

Smart Healthcare Facilities

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Challenges in Healthcare Facilities

Even before the COVID-19 outbreak threatened to overwhelm hospitals, clinics and other medical facilities with a novel and deadly Coronavirus, momentum had been building in the Healthcare Sector to apply technology to the challenge of controlling Hospital Associated Infections (HAI).

While in the past these efforts focused on protocols to prevent the spread of antibiotic resistant bacterium, the COVID-19 outbreak throws a light on another, potentially more difficult challenge: How to treat affected patients while preventing the virus – to which no human has a natural immunity – from overwhelming the hospital, its staff, patients and their families.

As per CDC, 1 in 31 hospital patients has at least one Healthcare-Associated Infection

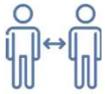
Expectations on improved patient experience to be balanced with increasing cost of healthcare.

Solutions to monitor space, asset, and staff are not cost effective and require heavy staff involvement



Strategic Drivers for Healthcare Facility Transformation

Short-Term



COVID-19
Response



Adapt enhanced
cleaning
practices



Manage
In-Space
Occupancy



Improve Service
Experience

Long-Term



Optimized and
safe spaces



Sustenance
focus



Integrated
systems



Compliance
reporting and
accuracy



This is enabled by creating Digital Twins of the Physical World



“About one-third of the commerce generated by what's estimated to become a 300B Smart Hospital Industry by 2028 will be on the **operational side.**”

-Microshare



“One out of five dollars under professional management in the United States today – or \$8.72 trillion – is invested in an ESG certified **sustainable investment.**”

- JP Morgan Chase

Need for a simple, scalable and cost-effective solution



Technology Approach Towards Building Smart Healthcare

Smart Healthcare Facilities solution brings safety, wellness, efficiency and a data-driven approach to securing your most valuable asset: **People**

- ➔ Leveraging the power of Azure IoT and Cloud
- ➔ Provides immersive visual experience and real-time actionable insights
- ➔ Brings an intrusion-free, opex-based, easy to deploy solution
- ➔ The solution leverages IoT to transform inert brick-and-mortar structures into safer, more efficient, more sustainable assets
- ➔ Ensure a safe and comfortable environment for healthcare facility occupants.

