NETIX.AI
THE SMART MOVE

BMS To IoT

A JOURNEY OF DIGITAL TRANSFORMATION IN PROPERTY MANAGEMENT

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70%

of the millennial workforce want to be in a smart office within the next five years

Dell and Intel Future study

72%

of CREs say their departments are not fully equipped to deliver positive portfolio-performance

JLL Global Real Estate Survey

16%

Overall connectivity penetration rates across all building systems is only around 16% today

Memoori Smart Building Research

55%

of the global energy consumption can be attributed to building operations

2020 Global Status Report for Buildings and Construction

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Introduction

It is the building owner's and/or a Facility manager's responsibility that the property is kept at its best and the operations of both Hard and soft services are being carried out efficiently always. In order to ensure this the person or team depends on applications such as Building Management Systems (BMS), Computer-aided facility management (CaFM), Computerized Maintenance management system (CMMS), etc; to gain visibility of assets, space conditions, equipment performances, service provider actions KPIs and many other site activities.

BMS also known as Building Automation Systems (BAS) has been the key to alarm and asset management, in the recent past it has taken up energy management of commercial, residential and industrial buildings. The BAS has progressively evolved over time from only an HVAC control system to multiple asset monitoring and control such as lighting control, plumbing systems, and power systems. With the data from multiple ﬁeld peripherals integrated into a central workstation, the team can identify issues and rectify them on time.

However, any BAS is as good as how efficiently the engineer has commissioned it. Two similar buildings can perform in a completely different manner depending on the configurations, programming logic, and sequence of operations written by the commissioning engineer based on the project consultant's specifications and value engineering requirements. There are always issues that are not visible which will cause inefficient operations of assets and poor equipment performance. In most cases, the inefficiency is not understood or noticed due to a lack of information on site or the non-availability of skilled personnel. With the global need for energy saving, cost reduction, and ever-increasing demands of the occupants for comfort levels, it has become necessary to look ahead of the traditional BAS approach to achieve a sustainable solution.

The traditional BMS follows a closed proprietary protocol system, and every property/facility manager has to maintain OEM-based annual service contracts just to keep the BAS functional. They also need to maintain excess budgets to repair or upgrade systems completely if they go obsolete. The end-users believe that they could choose only from the options provided to them or replace the complete system with a new one to follow the same process all over again.

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Challenges of a Siloed Building Management System

No real-time alerts for issues I Limited monitoring of site equipment performance I Limited view of entire facility performance I Geographically dispersed asset base I Very high Monitoring costs due to distributed systems I High manpower utilization I Limited compliance reporting/lack of oversight I No provision for data analytics/machine learning/predictive alerts I Separate systems not linked together I Limited data on energy consumption I No single overview for Management Information I Reduced asset life-cycle I Low efficiency of systems IHigh maintenance costs I Non-optimized systems I Non-integrated systems I Unable to scale/integrate legacy systems I No real-time alerts for issues I Limited monitoring of site equipment performance I Limited view of entire facility performance I Geographically dispersed asset base I Very high Monitoring costs due to distributed systems I High manpower utilization I Limited compliance reporting/lack of oversight I No provision for data analytics/machine learning/predictive alerts I Separate systems not linked together I Limited data on Energy consumption I No single overview for Management Information I Reduced asset life-cycle I Low efЗciency of systems IHigh maintenance costs I Non-optimized systems I Non-integrated systems I Unable to scale/integrate legacy systems I No real-time alerts for issues I Limited monitoring of site equipment performance I Limited view of entire facility performance I Geographically dispersed asset base I Very high Monitoring costs due to distributed systems I High manpower utilization I Limited compliance reporting/lack of oversight I No provision for data analytics/machine learning/predictive alerts I Separate systems not linked together I Limited data on Energy consumption I No single overview for Management Information I Reduced asset life-cycle I Low efficiency of systems IHigh maintenance costs I Non-optimized systems I Non-integrated systems I Unable to scale/integrate legacy systems I No real-time alerts for issues I Limited monitoring of site equipment performance I Limited view of entire facility performance I Geographically dispersed asset base I Very high Monitoring costs due to distributed systems I High manpower utilization I Limited compliance reporting/lack of oversight I No provision for data analytics/machine learning/predictive alerts I Separate systems not linked together I Limited data on Energy consumption I No single overview for Management Information I Reduced asset life-cycle I Low efЗciency of systems IHigh maintenance costs I Non-optimized systems I Non-integrated systems I Unable to scale/integrate legacy systems I No real-time alerts for issues I Limited monitoring of site equipment performance I Limited view of entire facility performance I Geographically dispersed asset base I Very high Monitoring costs due to distributed systems I High manpower utilization I Limited compliance reporting/lack of oversight I No provision for data analytics/machine learning/predictive alerts I Separate systems not linked together I Limited data on Energy consumption I No single overview for Management Information I Reduced asset life-cycle I Low efficiency of systems IHigh maintenance costs I Non-optimized systems I Non-integrated systems I Unable to scale/integrate legacy systems I No real-time alerts for issues I Limited monitoring of site equipment performance I Limited view of entire facility performance I Geographically dispersed asset base I Very high Monitoring costs due to distributed systems I High manpower utilization I Limited compliance reporting/lack of oversight I No provision for data analytics/machine learning/predictive alerts I Separate systems not linked together I Limited data on Energy consumption I No single overview for Management Information I Reduced asset life-cycle I Low efficiency of systems I High maintenance costs I Non-optimized systems I Non-integrated systems I Unable to scale/integrate legacy systems I No real-time alerts for issues I Limited monitoring of site equipment performance I Limited view of entire facility performance I Geographically dispersed asset base I Very high Monitoring costs due to distributed systems I High manpower utilization I Limited compliance

