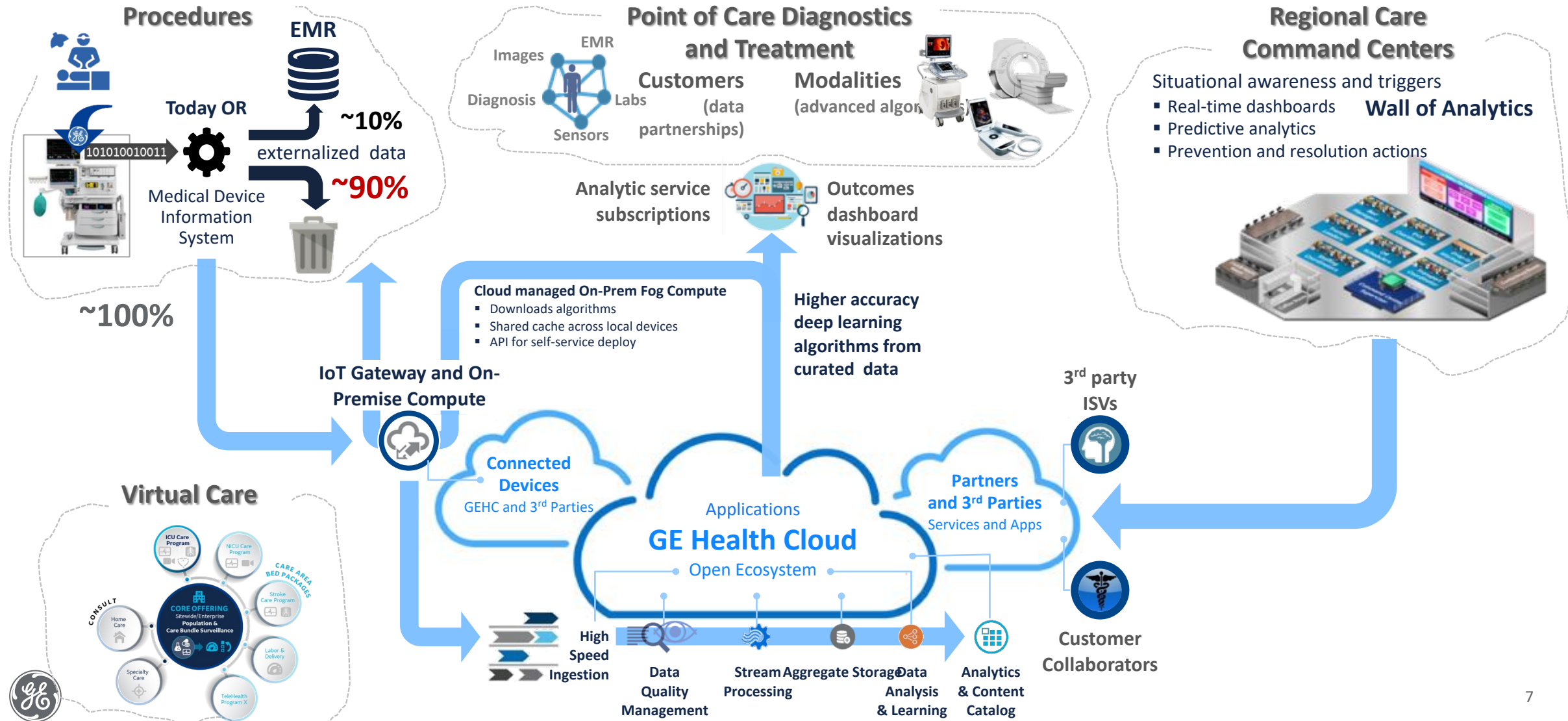**Operator Customer**

Training & Maintenance

Strong Partnership Eco-system required to deliver and maintain

TECHNOLOGY

MEDICAL DIGITAL/AI ECO-SYSTEM

Procedures

EMR

Today OR

~10% externalized data

~90%

Medical Device Information System

~100%

Point of Care Diagnostics and Treatment

Images

EMR

Diagnosis

Labs

Sensors

Customers (data partnerships)

