

# HTM CMMS 2035

## Presenters:



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# WHY?

- Aging Workforce (from 24X7 Annual Salary Survey)
  - Average – 49.5 yrs.
  - 27% over 55
  - 24% under 30
- Unemployment (from U.S. Bureau of Labor Statistics)
  - 3.6% Overall
  - 2.3% in Healthcare Sector
- Fewer Schools to train new people

- How many...
  - Fully staffed?
  - Face staff losses due to:
    - Retirements?
    - “The Great Resignation?”
  - Have opportunities that would require additional hours/staffing?

# EFFICIENCY

- Document
- Aggregate by Work Type
- Determine what Good Looks Like
- Identify Waste
- Eliminate Waste



**DATA INTEGRITY!**

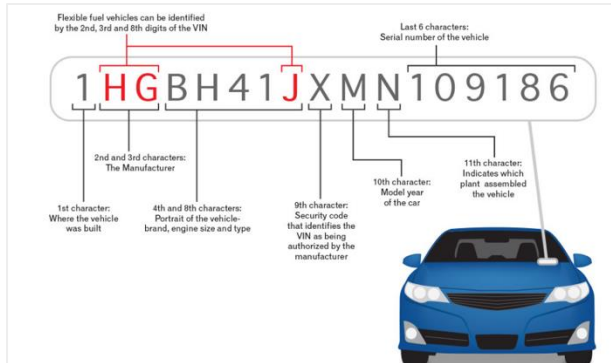
# Brief Overview: GMDN & GUDID

Goal: Create a system using Unique Device Identification “UDI” for all medical devices, similar to the auto industry that can track recalls and user information using the VIN #

GMDN: Global Medical Device Nomenclature

GUDID: Global Unique Identification Database

Based on ISO 15225



**UDI = DI + PI**

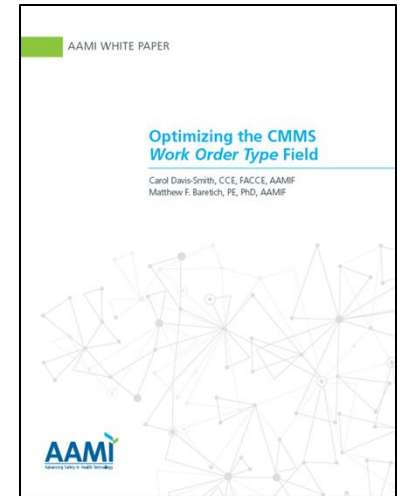
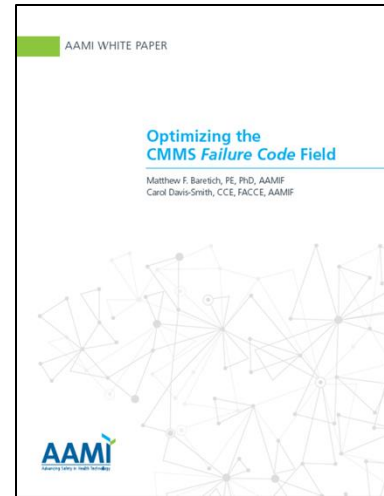


**Device Identifier(DI)** = mandatory, fixed portion of a UDI that identifies the specific version or model of a device and the labeler of that device

**Production Identifier(PI)** = a conditional, variable portion of a UDI that identifies one or more of the following when included in the UDI:  
Lot or batch number, Serial number, Expiration date, Manufacturing date, and, for an HCT/P regulated as a device, the distinct identification code

