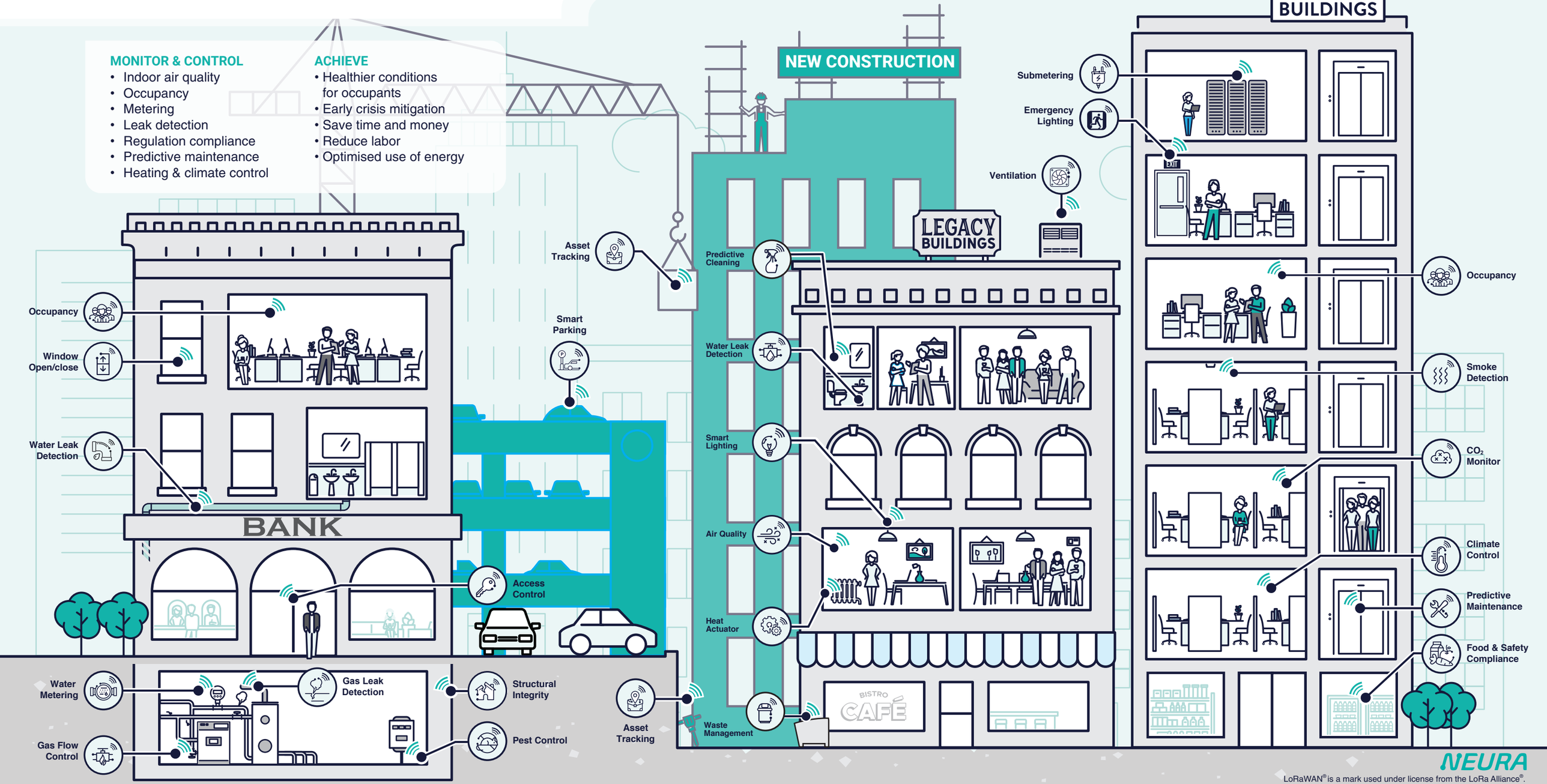
WIRELESS SMART BUILDING SOLUTIONS

Simple • Scalable • Secure

MONITOR & CONTROL
- Indoor air quality
- Occupancy
- Metering
- Leak detection
- Regulation compliance
- Predictive maintenance
- Heating & climate control

ACHIEVE
- Healthier conditions for occupants
- Early crisis mitigation
- Save time and money
- Reduce labor
- Optimised use of energy



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REAL WORLD SMART BUILDING DEPLOYMENTS

ENVIRONMENTAL MONITORING & SAFETY

AIR QUALITY MONITORING

- ***Challenge***: Indoor air can have high levels of CO2, Volatile Organic Compounds (VOCs), and Particulate Matter (PM).
- ***Solution***: Indoor air quality monitoring keeps air safe and healthy, identifies beneficial conditions, and alerts occupants to avoid unhealthy areas. Potential benefits include lower absenteeism, higher productivity, and avoiding legal and regulatory expenses.

CLIMATE CONTROL

- ***Challenge***: Systems controlling temperature and humidity are often inefficient, run only according to schedules, and lack sufficient monitoring zones.
- ***Solution***: Temperature and indoor humidity air quality monitoring increases comfort and supports lower costs. Increasing the number of zones provides more actionable data for adjustments and system changes.

CO2 MONITOR

- ***Challenge***: Studies show that at CO2 concentrations above 1200ppm, people start to feel drowsiness, develop a faint cough, and reduce their productivity; at levels above 1800ppm, people will experience headaches, sleeplessness, and increased heart rate.
- ***Solution***: Using LoRaWAN with battery-powered sensors helps lower expense by making it easy to place sensors throughout structures for comprehensive monitoring.

