



# INDUSTRIAL IOT ANALYTICS & HEALTHCARE INDUSTRY

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# OBJECTIVES OF TODAY'S SESSION



- Why Industrial IoT Analytics & Healthcare – Key Trends
- Healthcare Providers & Manufacturers – Different Use Cases
- Real life examples & Case Studies



The Internet of Things (IoT) with an ever-growing number of inter-connected machines, systems and devices generates vast amounts of data called “Machine Data” that is complex in variety, volume and velocity. *Glassbeam knows how to handle this complexity through its patented cloud-based technology.*

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## Recognized Leader in IoT Analytics



# ABOUT CETAS HEALTHCARE

# cetas

healthcare

Insights + Intelligence = Impact

We help our clients solve critical problems and make impactful decisions using insights derived from data and analytics

[www.cetas-healthcare.com](http://www.cetas-healthcare.com)



## SNAPSHOT

**6** OFFICES  
ACROSS THE GLOBE

**75** COUNTRIES  
RESEARCHED SO FAR

**100** Projects  
OVER 100 HAPPY CLIENTS AND COUNTING

**13/20** MEDICAL DEVICE COMPANIES ARE OUR REGULAR CLIENTS  
13 OF TOP 20 MEDICAL DEVICE COMPANIES ARE OUR REGULAR CLIENTS

**100%** Client retention  
ALL CLIENTS HAVE COME BACK FOR REPEAT BUSINESS OR ADVISORY

**35** OVER 35 WORKSHOPS CONDUCTED ON CLIENT'S REQUESTS TO EDUCATE PRODUCT TEAMS ON APPLICATIONS OF MARKET RESEARCH

VISIT [WWW.CETAS-HEALTHCARE.COM](http://WWW.CETAS-HEALTHCARE.COM)

# Huge Potential for IoT Impact in Healthcare industry

\$2.5  
Trillion

Predicted global  
worth of IoT in  
healthcare  
industry by 2025

Source: GE, Intel

Deployment of Industrial Internet  
can help to drive down costs  
from clinical and operational  
efficiencies by roughly 25% or  
over **\$100 Billion** per year



# What is Common Amongst All These Medical Machines?



These are all highly engineered expensive machines



They all generate vast amounts of operational and procedural log data



All these machines are increasingly connected on the Net or secure WiFi



Manufacturers are waking up to the value of this Big Data Analytics

- Two Different Segments – Two Different Use Case Types

**Manufacturers**



**Improve Service Management**

**Derive Product Insights & Usage Intelligence**

**Provider Hospitals**



**Recover “Lost” Revenues with higher System Uptime**

**Manage Assets & Track Inventory**

# MEDICAL DEVICE MANUFACTURER MARKET – IMAGING EQUIPMENT

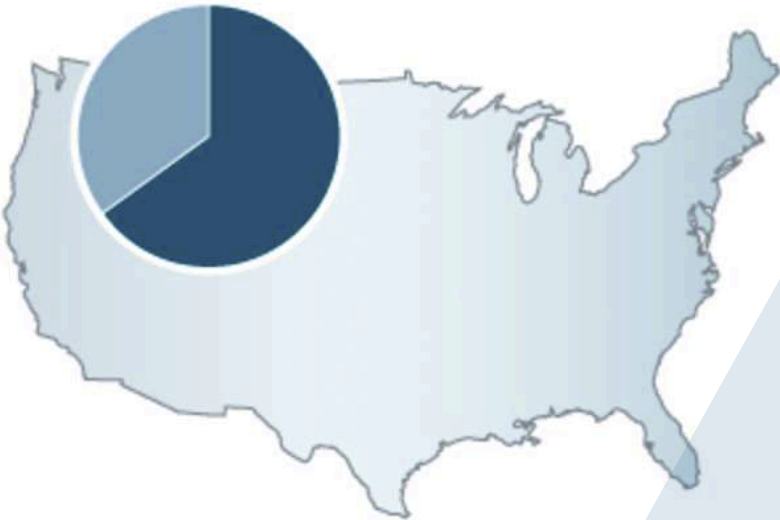


**500K to 750K**

5% CAGR WW unit growth  
2015-2020 in Imaging  
Equipment Market

## Top 5 OEMs

- GE Healthcare
- Siemens
- Philips
- Toshiba
- Hitachi



**60%**

of North American  
medical imaging  
equipment is  
connected



## Potential IoT solutions:

- Remote connectivity and remote management
- Automated troubleshooting and diagnostics with Rules Engine
- Machine learning & Predictive analytics