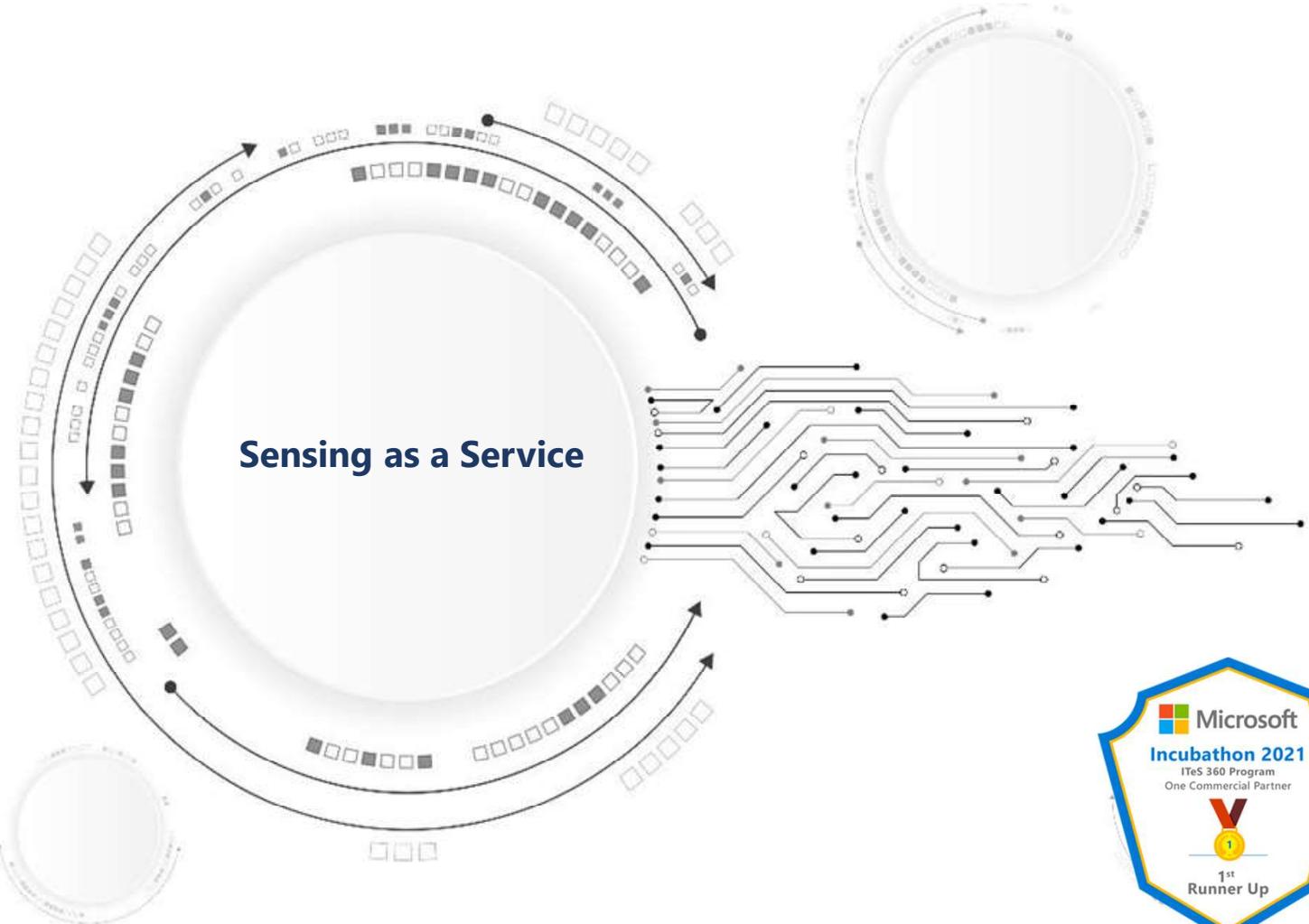
Healthcare Facility Monitoring & Insights

Enable real-time visibility insights to the facility utilization, asset performance, environment health to ensure robust operations and wellbeing of healthcare staff and visitors.

↑ Enhanced occupant experience ↓ Upto 25% reduction in operational cost ↓ Reduced downtime in healthcare operations

Ease of Use





Sensing as a Service

DIFFERENTIATORS

Low Cost, SaaS Model

(No Upfront Costs)



Accelerated Time to Value

(<1 Week Deployment Cycle)



Healthcare Proven Technology

(No intrusion with medical assets)



Secure & Compliant

(HIPAA, GDPR, ISO/IEC 27018)



Azure Well-Architected Framework

(Built in adherence to 5-Pillars)



Transformation Pillars to Smart Healthcare Facilities

MICROLAND®
Making digital happen

Enabling preemptive action against risks to patient, staff health and wellness



Space Occupancy and Feedback Monitors in washrooms and common areas reduce infection risk and put staff, patients and visitors at ease.



Bed Occupancy Monitors in hospital wards mitigate bed infection rates and bed allocation delays. This has proven invaluable in tracking bed cleaning and getting patients settled quickly.



Predictive Cleaning provides accurate and optimized view to facility manager to deploy cleaning team where they are needed, when they are needed



Air Quality and Water Quality monitored 24/7 retard the spread of bacteria and reduce the risk of Legionella (Legionnaire's Disease) outbreaks.

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Asset Tracking pinpoints key mobile equipment like wheelchairs or beds, improves patient care and frees nursing, maintenance and other staff to do the vital jobs they are paid to perform.



Fridge Monitoring across cold storage areas to prevent deterioration and expiration of vaccines, sensitive medicines, lab samples by being alerted to changes in real-time temperature.