NETIX.Ai – Transforming Today To Create a Better Tomorrow

NETIX.Ai is an IoT & AI-based automation solution provider, that leverages its innovative strategies, analytic algorithms, and brand-agnostic solutions to transform facilities into safe and sustainable edifices. Our vision is to create an ecosystem where building owners and the facility team are enabled with the support, technology, and information to make informed decisions based on AI-powered data-driven insights. We empower the end-user with the right to repair and are committed to delivering our one-of-a-kind brand-agnostic solutions and services for multiple major OEMs.

NETIX.Ai introduces the Android Approach , where its products and solutions are engineered and embedded with an open-source firmware that adapts to the existing environment of legacy BAS and other third-party systems as well. NETIX.Ai solutions are designed to integrate with the existing infrastructure and thus empower the end-user with an intuitive, front-end upgrade without any disruption. Once this is achieved, the end-user is enabled to repair or replace the

existing legacy/non-operational BAS controllers or migrate to an open-source controller in phases as and when it is feasible or required. Thus the operations are not disrupted and rather enhanced efficiently phase by phase without having a major cost impact of complete replacement.

Advancement in cloud computing and IoT solutions has enabled remote connectivity of buildings allowing for wider visibility, high-level data analytics, minimized latency, proactive approach, and many such capabilities leading to energy-efficient buildings. Today's digital transformation has helped considerably reduce the cost of operations and energy consumption. There are case studies across global portfolios that have achieved exponential energy savings. Many building owners and facility management companies can maintain sustainable and energy-efficient buildings by leveraging the capabilities of digital transformation through IoT-enabled BMS.