Modalities (advanced algorithms)

Analytic service subscriptions

Outcomes dashboard visualizations

Regional Care Command Centers

Situational awareness and triggers
- Real-time dashboards
- Predictive analytics
- Prevention and resolution actions

Wall of Analytics

Cloud managed On-Prem Fog Compute
- Downloads algorithms
- Shared cache across local devices
- API for self-service deploy

Higher accuracy deep learning algorithms from curated data

IoT Gateway and On-Premise Compute

Virtual Care

ICU Care Program

NICU Care Program

CARE AREA BED PACKAGES

CONSULT

Home Care

CORE OFFERING Sitewide/Enterprise **Population & Care Bundle Surveillance**

Stroke Care Program

Specialty Care

Labor & Delivery

TeleHealth Program X

Connected Devices GEHC and 3rd Parties

Applications

GE Health Cloud

Open Ecosystem

Partners and 3rd Parties Services and Apps

3rd party ISVs

Customer Collaborators

High Speed Ingestion

Data Quality Management

Stream Processing

Aggregate Storage

Data Analysis & Learning

Analytics & Content Catalog

CYBER SECURITY

PRIVACY
Personal information
Protection &
confidentiality

Example: Patient data breach (e.g. name, date of birth, medical history)

PATIENT SAFETY
Safe & effective
products &
pathways

Examples: System shutdown during invasive procedure, misdiagnosis due to corrupted clinical data

SECURITY
Asset confidentiality,
integrity & availability

Examples: Ransomware attack leads to locked patient files, devices disconnected from network

VIRTUAL CARE PLATFORM

Intelligent. Tailored. Collaborative.

Mural **prioritizes clinician's attention to the most critical patient cases** and reduces the time to intervention **due to its ability to digitize & transform hospital defined protocols** into an interactive visual dashboard that enhances **clinical team's compliance to already established care pathway protocols** as well as improves **efficiency, collaboration, clinical outcomes, & cost of care** while elevating overall satisfaction for patients & clinical teams.

CARE AREA BED PACKAGES

ICU Care Program

NICU Care Program

Stroke Care Program

CONSULT

Home Care

CORE OFFERING
Sitewide/Enterprise
Population & Care Bundle Surveillance

Specialty Care

Labor & Delivery

TeleHealth Program X

JB66506US

OVERALL VIRTUAL CARE SOLUTION

Tele ICU Offering

DIAGNOSTICS   LIVE AUDIO/VIDEO   WAVEFORM VIEWER

Near Real Time Data
Audio/Video
Smart Collaboration
Episodic Diagnostics

Care Pathway Compliance Offering

POPULATION SURVEILLANCE   EMR   PATIENT SNAPSHOT
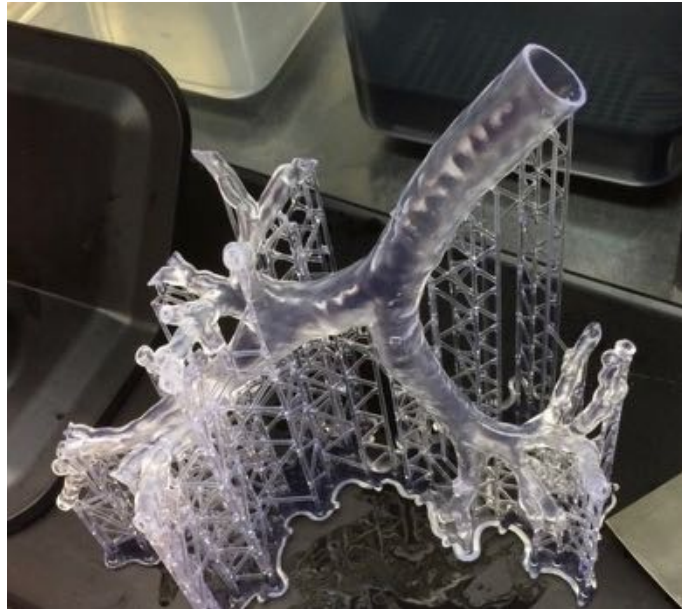
EWS
Protocol Compliance
Care Pathway Bundles
Care Prioritization
Trended Data
Clinical Notes
Smart Alarms

