VitalCore: Analytics and Support Dashboard for Medical Device Integration

Hyonyoung Choi *, Amanda Lor +, Mike Megonegal +, Xiayan Ji *, Amanda Watson *, James Weimer *, Insup Lee *

*University of Pennsylvania, Penn Medicine +
Medical Device Integration at Penn Med

3000+ Integrated Medical Devices
36 HL7 Servers
13 Facilities
7 Vendor Networks

When these devices malfunction

Reactive Troubleshooting
- Extended Downtimes

Manual Documentation
- Errors
- Manipulations
- Omissions
Troubleshooting

Receive ticket from service desk

Identify device info using Excel

Retrieve server info and login

Login to server/webpage

Launch HL7 Tool

Search for HL7 Message

View HL7 Message

Taking Upwards of 5.5 minutes
Web-based dashboard for medical device integration analytics and support

**FEATURES**

- Identify all medical devices on the network
- Monitor connectivity status of all integrated medical devices in real time
- View HL7 data output from all devices, no matter the vendor
- Use existing hospital hardware and network infrastructure

View connectivity and data output from all integrated medical devices on the hospital network, no matter the device type, vendor, or location
System Architecture
Troubleshooting

Before VitalCore

Receive → Identify → Retrieve → Login → Launch → Search → View
- Receive ticket from service desk
- Use excel to identify device info
- Retrieve server info and login
- Login to server/webpage
- Launch HL7 Tool
- Search for HL7 Message
- View HL7 Message

After VitalCore

Receive → Login → Search → View
- Receive ticket from service desk
- Login to VitalCore
- Search for HL7 Message
- View HL7 Message
Evaluation - Troubleshooting

3.8 to 6x faster to retrieve HL7 Messages
Anomaly Detection

Detected Anomalies:

• Single and Groups of Devices
• Minute, Day, Weekday, Weekend, Week, Monthly

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Ventilation Alert

Respiratory Therapist

Telemedicine Respiratory Therapist
## Related Systems

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Conclusion

• VitalCore is a medical device integration platform that supports clinical decisions
  • Reduces manual documentation of medical device data
  • Provides access to real-time, accurate data in the EHR

• Deployed in 3 real world applications at Penn Medicine:
  • Medical Dashboard, reduced the amount of time required of medical professionals, clinical engineers, and IT analysts by up to six times when troubleshooting.
  • Ventilation Alert extracted ventilation information and alerted appropriate personnel.
  • Anomaly Detector detected anomalies in device usage to change troubleshooting responses from reactive to proactive.
THANK YOU!

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