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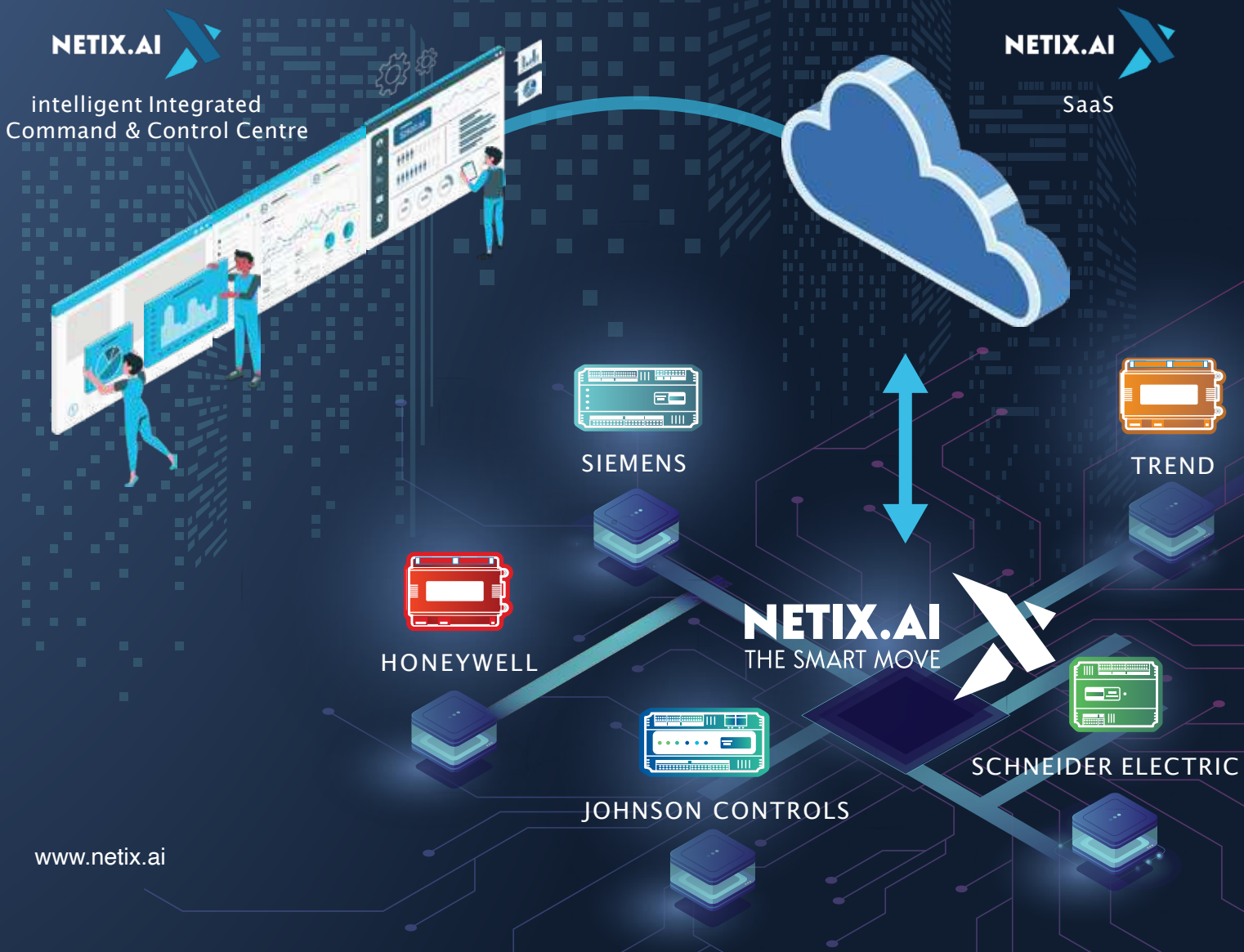THE SMART MOVE

NETIX.AI Powered Platform

NETIX.AI is a full-featured, cloud-based asset and energy management software for reducing risk and downtime, optimizing cost, time, and energy across buildings & cities. The AI-powered platform is designed to increase the efficiency, sustainability, and reliability of building spaces and convert aging buildings into smart buildings, as well as help design new smart and sustainable buildings and cities.

The platform uses pre-configured condition-based algorithms, AI/ML analytics, fault detection, and diagnostics to do equipment analysis of connected assets and property spaces to identify alerts and causes. It performs real-time auto-diagnostics and provides insights into energy use across the property or properties. This allows machines to recognize deviations from standard operating procedures and perform writebacks without human intervention.

The addition of machine learning algorithms and AI-based outputs provides teams of facility managers with the ability to perform predictive and energy-focused maintenance for

assets, which is much more efficient and cost-effective compared to the traditional preventive or corrective approach. The proven versatility and scalability of the modular design make our solution stand out with real-time analytics, improving operations & maintenance, thereby offering the best standard of living for all. NETIX.AI reorganizes maintenance operations with our end-to-end asset management suites, designed to increase efficiency and improve service and productivity.