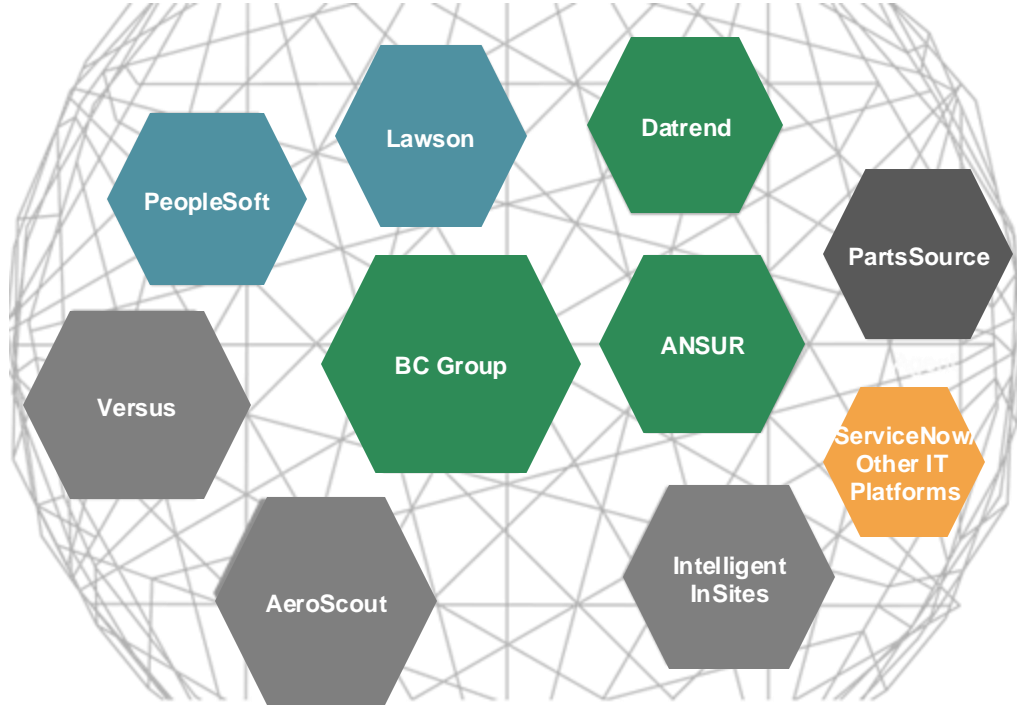
# What Exists Today?

- Standardized Codes
- Rigid Documentation Standards
- Automations
- Integrations/Interfaces
  - Enterprise Resource Planning (ERP)
  - ServiceNow/CMDB
  - Cybersecurity/Network Monitoring Tools
  - RFID/RTLS
  - ADT
  - Recalls
  - Time/Resource Platforms
  - BAS
  - IoT
  - Automated Test Equipment



# Integration Opportunities

Variety of Integrations available including custom interfaces



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Purchasing

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Test Devices

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RTLS

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Parts

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CMDB

# AUTOMATION

- CMMS

- Auto-assignments
- Failed PM
- Incoming Inspection
- Could Not Locate
- Removed from Service/Retired



