

HIMSS Cybersecurity Community Sponsor

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Medical University of South Carolina

Changing What's Possible



- › Founded in 1824
- › More than 3,000 students and 700 residents in six colleges
- › Nearly 13,000 employees, including approximately 1,500 faculty members
- › South Carolina's only academic health science center and largest non-federal employer in Charleston
- › Annual budgets in excess of \$2.4 billion, with an annual economic impact of nearly \$4 billion
- › Annual research funding in excess of \$284 million
- › 700-bed medical center, which includes a nationally recognized children's hospital, the NCI-designated Hollings Cancer Center, a Level I trauma center, Institute of Psychiatry
- › More than 100 outreach locations across the state, and South Carolina's only transplant center.



Medical University of South Carolina

Office of Information Security

**Information Security
Mission**

**Enabling Healthcare,
Education and Business
Capabilities**

**Cyber Threat Management
Cyber Risk Management
Cyber Services**

**Information Security
Governance**

**The Board of
Trustees**

**Cyber Executive
Steering Committee**

**Cyber Management
Committee**

**Information
Security Office**

**Cyber Program
& Frameworks**

NIST **HITRUST[®]**

**Control
Framework**

**Program
Framework**

**Risk
Framework**



Medical University of South Carolina

Technology & People Landscape

21,000 WORKSTATIONS	5,400 SERVERS	21,000 BIOMEDICAL DEVICES	3,500 ROUTERS & SWITCHES
17,000 MOBILE DEVICES	5 PB STORAGE	1100 APPLICATIONS	98,000 NETWORK PORTS
3 M PHI & PII	1 M CREDIT CARD TRANSACTIONS	20,000 PEOPLE	



Medical University of South Carolina

Shawn Jenkins Children's Hospital and Pearl Tourville Women's Pavilion

This state-of-the-art building transforms how care is delivered to children and women, seamlessly integrating children's care with obstetrical services.



250 Licensed Beds

Labor & Delivery Unit:
29 Mother/Baby Postpartum Rooms
5 Antepartum Rooms
7 Couplet Care Rooms

80 Licensed NICU Beds

Rooftop Helio-pad



Shawn Jenkins Children's Hospital and Pearl Tourville Women's Pavilion Enabled by Innovations in Cybersecurity and Health IT

- › *This new hospital functions from a technological standpoint as a hospital of the future.*
- › *Integrated technology with real-time location system to track patients, supplies and staff.*
- › *The technology allows the family to view care from outside the facility.*



Shawn Jenkins Children's Hospital and Pearl Tourville Women's Pavilion Enabled by Innovations in Cybersecurity and Health IT



Patient and Family Centered Care

- › *Multidisciplinary design team for SJCH was formed to develop the overarching concept for the facility.*
- › *Patients and families should feel engaged, empowered, and informed throughout their experience.*
- › *The patient and family experience doesn't start and end at the door to the hospital.*



Safeguarding Patient Care Operations

With Network Segmentation & Network Access Control

Patient Monitoring

Nurse Call

Digital Rectangle

Streaming Media

Mobile Devices

Lighting

Technology Innovations

*Remove the technology
from between the
patient, family, and care
team*

Wired & Wireless

RTLS

GetWell Network

Drug Dispensers

Radiology Imaging

Door Signs

Badge Access



Safeguarding Patient Care Operations

With Network Segmentation & Network Access Control

› *Remove the technology from between the patient, family, and care team*

- *Workstations on Wheels form a wall between you and the patient*
- *Remove technological barriers that keep rounds out of the patient room*
- *Make providers' time on rounds more efficient*