## Expected ROI:

**50%** reduction in parts replacement resulting in \$millions savings per year

**80%** Mean Time to Resolution (MTTR)

**\$2,000** reduction in service costs for machines repaired remotely

# Ultrasound Machine Manufacturer - Use Case



- Customer Portal:
  - Machine inventory and utilization patterns
  - Comparison of exam time per Sonographer
  - Improve training modules based on metrics observed

# Ultrasound Machine Manufacturer - Use Case



- Product Management & Engineering:
  - Application & Feature Usage
  - # of images per exam
  - # of user operations per exam

# Ultrasound Machine Manufacturer - Use Case



- Global Support & Services organization:
  - Identify issue signatures
  - Trend sensor readings with thresholds
  - Recommendations and corrective action



# Asset Utilization

< ClevelandClinic - Exams Analysis



Asset Utilization

Operator Utilization

Device Health Summary

Scanners

3

Total Exams

42

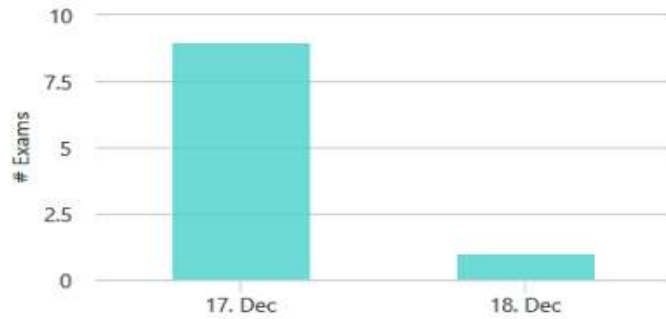
Total Duration (hours)

23.59

Average Duration (mins)