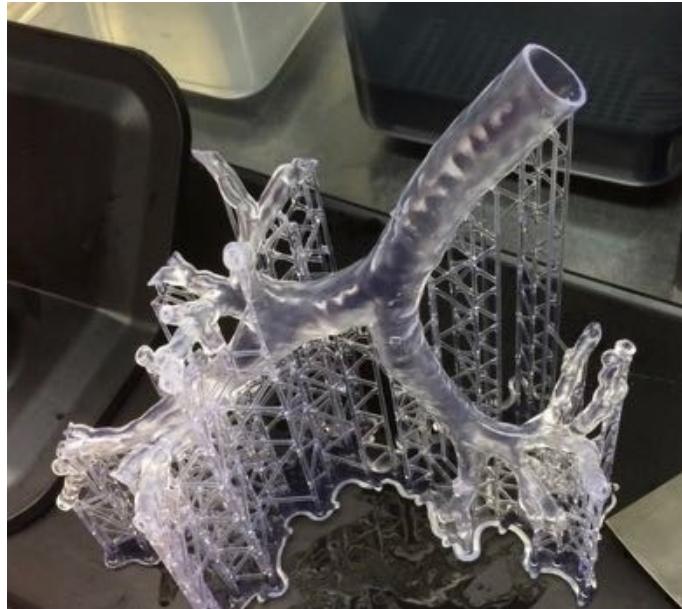JB63463US

ADDITIVE MANUFACTURING (3D Printing)

3D-printed models of vessels and other parts of the vascular system

"for most radiologists, 3D images are limited to reconstructions on a computer screen, so by harnessing the power of 3D printing with a rich data set, we are able to pull images out of the screen and into our hands, allowing us to interact with the data in a deeper way to fuel innovative, personalized care based on the unique needs of each of our patients." — Beth Ripley Radiologist VA Puget Sound

In the future, more than 96% of medical professionals expect to use additive products in their practice

Additive Manufacturing (3D Printing)

Potential to transform the approach to surgery

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INFRASTRUCTURE

- Rural communities often have limited access (ie. Roads, waterways, air)

- Traditional construction methodologies not viable

- Sustainability and maintenance are key success factors

- Training local workforce (knowledge transfer) to sustain

- ROI friendly

- Overall coordination of project i.e. Bringing all together, AI, Digital, Equip etc., critical

EXAMPLE ROI

- New modular solution RFP for Turnkey Services;

- Asked to price traditional and modular construction

- Results were 6 mnths faster and $1.2m less expensive – resulting in patients being seen quicker and revenue realized earlier

- No disruption to existing site, less waste (green) and much higher quality product

Modular OR

Remote Trauma/ER

Logisitics

CYBER SECURITY

Healthcare Risk Domains

Healthcare product cyber security must address risks to patient safety, privacy, and other types of security risks. Manufacturers and providers need to apply controls and manage risks to products and the data they generate. Controls are applied during design and deployment and maintained throughout the life of the product.

The impact to patients ranges from personal data breaches to the potential for serious harm (up to and including loss of life). The effect felt by manufacturers and providers includes impact to business operations, fines, lawsuits, and tarnished reputation.

Privacy
* Personal information protection, confidentiality

Example: Patient data breach (e.g. name, date of birth, medical history)

Security
* Asset confidentiality, integrity, availability

Examples: Ransomware attack leads to locked patient files, devices disconnected from network

