Central Monitoring System (CMS) - Re-Purposing Existing Assets

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SMBE 2025

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Agenda

- Introduction to CMS
- Components of CMS
- Significance of Re-purposing Equipment
- Case Study: Temora Hospital CMS Project
- CMS Software Setup & Configuration Details
- Clinical Feedback & Outcomes
- Questions & Answers

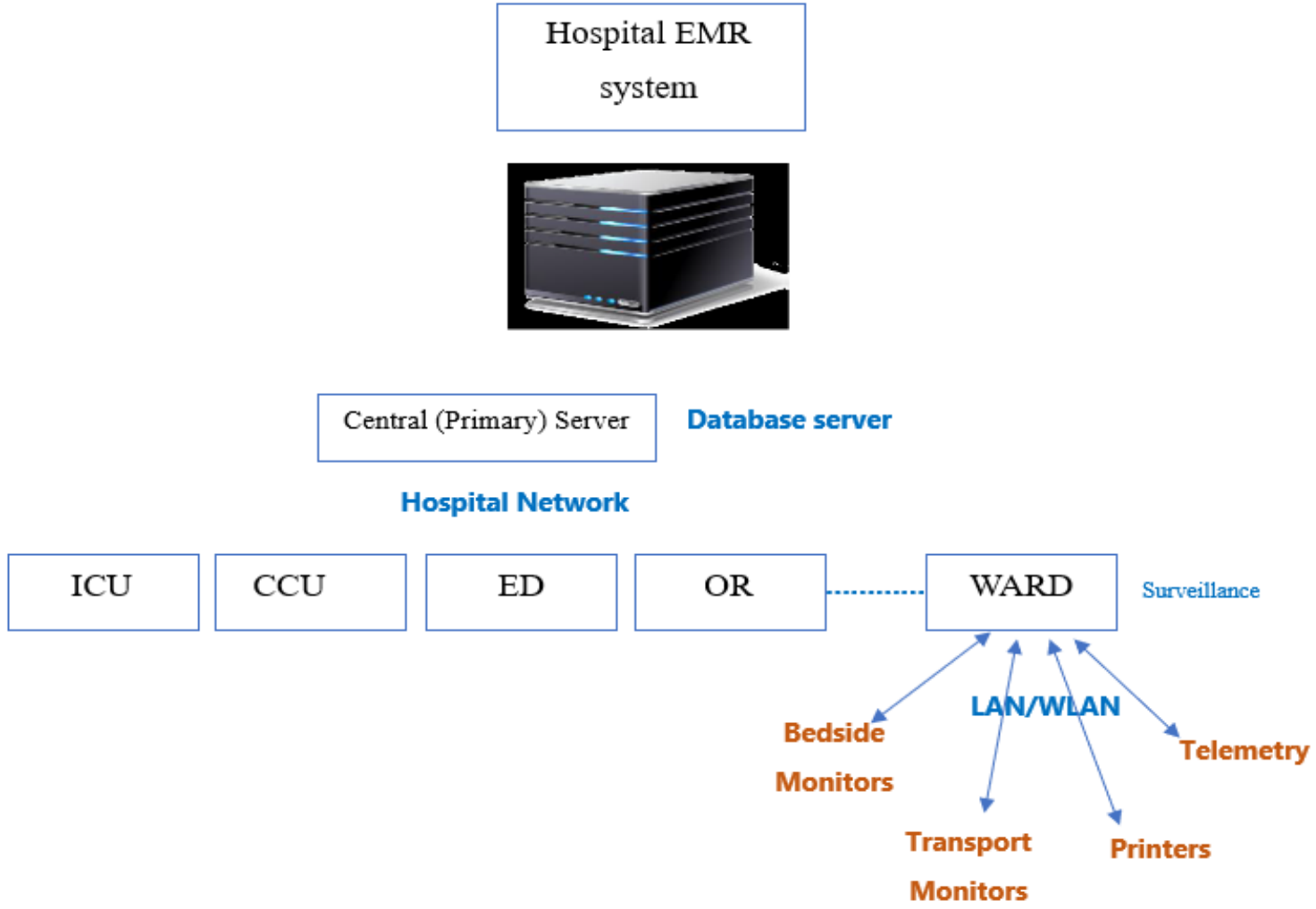
What is Central Monitoring System in Healthcare?

The Central Monitoring System (CMS) is an integrated platform used in hospitals to continuously monitor patient vitals, alarms, and clinical data in real time from various departments enabling real-time data access and alerts for improved patient safety and streamlined workflows.

Historical Context of CMS

- 1960s–1970s: Continuous ECG monitoring introduced in ICUs & EDs.
- 1980s–1990s: Expanded to vital signs (BP, SpO_2) & integrated with hospital systems.
- 2000s–2010s: Wireless networks, remote access, and Internet connectivity.
- 2010s–Present: Cloud-based monitoring, wearables, and EMR integration.

Components of CMS



The Significance of Re-purposing Equipment

Limitations and Challenges Rural & Regional Areas:

- Limited availability of new technology and longer delivery times due to budget constraints.