SMART LIGHTING

- ***Challenge***: Lighting is a significant portion of electric use and is not effectively monitored and controlled.
- ***Solution***: Monitor lights in use and levels, enabling remote and automated controls to adjust levels and turn lights on or off for safety, efficiency, etc.

UTILITIES, LEAK DETECTION & AUTOMATED VALVES

GAS LEAK DETECTION

- ***Challenge***: Gas leaks endanger occupants and are potentially explosive.
- ***Solution***: Provide early detection, enable alarms for occupant safety, and minimise property damage.

METERING

- ***Challenge***: Meters have traditionally required onsite readings, which are expensive and inefficient.
- ***Solution***: Implement meters with LoRaWAN communication to eliminate manual readings and provide near real-time usage data. Improve the timeliness and accuracy of billing.

SMART VALVE

- ***Challenge***: Water leaks cause extensive damage with long response times and manual shut-off.
- ***Solution***: Automated valves enable quick response to leaks, preventing damage, avoiding tenant displacement, and can support lower insurance costs.

SUB-METERING

- ***Challenge***: Multi-tenant buildings without sub-metering use more resources and have higher tenant dissatisfaction.
- ***Solution***: Install LoRaWAN and enable individualised billing for resource use, which encourages occupant conservation.

WATER LEAK DETECTION

- ***Challenge***: Water leaks often go undetected for a significant time, causing extensive damage and displacing tenants.
- ***Solution***: Generate alarms to management, tenants, and plumbing company to enable quicker response to leaks and minimise or eliminate damage.

WATER MONITORING

- ***Challenge***: Response to plumbing problems is reactive, increasing cost, time to fix, and tenant dissatisfaction.
- ***Solution***: Install LoRaWAN, enabling the plumbing company to receive near real-time alerts and localise the sources of problems to specific building areas.

BUILDING OPERATIONS

ACCESS CONTROL

- ***Challenge***: Access to buildings and areas within buildings require adequate controls.
- ***Solution***: Provide low-cost monitoring and control at an individual level with efficient authorisation and de-authorisation.

FOOD SAFETY & COMPLIANCE

- ***Challenge***: Freezers and refrigerators often malfunction, resulting in spoilage or unsafe products.
- ***Solution***: Near real-time temperature monitoring solutions provide continuous information about the status of refrigerators and freezers. Alerts trigger when a unit fails, or temperatures are outside of acceptable ranges, triggering a timely response resulting in loss avoidance.

INDOOR ASSET TRACKING

- ***Challenge***: Businesses have numerous valuable assets requiring usage monitoring, theft detection, and tracking as they move.
- ***Solution***: Attach low-cost trackers to assets for continuous monitoring, including building schematics showing actual position and movement within a structure.

OCCUPANCY & PEOPLE COUNTING

- ***Challenge***: Manual occupancy and foot traffic tracking for indoor spaces are difficult to manage effectively.
- ***Solution***: Measure foot traffic, time spent in an area, and trends over time to analyse and improve the in-person experience. Gather data to help improve marketing, boost revenue, and increase profit.

SMART PARKING

- ***Challenge***: Parking areas are difficult to manage effectively, resulting in lost revenue, high staffing costs, and user dissatisfaction.
- ***Solution***: Help increase the revenue from parking spaces, improve staffing, streamline payments, and increase user satisfaction with automated parking management. Guide drivers to the most efficient parking spot and effectively manage occupancy.

WINDOW AND DOOR OPEN/CLOSE

- ***Challenge***: Open windows and doors increase HVAC costs and present security and safety issues.
- ***Solution***: Add low-cost open/close detection to windows and doors, including showing locations on building schematics.

PREDICTIVE MAINTENANCE

PEST CONTROL

- ***Challenge***: Pest control traps require manual monitoring to clear and reset.
- ***Solution***: Install connected traps that alert when occupied.

PREDICTIVE CLEANING OF WASHROOMS

- ***Challenge***: Washrooms typically follow a regular schedule for cleaning and replenishing paper products, soap, etc., which can result in poor maintenance, increased cost, and tenant dissatisfaction. Dirty washrooms are an eyesore and a potential health hazard.
- ***Solution***: Monitor supplies to know precisely when refilling is needed. Detect the number of people entering to help determine appropriate cleaning frequency, reduce expense and improve tenant satisfaction.
- ***Challenge***: Equipment requires regular inspection and maintenance to ensure peak performance and extend life.
- ***Solution***: Assess the current state of equipment, predict future needs more accurately, and schedule maintenance when needed by capturing sound, temperature, utilisation, and vibration data.

STRUCTURAL HEALTH MONITORING

- ***Challenge***: Structures experience environmental stresses that cause damage, impact lifespan, and potentially endanger occupants.
- ***Solution***: Monitor temperature, vibration, stress, materials degradation, tilt, etc., to assess structural integrity in near real-time, providing data for timely response and long-term assessment.

WASTE MANAGEMENT

- ***Challenge***: Waste management typically follows a regular schedule for emptying containers resulting in additional personnel expense and inefficiency. Overflowing bins are an eyesore and a potential health hazard.
- ***Solution***: Monitor waste bins to know exactly when they need to be emptied, preventing unnecessary trips and help minimise cost. Improve routes, detect and deter theft, along with helping reduce personnel and fuel expenses.

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Source: LoRa Alliance