# AUTOMATION

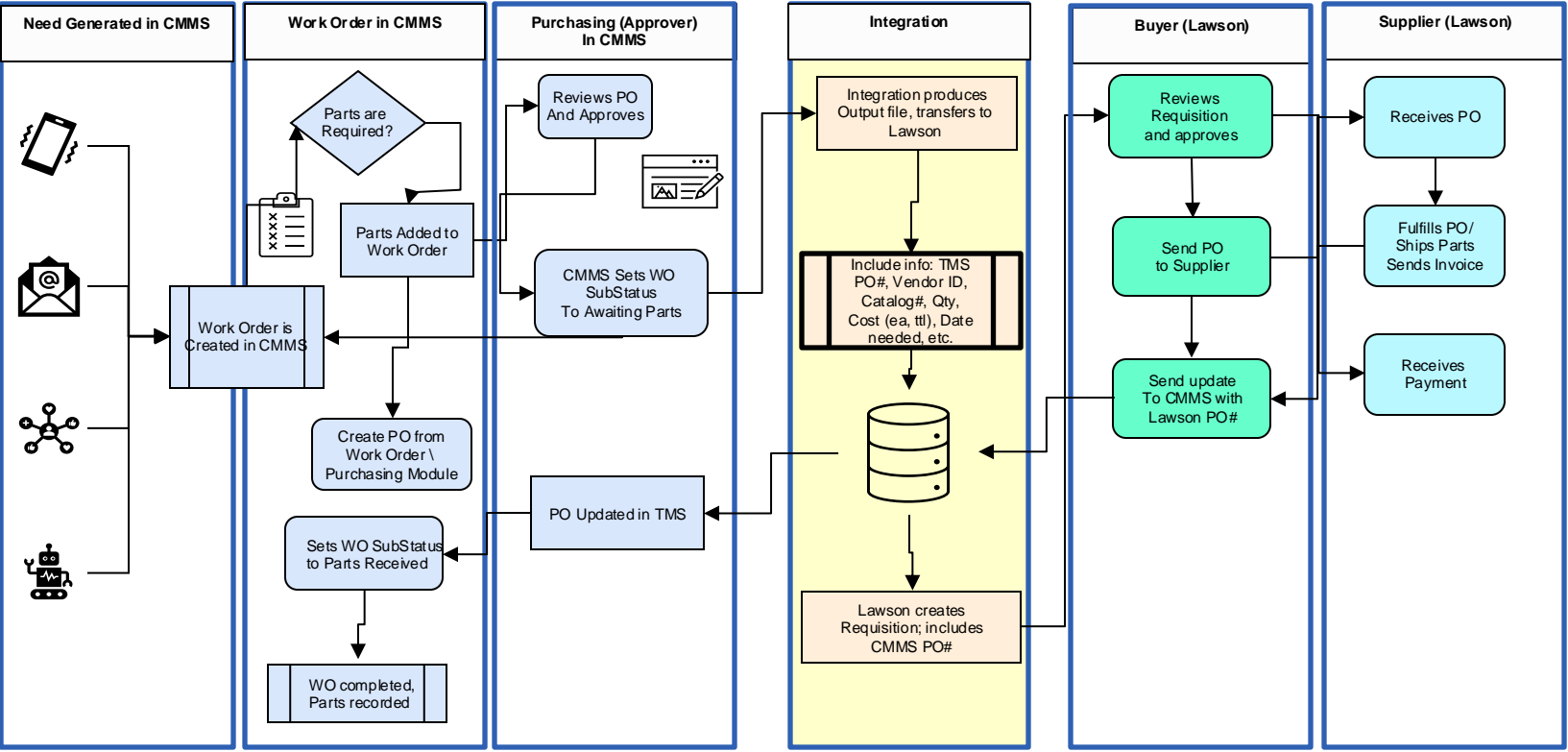
- CMMS (cont.)
  - Transfer of Work Order
  - Vendor Notification
  - Equipment Transfers
  - Equipment Reactivation
  - Mass Edits