Solutions:

- Re-purposing existing assets ensures hospitals in remote areas can still implement CMS without waiting for costly new equipment or long delivery times.

Policies for Reusing Assets:

- Refer to Hospital policies on redeploying medical equipment and the processes in place for equipment testing and certification. (What you need to know?)

Pros & Cons of Re-purposing

Pros:

- Cost-effective solution.
- Reduces waste by maximizing the life of existing equipment.
- Minimizes downtime and can be implemented faster.

Cons:

- Older systems may face compatibility or integration issues.
- Potential need for extra maintenance and support.
- End of Life (EOL) : Addressing challenges when dealing with equipment approaching its EOL, and how to ensure continuous support for re-purposed systems.

Case Study - Temora Hospital

Aim

To prepare and integrate a Central Monitoring System for Temora Hospital by the end of Dec 2024.

- **Overview of Temora Hospital**:
  - 28 beds, Level 2 Hospital, located in a rural area.
  - Challenges with acquiring new technology is mainly due to budget constraints.
- **Budget Analysis**:
  - **In-House Resources**:
    - **IT**: Supported in system's integration with hospital network infrastructure & HL7
    - **Biomedical**: Master-planned the setup of medical devices
    - **Manufacturer**: Assisted in providing software and configuration support
    - **Maintenance**: Onsite support and Installation
  - **Costs**:
    - $5930 for equipment like **Arms Wall Mount** from vendor
    - $4000 for **Network Port Installation** from local service provider
    - **Telemetry** : Not demanded by the facility due to future redevelopment project
- **Consultation & Location Mapping for Patient Monitors**:
  - Stakeholders (Clinicians, IT, Biomed), collaborated to design required plan for designated bed spaces

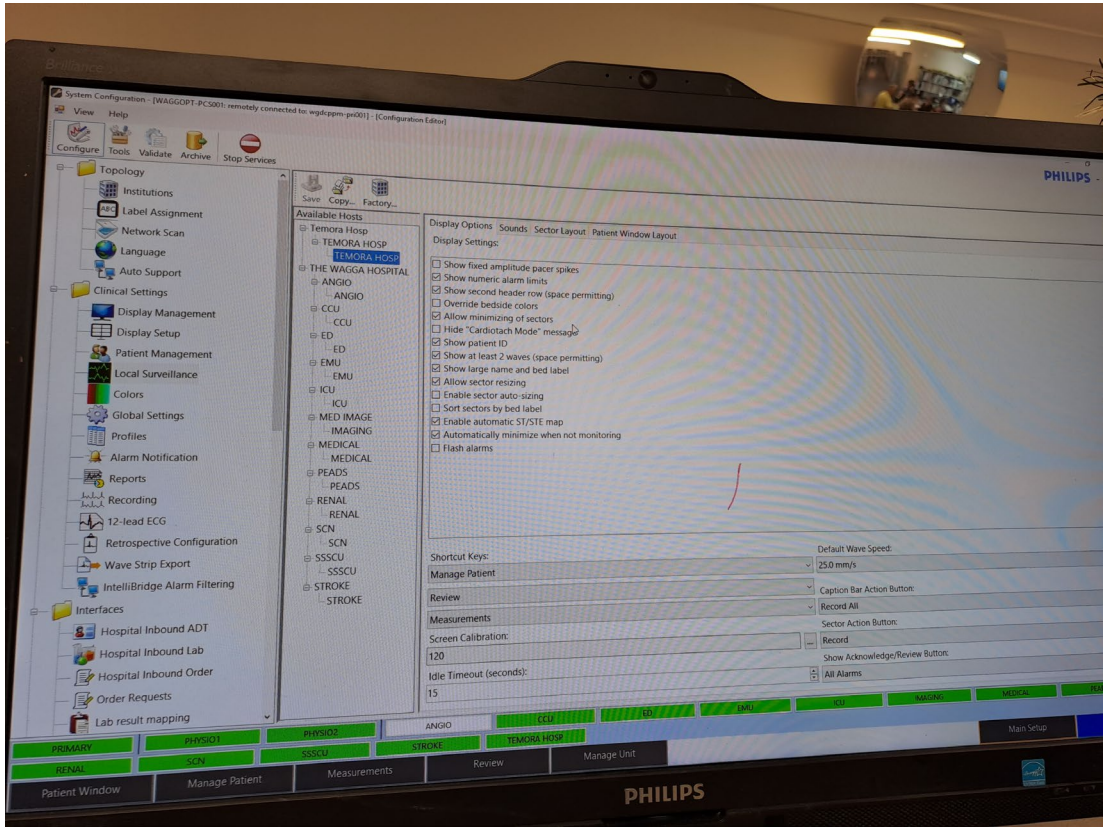
Biomedical Hardware Integration - Onsite