Patient Safety
* Safe and effective products

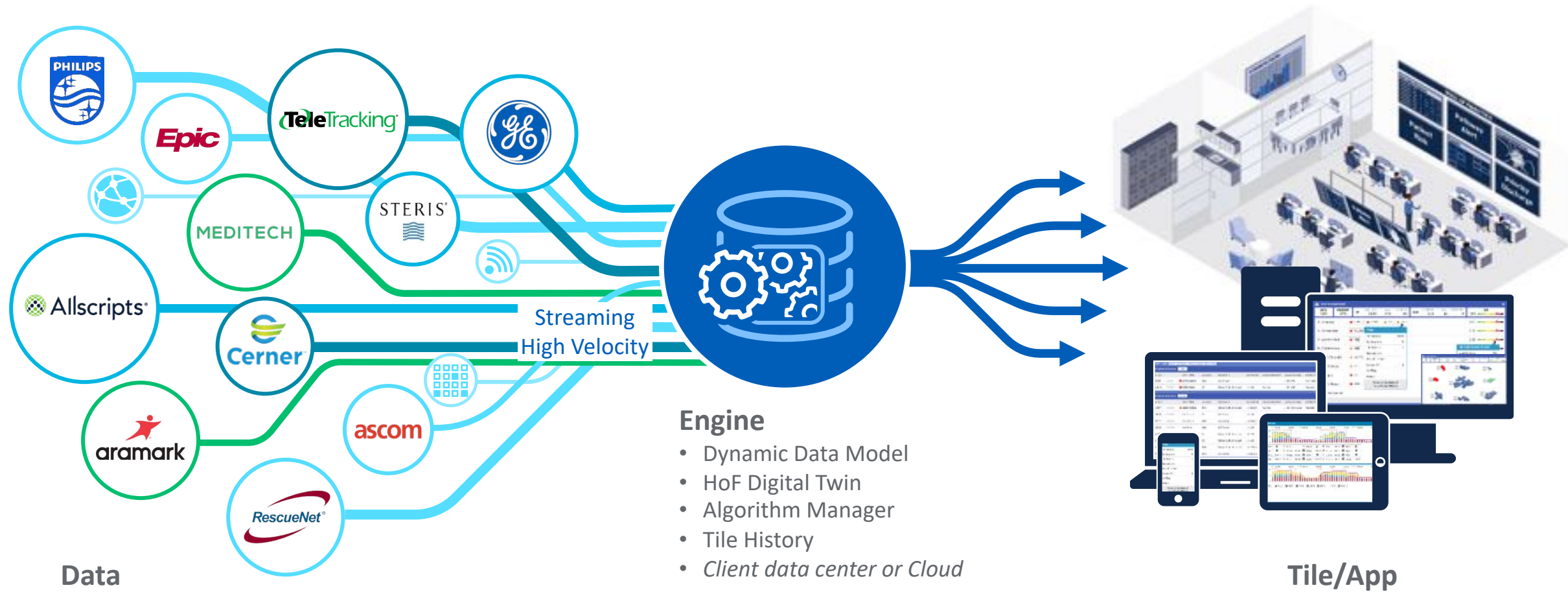Examples: System shutdown during invasive procedure, misdiagnosis due to corrupted clinical data

AI FOR AUTOMATION – SETUP AND CLINICAL

Analytics Platform: Cross-System **Real-Time** Decision Support

Streaming High Velocity

Data

Engine
- Dynamic Data Model
- HoF Digital Twin
- Algorithm Manager
- Tile History
- *Client data center or Cloud*

Tile/App

Source Systems	GE WoA Engine	GE WoA Tiles

Solution

Enabling Precision Health

Applications
Edison Applications

Devices
Edison Smart Devices

Developer Services
Edison Platform

Data Management • Security • Analytics and AI

A Scalable, Secure & Connected Ecosystem

Intelligent Devices

Applications

Services

Clinicians

Administrators

Patients

Clinical Partners

Developers

Third Party Apps

Edison Edge
Analytics & Artificial Intelligence

GE Health Cloud &/ Edge

Secure   Scalable   Connected   Collaborative

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Meeting space

Wall of Analytics™
(real-time and predictive apps)

Co-located, cross-functional decision-makers empowered by the organization to drive action