Safeguarding Patient Care Operations

With Network Segmentation & Network Access Control

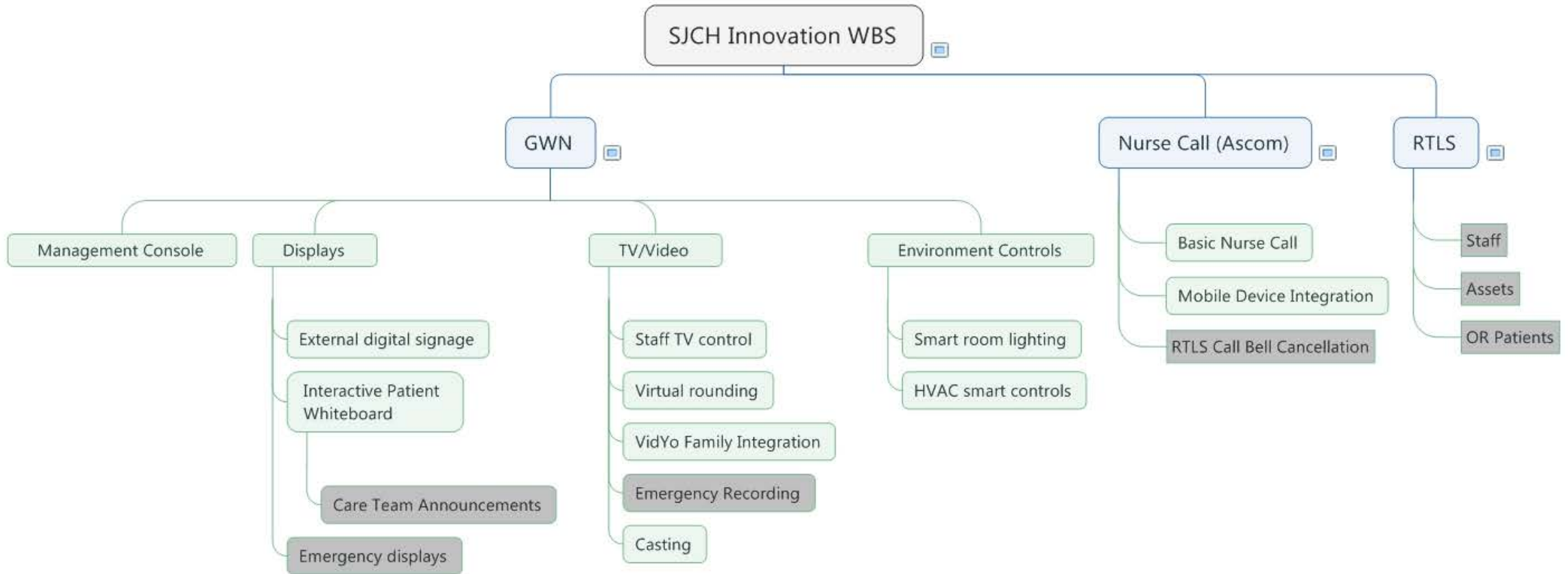
› *Leverage mobile technology heavily*

- *Mobile devices inside and outside patient rooms*
- *Mobile devices with EMR app for rounding teams*
- *Mobile devices with EMR app for nurses and residents*
- *Completely eliminate Workstations on Wheels*