# Parts\Purchasing (Lawson) (ERP)

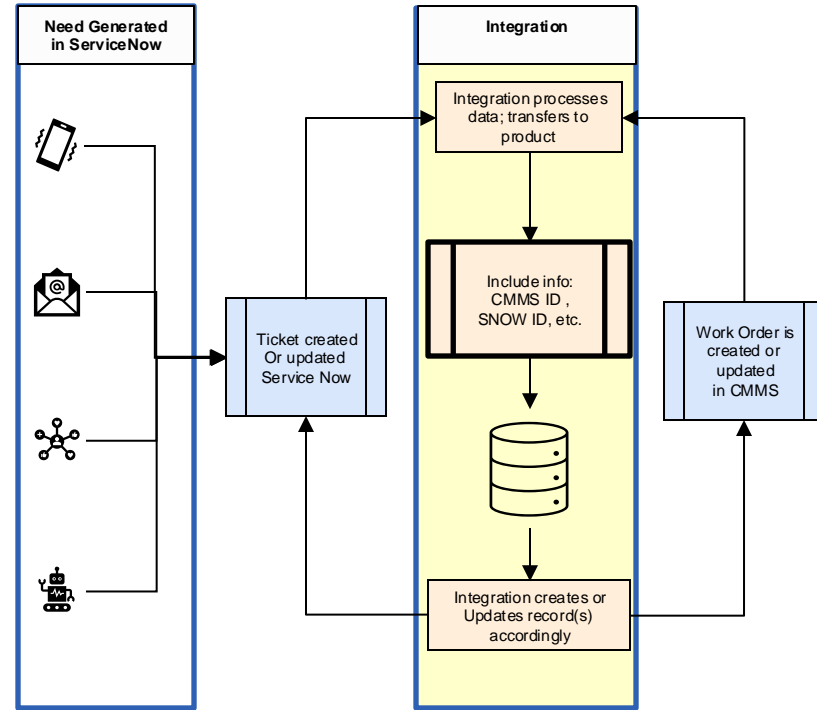
- Time spent ordering parts\services\contract activity can be substantial
- Errors add cost and delays
- Automated processes increase lifecycle & cost accuracy

# Parts\Purchasing (Lawson) (ERP)



# ServiceNow

- Share data between CMMS and ServiceNow (increase efficiency, eliminate manual processes, reduce errors)
- Necessary with blurred responsibilities between HTM & IT (clarity)
- Especially helpful with “mistaken” submissions
- CMDB management



# Cybersecurity

- Identify
  - connected devices
  - risks inherited with connected devices
  - risks due to aged OS
- Provide inventory-related documentation
- Generate action tickets on affected devices
- Identify assets by network
  - unplanned outages
  - planned maintenance
- Remediation planning

### Network

DICOM

AE Title

#### Wireless

IP Addresses	IP Type	IP Version	
127.000.000.001	Dynamic	IPv4	

#### Mac Addresses

ab:ab:ab:ab:ab:ab	
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### Software

Software Version

OS Developer

OS Version

Firmware Version

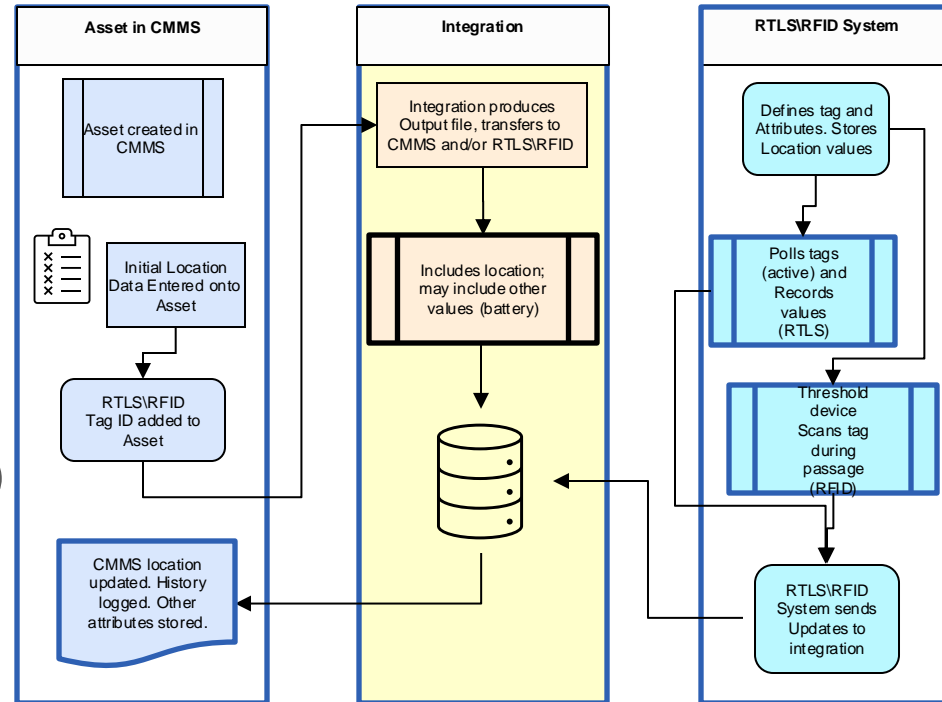
BIOS Version

#### Installed Software

Name	Version	Revision Level	Install Date	Method Used	
AIMS3	3.0707		09/05/2023 4:00 am		 