New/revised **procedures and operating mechanisms** to support action

Staff room
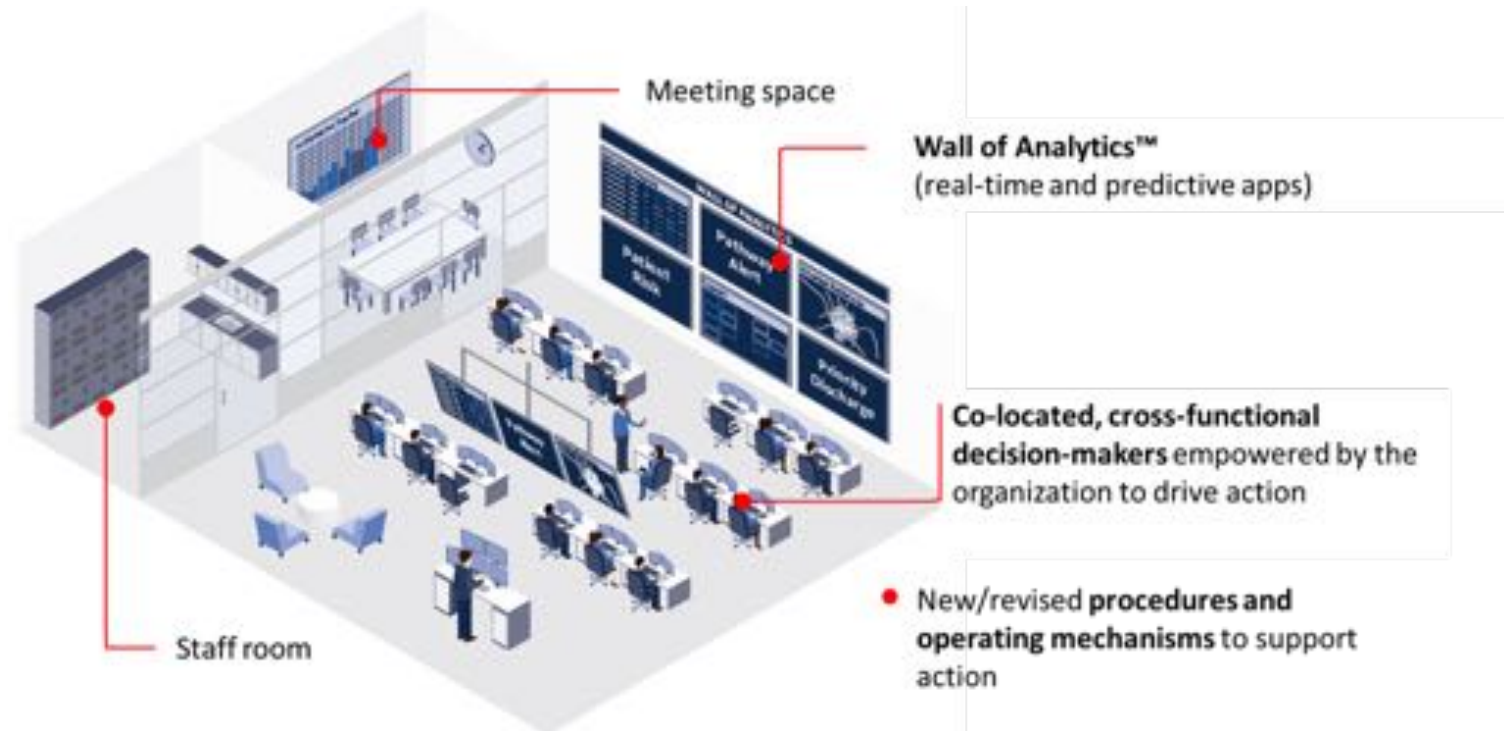
- <u>Centre of gravity</u> for daily operations, patient flow, quality, culture and learning across a <u>system</u> (air traffic control)

- Advanced analytics use <u>cross-system data and AI</u> algorithms to transform ability to impact care delivery moment to moment...always in <u>real-time</u>

- <u>Scalable</u> support for caregivers: <u>synchronize, optimize, de-risk</u>

- Continuous <u>improvement all the time</u>