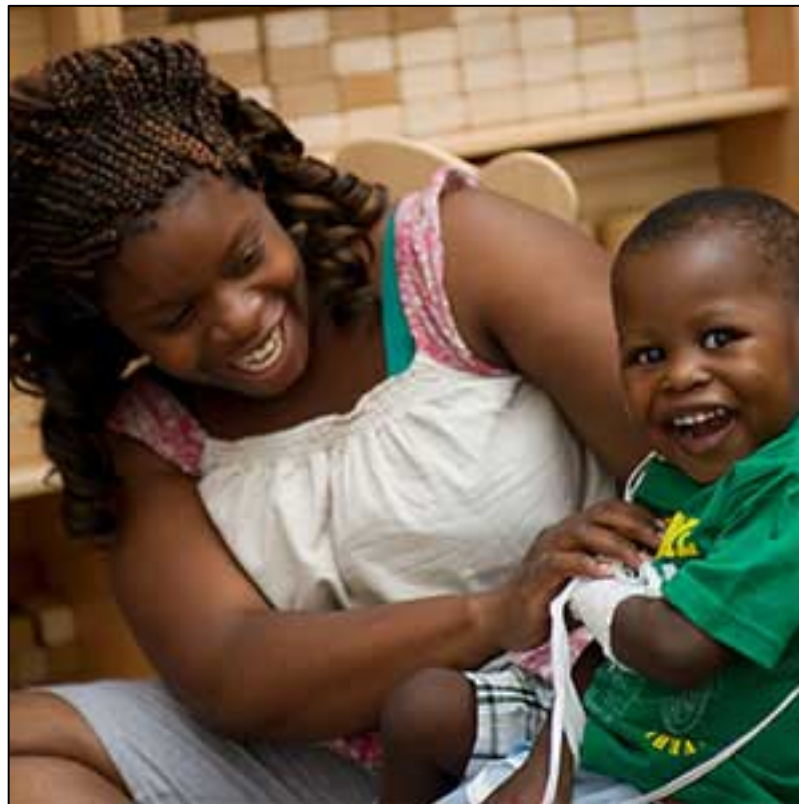
Safeguarding Patient Care Operations

With Network Segmentation & Network Access Control



Medical University of South Carolina

Shawn Jenkins Children's Hospital and Pearl Tourville Women's Pavilion



Safeguarding Patient Care Operations

With Network Segmentation & Network Access Control

1,800

FACILITY DEVICES

350

ACCESS POINTS

8,000

NETWORK PORTS

500

BIOMEDICAL DEVICES

650

TABLETS

7000+

Connected Devices

*Leverage mobile
technology heavily*

*Wired &
Wireless*

1,300

WORKSTATIONS

110

LAPTOPS

350

PERIPHERALS

225

STREAMING MEDIA PLAYERS

225

SMART TVs



Safeguarding Patient Care Operations

With Network Segmentation & Network Access Control

**A Flat Network
with Strong
Boundary
Defense**

Network Segmentation

- › Network Access Control determines which network segment a device is placed on
- › Enabled on both wired and wireless networks
- › Primarily focused on end point devices

Security Zones

- › Environmental Controls
- › Security Systems
- › Mobile Devices
- › Centrally Managed Endpoints
- › Unmanaged Endpoints
- › PCI Network
- › Clinical Devices

**A Segmented
Network with
Security Zones
and Strong
Boundary
Defense**



Safeguarding Patient Care Operations

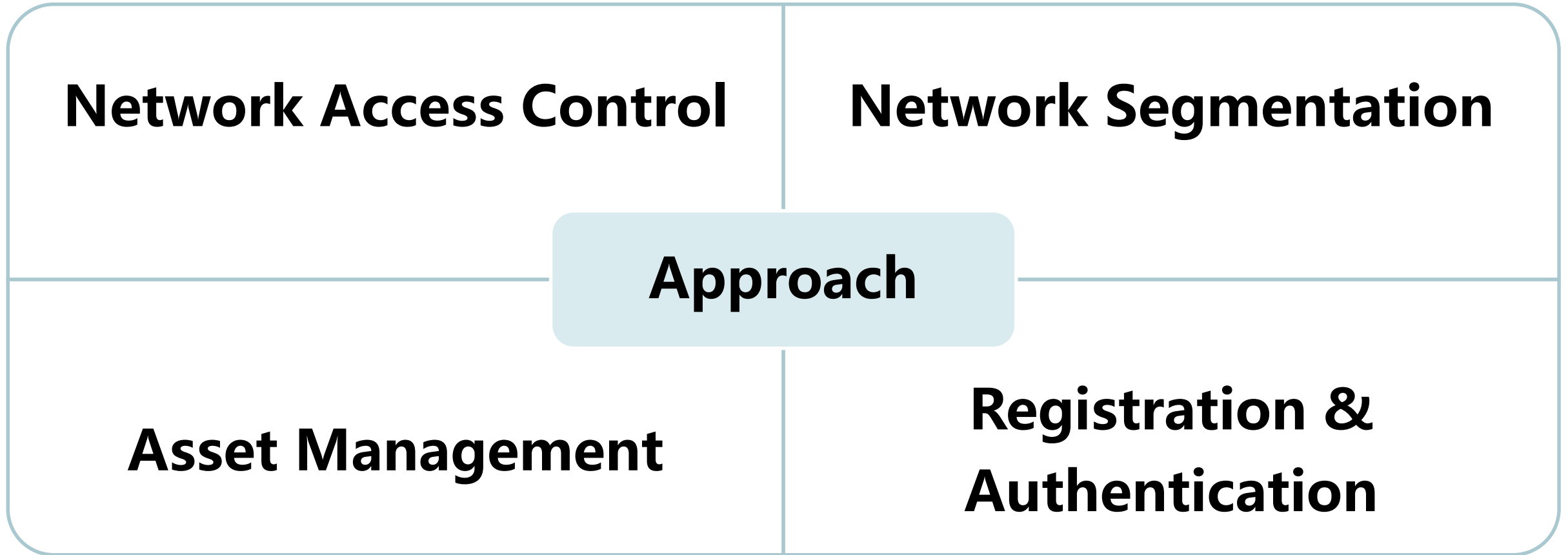
Challenges & Considerations – Building Construction to Technology Readiness