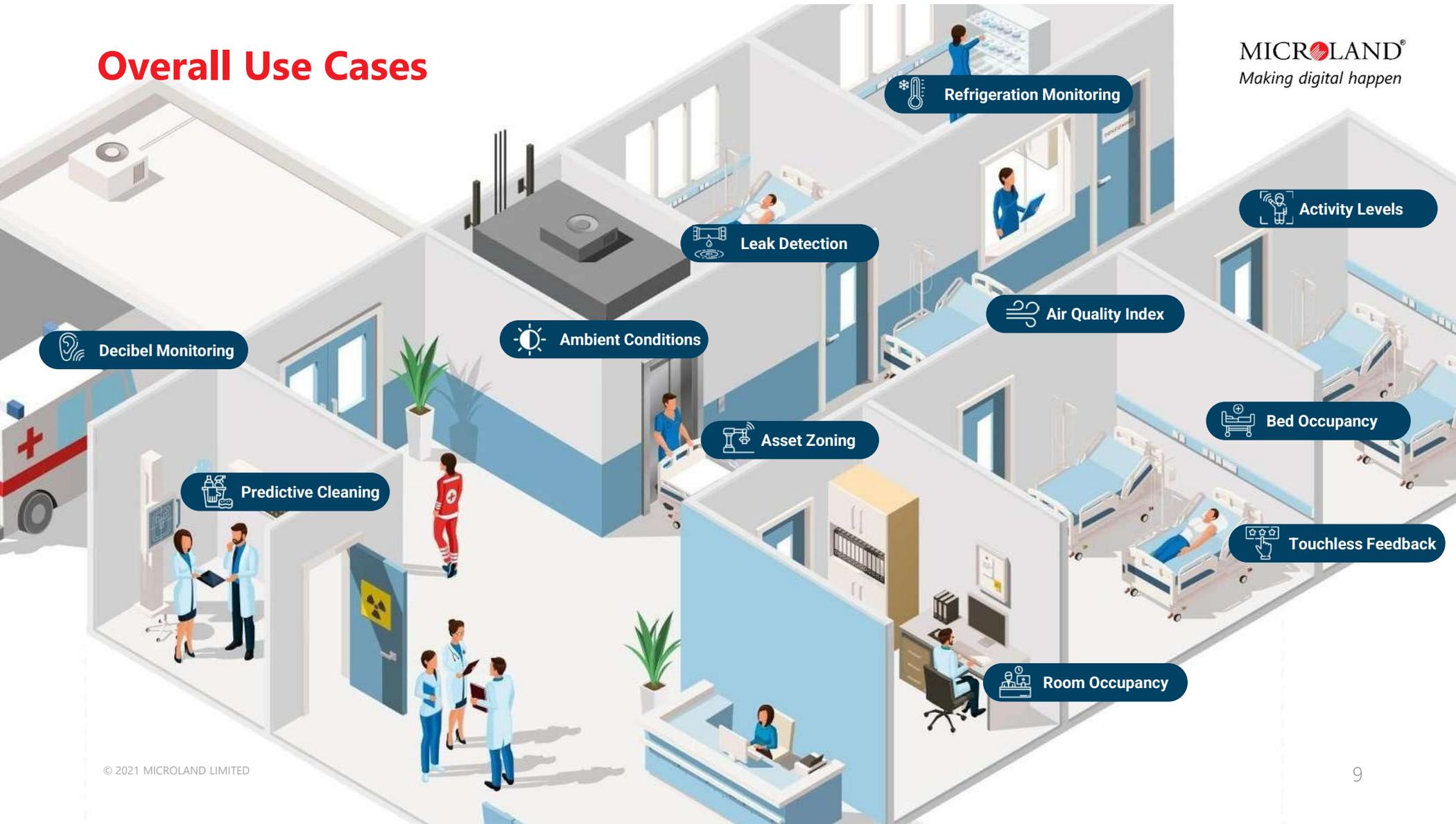
Facility Navigation hospitals help patients, healthcare staff and visitors find their way around hospitals and improve use of resources with our digital way finding.