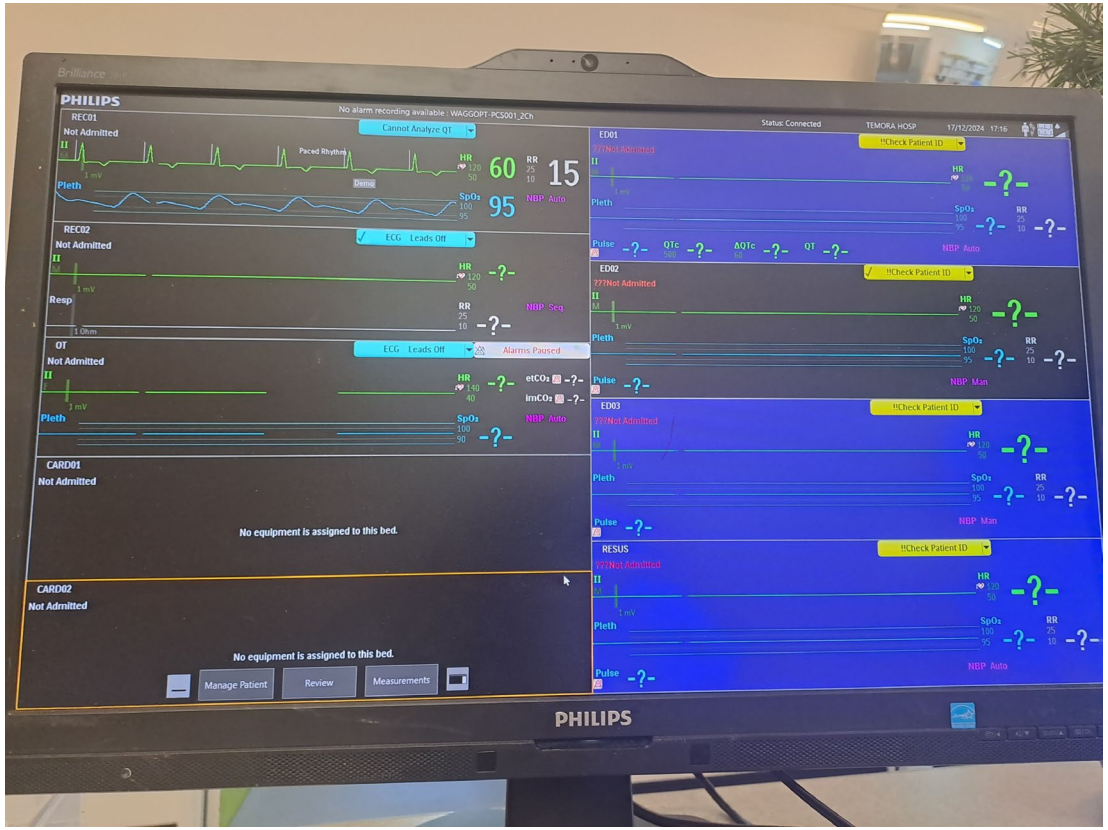
- 1x Central Station
- 4 x monitors in ED including Resus
- 1x monitor for OT
- 2x monitors for Recovery unit
- 2x monitors for Cardiac Rooms
- Total: 9 (sectors integration)
- Printer, Alarm speaker and UPS
- Patient monitors with Multi-measurement Modules & consumables(iProcurement)

CMS Software Setup & Configuration Details

- **Integration with Base Hospital Network**:
  - CMS system was integrated with the Base Hospital's to allow seamless data sharing over the hospital network by DNS entry & static IP allocation
- **Server Connectivity:**
  - Connecting CMS to the hospital's network and ensuring stable server communication for real-time updates and visibility.
- **Remote Access to CMS**:
  - Enabling remote access so biomed can monitor system status off-site, improving responsiveness in emergencies.
- **Hospital Printer & UPS Setup**:
  - Configuring Hosp local printers for hard copies to study patient retrospective data and integrating an Uninterruptible Power Supply (UPS) to ensure constant power availability in case of power failure.

Installation Completed





Clinical Feedback & GO Live

- **Clinical Configuration Sign-off**:
  - Final essential step is to obtain clinical feedback and ensure the system meets healthcare providers' needs before going live.
  - The CNE then decent the information to all users and collaborate with Base Hosp
- **Go Live Date**:
  - Official date when the CMS is fully operational at Temora Hospital.
  - Celebrating the success of the project and its positive impact on patient care.

Outcomes

- **Financial Impact**:
  - **Cost Savings**: The CMS implementation cost only 10% of the price for a new system, making it a very cost-effective solution.
- **System Understanding**:
  - It has improved understanding of the system & up skill the clinical staff
  - Will provide ideas to new users for all future purchases and help solidify plans for redevelopment
- **Collaboration with Other Departments**:
  - Acknowledging the vital role of interdepartmental communication and teamwork in making the project a success.
  - Will also tackle the troubleshooting for any future breakdown due to good foundation
- **Limitations**:
  - **Single Server**: Having one server to support the entire network could lead to bottlenecks or system failure.
  - Other thoughts on continuous improvement and future upgrades.

Conclusion

- **Summary**:
  - The project at Temora Hospital successfully re-purposed existing equipment, addressing limitations in rural healthcare while staying within the budget.
  - The project demonstrated how collaborative efforts across departments can lead to successful implementations despite challenges.
- **Future Considerations**:
  - Potential for future CMS upgrades, integrations with other hospital systems, and continued expansion to other sites.

Questions & Answers