MEDICAL DEVICES		WORKSTATIONS	
VENDORS	SECURITY DEVICES		
	GUESTS		LIGHTING
PRINTERS			
INTERNET OF THINGS			
NETWORK			
POWER		SCHEDULE	
BUILDING CONSTRUCTION			



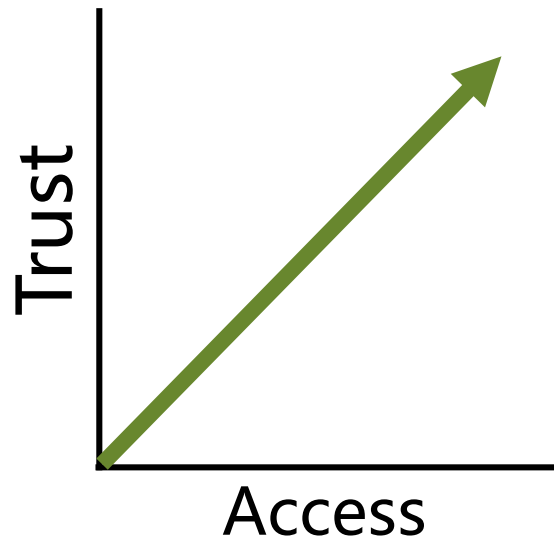
Safeguarding Patient Care Operations

With Network Segmentation & Network Access Control



Safeguarding Patient Care Operations

Our Solution & Approach



Network Segments

Each segment is routed through the internal firewall

MEDICAL DEVICES		WORKSTATIONS	
VENDORS	SECURITY DEVICES		
	GUESTS		LIGHTING
PRINTERS			
INTERNET OF THINGS			



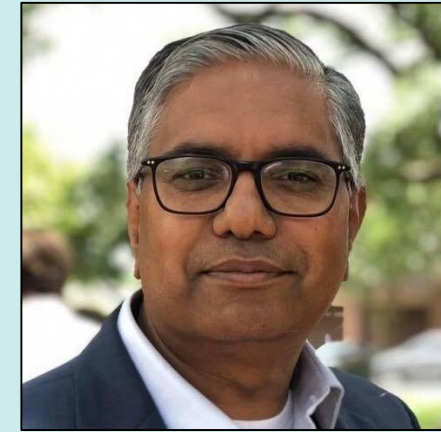
Safeguarding Patient Care Operations

With Network Segmentation & Network Access Control

- ❖ Hospital of the future required innovations in cybersecurity and technology
- ❖ Enterprise-wide collaboration with stakeholders, partners and technology suppliers



- Executives
- Clinicians
- PMO
- Networking
- Infrastructure
- BioMed
- Applications
- Integrations
- Facilities
- Vendors
- Suppliers
- Information Security



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Founded in 1824 in Charleston, The Medical University of South Carolina is the oldest medical school in the South. Today, MUSC continues the tradition of excellence in education, research, and patient care. MUSC educates and trains more than 3,000 students and residents, and has nearly 13,000 employees, including approximately 1,500 faculty members. As the largest non-federal employer in Charleston, the university and its affiliates have collective annual budgets in excess of \$2.2 billion. MUSC operates a 750-bed medical center, which includes a nationally recognized Children's Hospital, the Ashley River Tower (cardiovascular, digestive disease, and surgical oncology), Hollings Cancer Center (one of 68 National Cancer Institute designated centers), Level I Trauma Center and Institute of Psychiatry. For more information on academic information or clinical services, visit muscd.edu. For more information on hospital patient services, visit muschealth.org.