Ambience Monitoring ensures a pleasant experience for visitors, patients and staff by keeping ambience conditions like brightness, humidity, noise, etc. in control

Overall Use Cases

MICROLAND®
Making digital happen

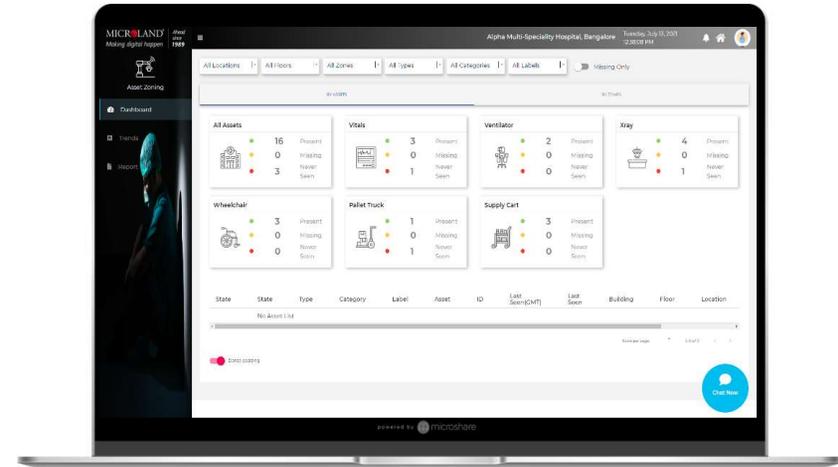




Asset Zoning

Tracking of portable medical devices and equipment in hospitals and healthcare facilities with use of geo-fencing and alerts for specific assets.

- Up to 15% hospital staff time saved
- Increases productivity and staff morale
- Up to 68% increased inventory accuracy
- Prevents theft and loss
- Track medical assets across facility locations
- Improved data insights on asset utilization leads to savings on capital expenditure



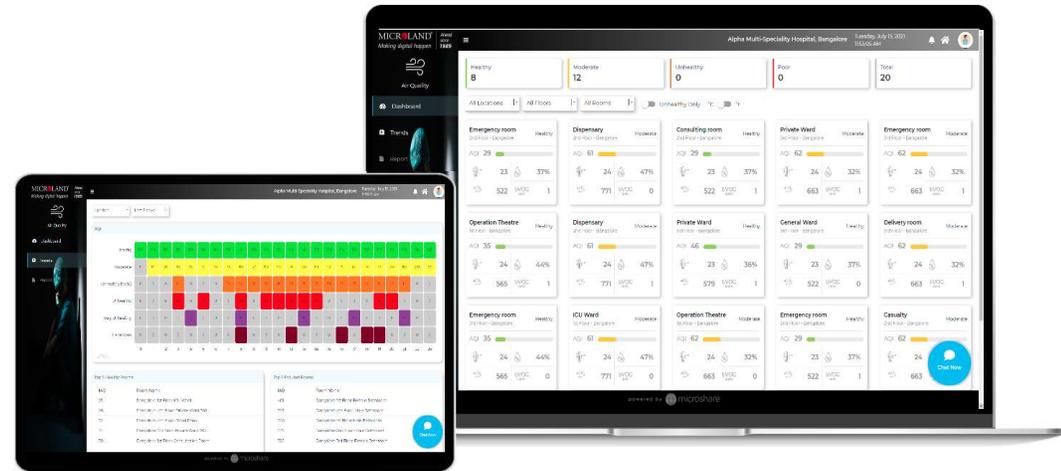
- Key features:
 - Asset Tracking
 - By Asset Type (e.g., wheelchairs, vital monitors, ventilators, etc.)
 - By Facility Zones (e.g., emergency area, labor room, OT, etc.)
 - Track current and last seen locations for misplaced assets
 - Geo-fencing of assets, and alerts in case of violations



Air Quality Monitoring

Optimum temperature, humidity and lowering levels of CO₂ through better management of air quality **reduce contagion spread** are known to improve stress levels, cognitive functions and **increase productivity** across front line healthcare workers.

