

# ITS Design Challenges for Health Care Facilities

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# Agenda

- Introduction
- Type of Health Care Facilities
- Applicable Standards & Codes
- Regulatory Bodies and Regulations
- Systems Sharing the Infrastructure
- Design Challenges
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  - Power & Cooling
  - Equipment Connectivity
  - Wireless Networks
- Implementation Challenges
- Conclusions



# Introduction

- Health care industry
- Why it's complicated
- Role of the ICT Designer
- Our Experience



# Type of Health Care Facilities

- Hospitals
- Skilled nursing facilities (nursing homes)
- Rehabilitation centers
- Psychiatric facilities
- Ambulatory clinics and surgical centers
- Outpatient clinics
- Acute care facilities



# Applicable Standards & Codes

- ANSI/TIA-1179-A, *Healthcare Facility Telecommunications Infrastructure Standard*
- ANSI/BICSI 004, *Information Communication Technology Systems Design and Implementation, Best Practices for Healthcare Institutions and Facilities*
- NFPA 99, *Health Care Facilities Code*
- Country specific standards and codes



# Regulatory Bodies and Regulations

- Authorities Having Jurisdiction AHJs
  - CMS
  - Department of Health, Ministry of Health
- Patient Information Privacy
  - HIPPA
- Disability Access
  - ADA
- Others
  - AHA
  - OSHPD
  - NFPA



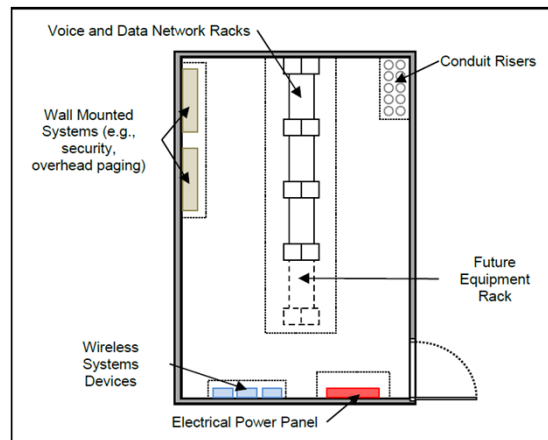
# Systems Sharing the Infrastructure

- Voice/Data
- Overhead Paging
- CCTV and Access Control
- Audio visual
- Distributed Antenna System
- Nurse Call System
- Building Management System
- Intercom
- Integrated Operating System
- Patient Monitoring
- Infant Protection System
- Patient Education/Entertainment
- Environmental Monitoring System

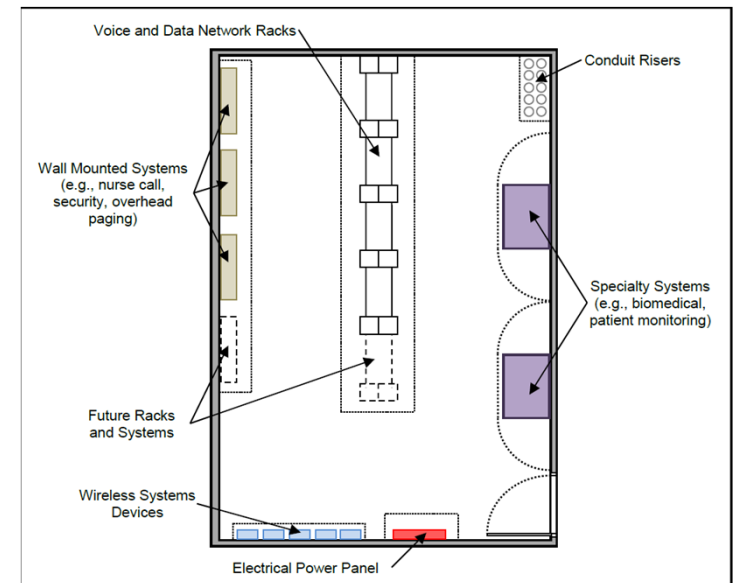


# Design Challenges - Space

- Telecom Rooms (TR) sizing guidelines
- Why do we need more space?
- Sample TR Layouts\*\*



Typical TR – Commercial/Enterprise



Typical TR – Health Care Facility

\*\*Source: ANSI/BICSI 004



# Design Challenges – Power & Cooling

- Calculating Power requirements
  - UPS
  - Emergency Power
  - Redundancy
  - Future growth
- Calculating HVAC Capacity need
  - Redundancy
  - Future growth



# Design Challenges – Equipment Connectivity

- Computers and phones
- Imaging Devices (X-Rays, MRIs, Ultrasound, CT, RT, Mammogram)
- Patient Monitoring
- Security Systems
- Building Management System / Environmental Monitoring Systems
- Entertainment Systems
- Digital Signage and Wayfinding



# Design Challenges – Wireless Networks

- Wireless Medical Telemetry Systems (WMTS)
- Wi-Fi networks
- Distributed Antenna System
- RFID and RTLS
- Emergency Codes Notification Systems
- Legacy Systems\*\*

\*\*Pagers



# Implementation Challenges

- Construction in occupied areas
- Infection Control Risk Assessment (ICRA)
  - HEPA-filtered vacuums and fans
  - Adhesive-faced contamination control mats
  - Zipper lock entrance
  - Contractor health forms



# Conclusions

- Health care facilities add more challenges to ICT designers
- Understand the standards and applicable regulations and codes
- Understand the requirements to develop better design
- Better design helps avoid implementation issues

## Questions?

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