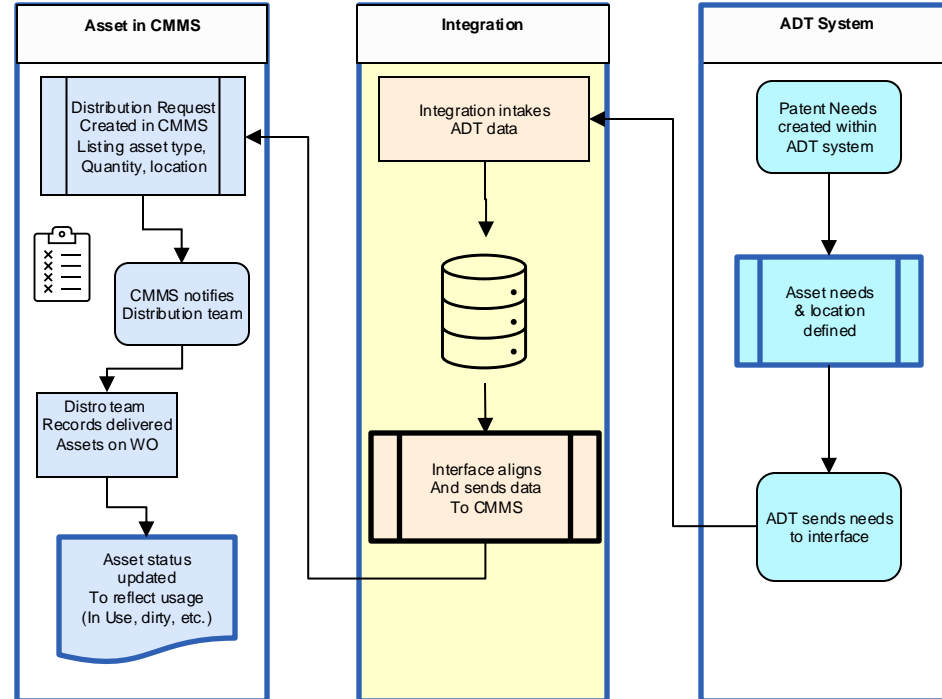
# RFID\RTLS

- Know what you have & where it is (inventory clarity)
- Decrease “overstock” of inventory (lower capital)
- Feed availability (distribution)
- Increase trust in ability to deliver what & when (fulfillment)



# Admissions\Discharges\Transfers (ADTs)

- Automated notification of needed devices (qty, type) – usually one-way (ADT to CMMS)
- Easily distributed to delivery team
- Update delivered assets to identify state (in use, dirty, etc.)
- Feed into equipment distribution & monitoring



# Recalls

- Vital to asset safety
- Timeliness of receipt is critical
- Automatically identify affected assets, produce WOs, track & document completion
- Report activity to manufacturer

The screenshot displays the 'Parent/Child Work Orders' interface. On the left, a list of work orders is shown, with 5817 selected. On the right, a detailed view for work order 5817 is displayed, showing the following information:

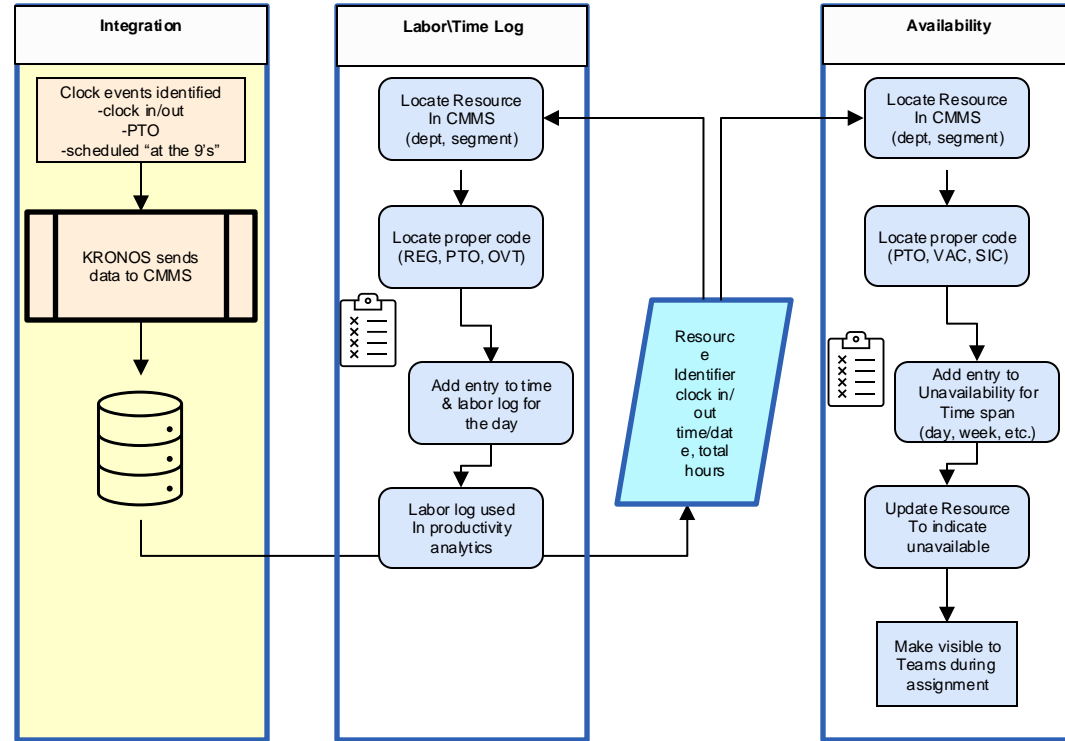
- Work Order\*: 5817
- Type: Hazard Alert -Recall
- Status: Open
- Problem: AED Recall 2023
- Job Type:
- Due Date: 09/05/2024 01:26 PM
- Estimated Hours:

The screenshot shows the AIMS3 software interface. The top navigation bar includes the AIMS3 logo, a menu icon, a 'Test Site' label, a 'Go To' button, and a user profile icon. The breadcrumb trail reads: Req: 1234 > Req: test > Req: REQ-1064 > PO: 1234 > PO: 1 > Part: PC100 > WO: 5815 > Part: 60001 > WO: 5816 > WO: 5817. The 'Request Information' section is visible, containing the following data:

- Work Order #: 5817
- Request Date: 09/05/2023 09:26 AM
- Status: Open
- Status Date: 09/05/2023 09:26 AM
- Type: Hazard Alert -Recall
- Requester:
- Phone #:
- Problem: AED Recall 2023
- Email:

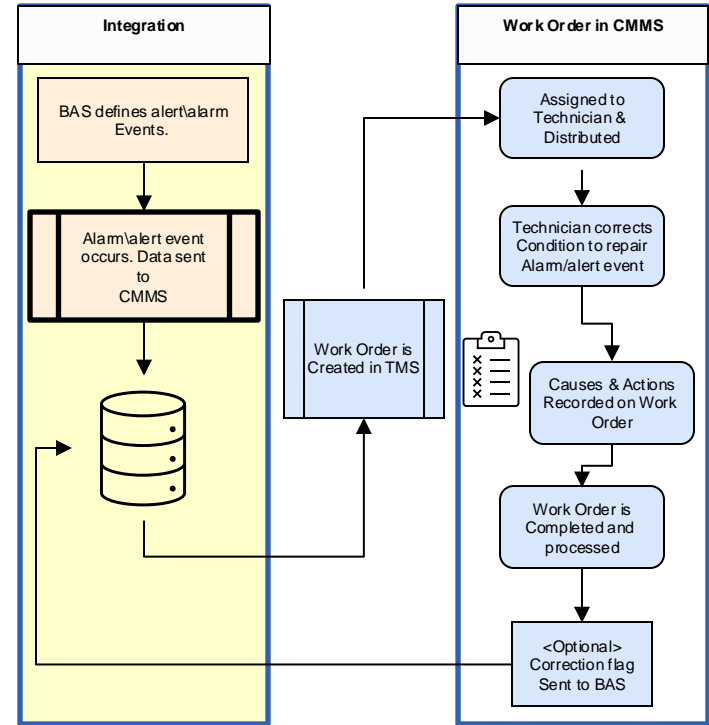
# Time\Resource

- Productivity analysis
- Knowing who is available for work distribution
- Planning and scheduling
- Workload balancing



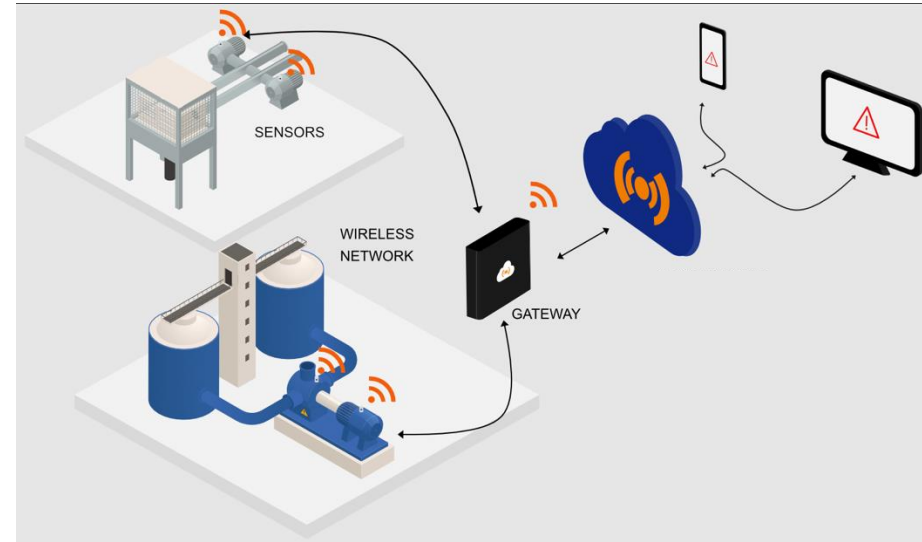
# Building Automation Systems (BAS)

- Organization-defined events
- Increase tracking of events; link to SSA involved
- Automate notifications of events to service team(s)
- Lifecycle and cost of ownership
- Automate notifications of service interruptions to hospital staff



# IoT (Internet of Things)

- Uses equipment condition
- Predictive vs. Reactive
- Reduced PM activity
- Increased reliability
- Lower resource utilization



# AUTOMATION

- Test Equipment
  - Fluke OneQA
  - Pronk Mobilize
  - Datrend



# Automation Case Study – Pronk Mobilize

- Wireless Automation via iOS App on Smart Device



**Safe-T Sim<sup>®</sup> Mobilize**  
Safety Analyzer



**SimCube<sup>®</sup> Mobilize**  
ECG, Resp, IBP,  
NIBP Simulator

Datrend  
Systems



BC Group  
Int'l



**FlowTrax<sup>®</sup> Mobilize**  
IV Pump Analyzer/Press. Meter



**DxSim Flex<sup>®</sup> Mobilize**  
SpO2 Simulator

# Carescape: Manual vs. Automated Time Comparisons - Net Effect

## Mobilize Automation PM Time

Medical Device	Manual Avg. Time (Min.)	Manual Avg. Time (Decimal Min.)	Mobilize Avg. Time (Decimal Min.)	Delta: Time saved / PM	% Time Saved	Total Hours Saved Annually
2016793-003 MASIMO	32:51	32.85	18.01*	14.84	45.17%	219.10
B650	33:04	33.07	10.76*	22.30	67.45%	371.33