- Enhance patients' recovery process
- Reduces the stress level of patients, healthcare staff, and visitors, raising productivity and satisfaction levels
- Provides 24/7 real-time intelligence on the actual environment your occupants are experiencing
- Minimize hospital acquired infections
- Provides key ESG (Environmental | Social | Governance) data to move your facility in a greener, more sustainable direction
- Alerts and actionable data to facility managers for ventilation and other problems before they get out of hand



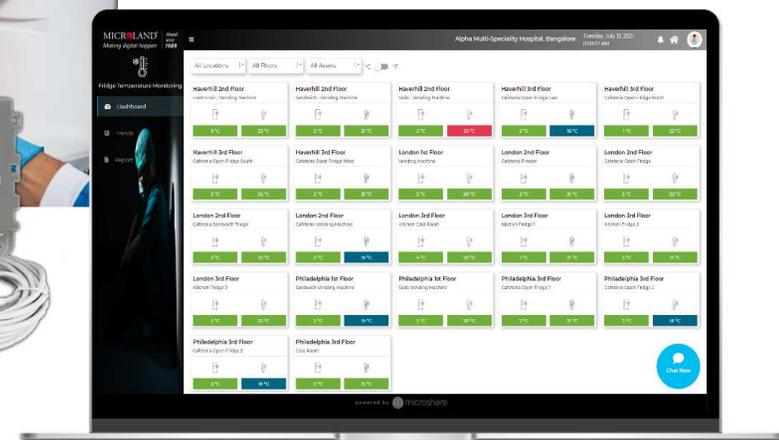
- Key features:
 - AQI Index with heat map visualization
 - Air quality status for all locations (Healthy, Moderate, Unhealthy and Poor)
 - Real time monitoring of Temperature, Humidity, eCO₂, bVOC
 - Top 5 healthy and polluted rooms
 - Air Quality trends across healthcare facility (e.g., most polluted/healthy rooms, KPI trends and forecasts, etc.)



Fridge Temperature Monitoring

Monitor and track temperature, in real-time, across your fridge and cold storage areas, suitable for hospitals and healthcare facilities. Prevent deterioration and expiration of vaccines and sensitive medicines by being alerted to changes in real-time temperature.

- Storage and distribution of vaccines and sensitive medicines to remain potent until they are used
- 24/7 monitoring of fridges with wireless sensors
- Typical battery life of 5 years
- Auditable record of temperature available online
- Alerts when temperature is out of acceptable bounds or is trending towards an issue
- Analyze data to improve compliance and energy consumption.



- Key features:
 - Refrigeration assets performance on single view
 - Filter by Buildings / Rooms / Zones etc.
 - Real time monitoring of
 - Fridge Temperature
 - Ambient Temperature
 - Refrigeration trends across all critical cold-chain assets to easily identify anomalies and deviations



Touchfree Feedback

Providing an anonymized solution to patients, healthcare staff, and visitor's feedback ensures that problems can be reported before they spiral out of control. Touchfree Feedback Stations provide push button or "touchfree" QR code functionality to increase occupant satisfaction and facility wellness.

- Reports and messages are customizable for all kinds of use cases
- Provides anonymized reporting of problems or feedback on any space at healthcare facilities
- Allows facilities managers to respond quickly to emerging problems
- Creates an easy-to-use channel for hospital occupants to share feedback, and insights for facility managers to carry out data-driven hospital experience management

How are you?

Scan the QR code to the right with your phone to instantly enable "Touchfree Feedback" on your personal device.



- Key features:
 - Patient and Visitor feedback on healthcare facility experience
 - QR based Touchfree system to record feedback
 - Accessible on any browser-based mobile device
 - Feedback trends and ratings across facility amenities
 - Available for Daily / Weekly / Monthly / Custom Periods