33.7

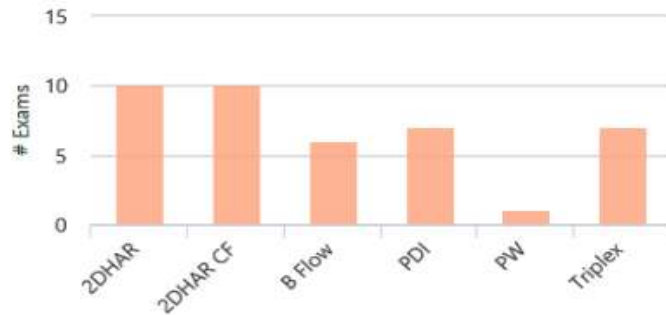
Exams Per Day



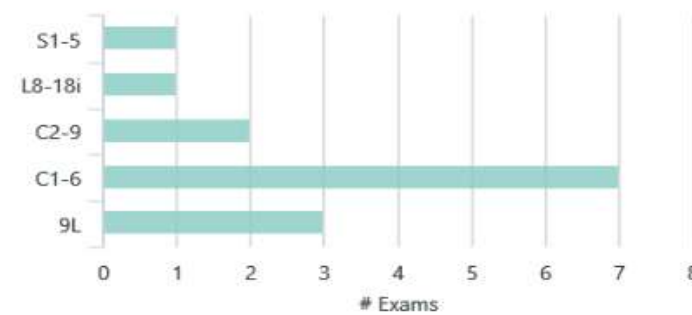
Applications



Modes Used



Probes Used



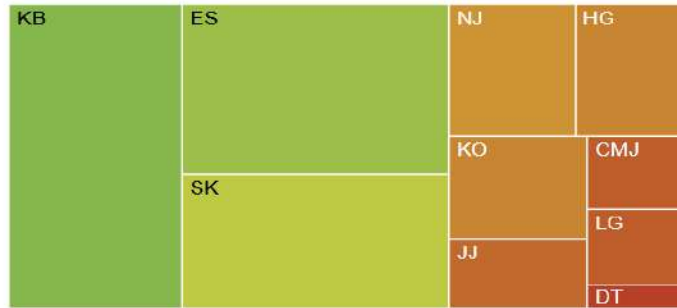
# Operator Utilization

## GMBC - Exams Analysis

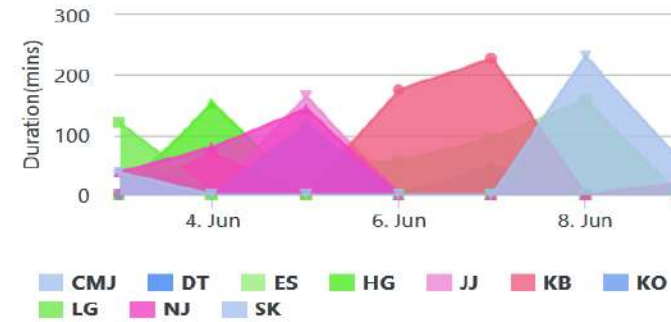


Asset Utilization **Operator Utilization**

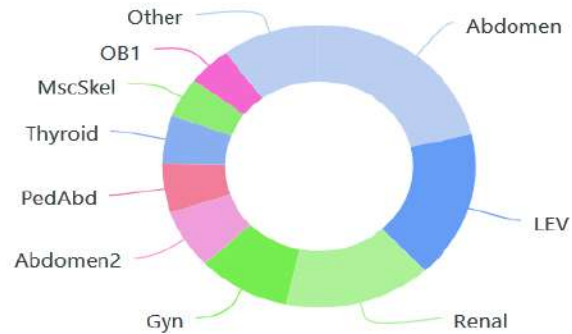
Exam Volume per Referring Physicians



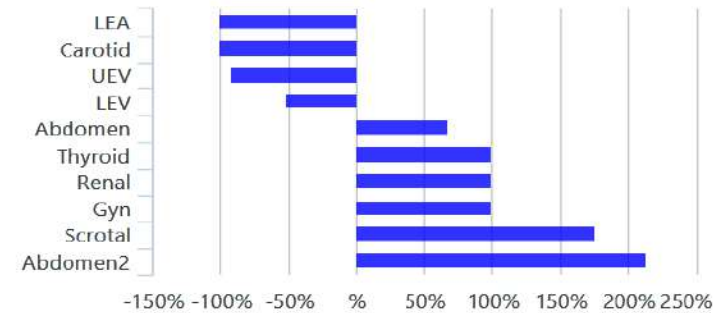
Utilization Time by Referring Physicians



Applications



Growth Rate of Top 10 Ordered Exam



# Support Analytics for Field engineering



[ClevelandClinic - Exams Analysis](#) 🕒 🗑️ 📄 📄

Asset Utilization | Operator Utilization | **Device Health Summary**

Asset Serial Number : 12824136G

Summary | Temperature | Voltage

### System Information

Computer Name: LOGIQE9-200268

Connectivity Status: [Details](#)

Product: Radiology Ichiro

Serial Number: 12824136G

SW Version: R6.1.1

### System Health Check

- Temperature
- Voltage
- Dicom Status
- Spooler
- Network: Wired

### Time Machine

Observation Date: [Log](#)

12/18/2015 07:18:32 ClevelandClinic-R611-AC\_Stuck

### Software Status

Observation Date: Friday, December 18, 2015 7:18:32 AM

SW Part Number: 5641078

System Platform: Ichiro

Install Date: 15.06.12

### Alerts By Severity

Severity	Count
HIGH	2
MEDIUM	4

### Alerts By Category

Category	Count
BUG	1
Front Pane...	1
MRX Init E...	1
UDT Errors	1
Unproper S...	1
User Event...	1

### Alert Details

Title	Category	Severity	Recommendation	Count
Looking for Unproper Shut-down	Unproper Shut-down	HIGH		3
UDT Interface	BUG	HIGH	eFMI 70218. Solved in R6.1.11 <a href="#">Click to view details</a>	1
Looking for MRX Init Errors	MRX Init Errors	MEDIUM		13
Looking for Front Panel Errors	Front Panel Errors	MEDIUM		12
Looking for UDT Errors	UDT Errors	MEDIUM		1
Looking for User Events (ALT-1/2 Button Presses)	User Events (ALT-1/2 Button Presses)	MEDIUM		1



Improving equipment SLA for MRI and CT Scan from 99% uptime to **99.9% uptime** resulting in **\$6.5M recovered rev/year**

**\$900K opex savings per year** by proactive failure analysis on Halogen levels in MRI and Tube replacement in CT Scan machines





VISIT US AT **BOOTH 436** FOR  
LIVE DEMO AND DISCUSSION

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