## Key Factors Contributing to Time Savings

- Mobilize checklist contains all steps required per OEM protocols, eliminates need to dig through service manual for details
- Instant wireless setting of all test equipment parameters, Pass/Fail tolerances, per manufacturer specs.
- All results captured electronically. Eliminated need to manually enter each result into CMMS

\*Mobilize time does not include tech. admin time to close out WO (currently 4-6 min.). This is automated depending on CMMS.

# Tomorrow?

- Greater Standardization (Nomenclature, CMMS Codes, Processes and Procedures)
- AEM Automation
- VR Training
- Predictive Maintenance Equipment Integrations
  - Smarter Equipment
- OEM CMMS Integrations (Electronic FSRs)
- Automated Staffing Analysis

# Annual Manning Analysis

<b>Modality</b>	<b>Metro Net Adds</b>	<b>Metro hrs/year</b>	<b>Central Net Adds</b>	<b>Central hrs/year</b>	<b>KM Net Adds</b>	<b>KM hrs/year</b>	<b>North Net Adds</b>	<b>North hrs/year</b>	<b>South Net Adds</b>	<b>South hrs/year</b>	<b>System Total hrs/year</b>	<b>FTE's</b>
<i>General Biomedical Totals</i>	903	1447.30	736	971.80	-161	-10.28	802	990.32	474	464.78	3863.92	3.14
<i>Biomedical Specialty Totals</i>	54	92.10	18	104.93	8	50.95	15	77.02	19	66.17	391.17	0.32
<i>Imaging Group I Totals</i>	78	241.80	35	468.99	12	50.71	26	371.44	37	453.28	1586.22	1.29
<i>Imaging Group II Totals</i>	67	302.58	49	209.33	20	17.00	51	95.43	44	83.36	707.70	0.58
<b>TOTALS</b>	1102	2083.78	838	1755.05	-121	108.38	894	1534.21	574	1067.59	6549.01	5.32

<b>Modality</b>	<i>Total Hours Added</i>	<i>Available Device Hours per FTE</i>	<i>Total FTE's</i>
<i>General Biomed</i>	3863.92	1230.25	3.14
<i>Biomed Specialty</i>	391.17	1230.25	0.32
<i>Imaging I</i>	1586.22	1230.25	1.29
<i>Imaging II</i>	707.70	1230.25	0.58
<b>FTEs All Modalities</b>	6549.01	1230.25	<b>5.32</b>

*Productivity = 100.8%*

## **Inventory Growth**

<i>Aurora Total Inventory 8/22/2006</i>	45,501
<i>Net Adds 08/23/2006 to 8/07/2007</i>	3,287
<i>Aurora Total Inventory 8/7/2007</i>	48,788
<b>Percentage Inventory Growth</b>	<b>7.22%</b>



2035?

# 2035?

- Quantum Computing/Quantum Networking
  - Greater/faster communication
  - Much higher levels of integration
  - Preventive Maintenance replaced with Predictive Maintenance
  - Neurolinks/Nanotechnology

# 2035?

- AI Predictive Maintenance
- Notification of Equipment Availability
- Problem/Solution Database (Notification)
- Accurate & Effective Equipment Location and Utilization Tracking
- Remote Diagnostics
- Remote Experts/AI Tech Support
- Screenless Pcs/Holographic images
- Access through phone/watch



 **MD EXPO**  
New England • October 8-10, 2024



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