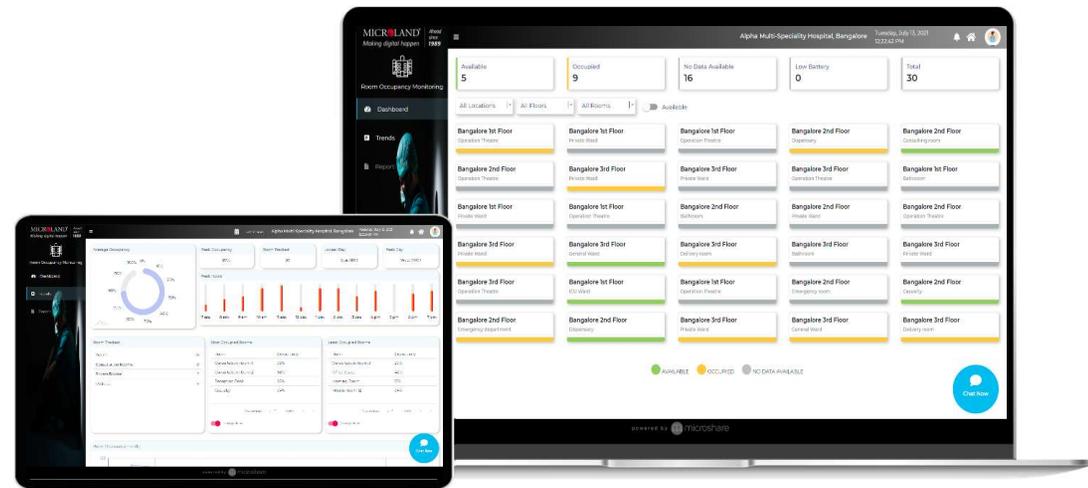


Occupancy Monitoring

Knowing how heavily any space is utilized is a pre-requisite to understanding the kind of attention it requires and the ROI it delivers. From reception to rooms to bed to lab space and more, Occupancy Monitoring provides actionable data for facilities operations and strategic insights for facility managers and management team.

A must have in **the New Normal**.

- Identifies high and low usage hospital areas for demand driven sanitization and HVAC purposes
- Occupancy-based data-driven cleaning schedules
- Provides data that helps lower energy and maintenance costs, as well as feeding an ESG agenda
- Creates a valuable historical picture of space usage for healthcare decision makers



- Key features:
 - Overall occupancy insights for each room (OPDs, Labs, OTs, Patient Room, etc.)
 - Occupancy trends to optimize healthcare operations & safety**
 - Avg. Occupancy Rate
 - Peak Occupancy Insights
 - Most/Least Occupied Spaces
 - Space by Utilization (%)
 - Space Utilization by Room, Location, Time, etc.

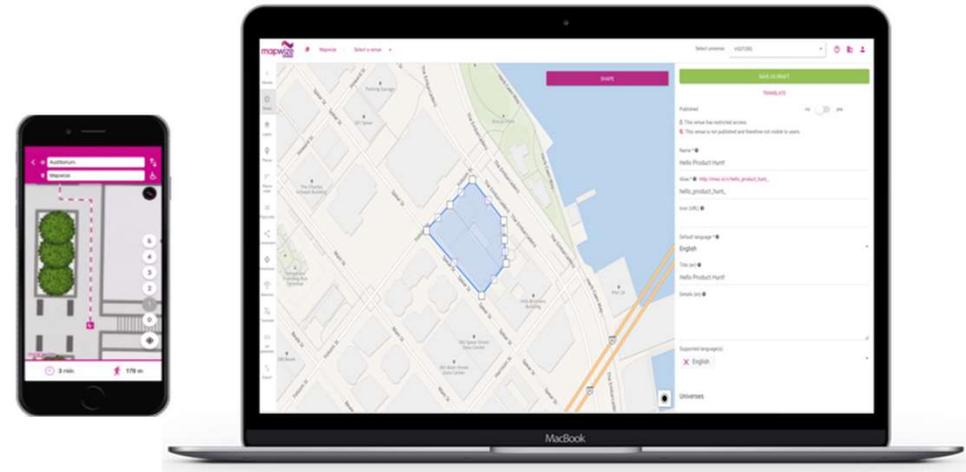
** future release



Facility Navigation

Interactive maps and wayfinding for hospitals which helps patients, healthcare staff and visitors find their way around hospitals and improve use of resources with our digital indoor facility navigation

- Provides a better patient and hospital staff experience through intuitive, stress-free navigation
- Makes hospital accessible friendly for all users
- Reduce number of late and missed appointments and save costs
- Provide a consistent experience inside your hospital on any device: smartphone, tablet, desktop and kiosk
- Optimize staff productivity with less interruptions of medical staff being asked for directions



- Key features
 - Way finding and accessibility
 - QR code locators allowing users to locate themselves
 - Personalized maps
 - Direction sharing
 - Interactive kiosk maps
 - Medical equipment tracking
 - Indoor navigation

Global deployments across multiple industries



Corporate Offices



Facilities Management



Hospitals



FMCG



Pharmaceuticals



Logistics



Public Transport



Care Homes



Food Manufacturing



Army/Defence Bases

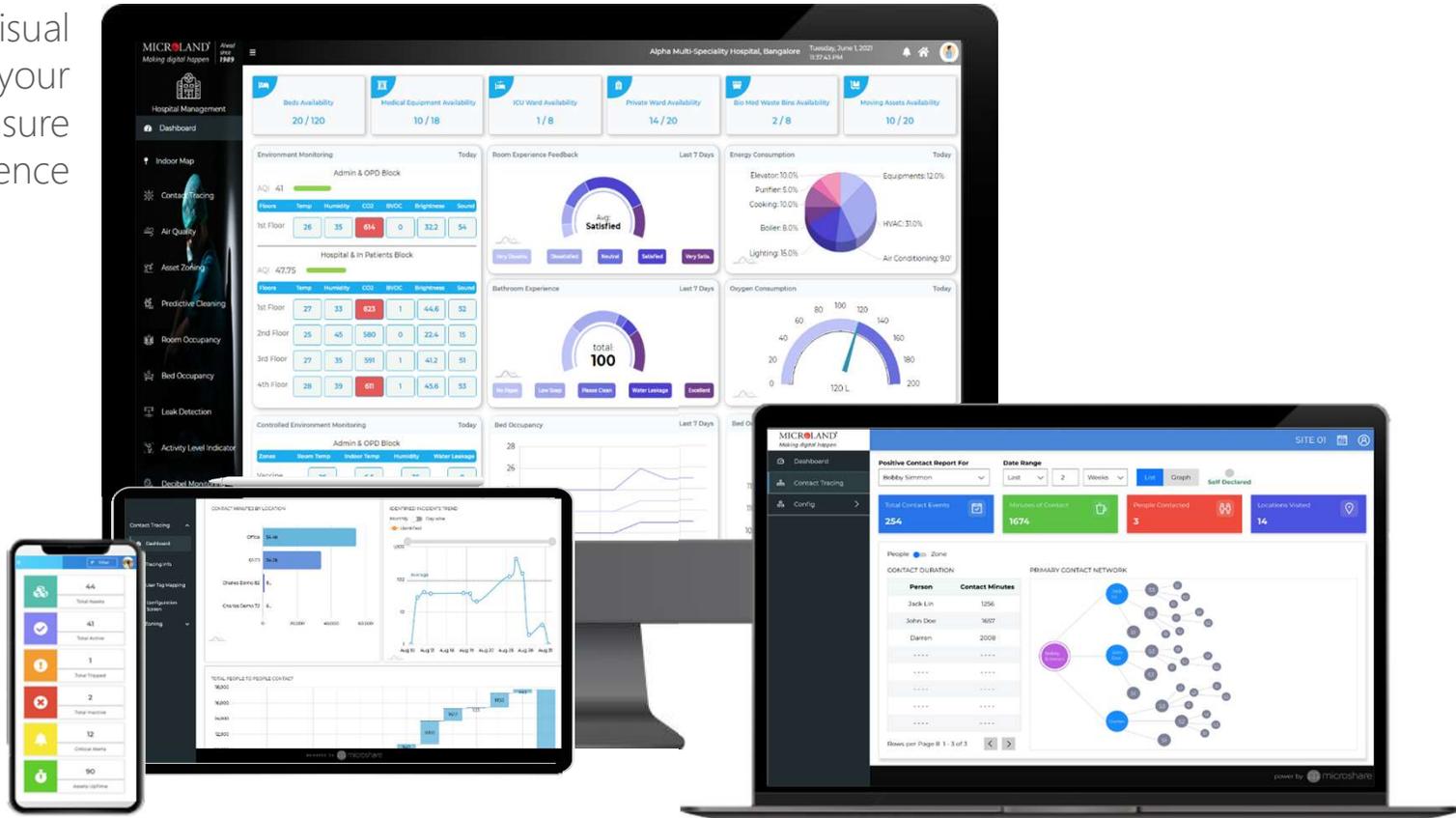


Universities



Mining & Power Plants

An insightful visual experience of your facility to ensure safety and resilience



THANK YOU

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