The energy management module in the platform not only gives the end-user a total overview but also detailed insights into energy consumption at the asset level. This enables benchmarking of energy usage to generate savings and reduce carbon footprint. Based on the insights provided, our end users have achieved up to 25% savings in energy consumption and up to 50% savings in operational costs. Based on our predictive algorithms, critical breakdowns have also been reduced by 80%.

NETIX.AI
intelligent Integrated Command & Control Centre

NETIX.AI
SaaS

SIEMENS

TREND

HONEYWELL

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JOHNSON CONTROLS

SCHNEIDER ELECTRIC

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Tap into the true potential of your infrastructure

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BUILDING OWNERS

RESIDENTIAL
BUILDINGS

FACILITY
MANAGEMENT

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SYSTEMS

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Achieve More With Less

ML & AI POWERED PLATFORM

INTERFACE WITH THIRD PARTY PLATFORMS

PREDICTIVE DIAGNOSIS

DIGITAL TWIN

NETIX.AI

IN–DEPTH AUTO DIAGNOSIS

SPACE ANALYTICS

CWS SYSTEM MANAGEMENT

FIRE ALARM DASHBOARDS

REMOTE MONITORING OF OPS

ENTERPRISE SECURITY

NETIX.AI (iICCC) enables infrastructure/assets/buildings and cities to function optimally by graduating to real-time data-driven decision making. It is the nerve center for operations and disaster management and can act as a decision support system for building/ city administration by responding to real-time events using data feeds from various sources.

NETIX.AI caters to various facets of a smart city/building. It provides both macro and micro level solutions leading to sustainable operations, savings on energy and improved ROI.
iICCC solutions form the basis of building sustainability. Our aim is to serve clients, addressing challenges of building operational effciency and energy optimization using a holistic approach.

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NETIX.AI SOLUTIONS HIGHLIGHTS

➤ **IoT and AI Solutions for Buildings & Factories**

➤ **NETIX.AI Cube**   **Intelligent Integrated Command Control Center**

- Facilities AI
- Energy AI
- Sustainability AI
- CAFM AI

- Asset Management
- Energy Management
- Property Management & ESG Reporting
- Facility Management

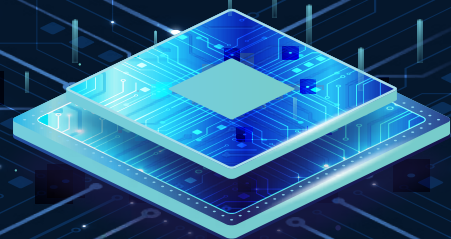➤ **Leading the BMS Transformation – Legacy System Upgrades**

➤ **Smart Cities – Connected Buildings & Remote Management**

➤ **iIBMS – Intelligent Integrated Building Management System**

➤ **NETIX.AI Sustainability Financed Solutions**

➤ **Smart Hardware solutions:**
- Smart Thermostats & IAQ Sensors
- Smart Meters
- Gateways
- IIBMS Controllers

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NETIX.AI – Features
Detailed Real Time Fault Detection and Diagnosis

Fault Detection and Diagnostics for equipment maintenance have been configured to optimize maintenance costs while parallelly improving the reliability, availability, maintainability, and safety of the equipment. This is achieved by collecting continuous monitoring data and analyzing the information using condition-based algorithms to detect anomalies. Once the incident notification is generated, then the system checks through a step-by-step verification with the site peripherals and identities the most possible root cause, and suggests resolution actions.

For example, a high-temperature alarm from a fan coil unit is identified via a custom configuration written using a simple Jexl and logical expressions, this then generates the incident. Once the incident is generated, the platform checks the dependent parameters on site that could cause the incident and gives the output of the most possible cause and resolution. The system has identified the root cause and the resolution from the learning it has obtained from the previous history database and also based on the previously recorded feedback which is a machine learning output.
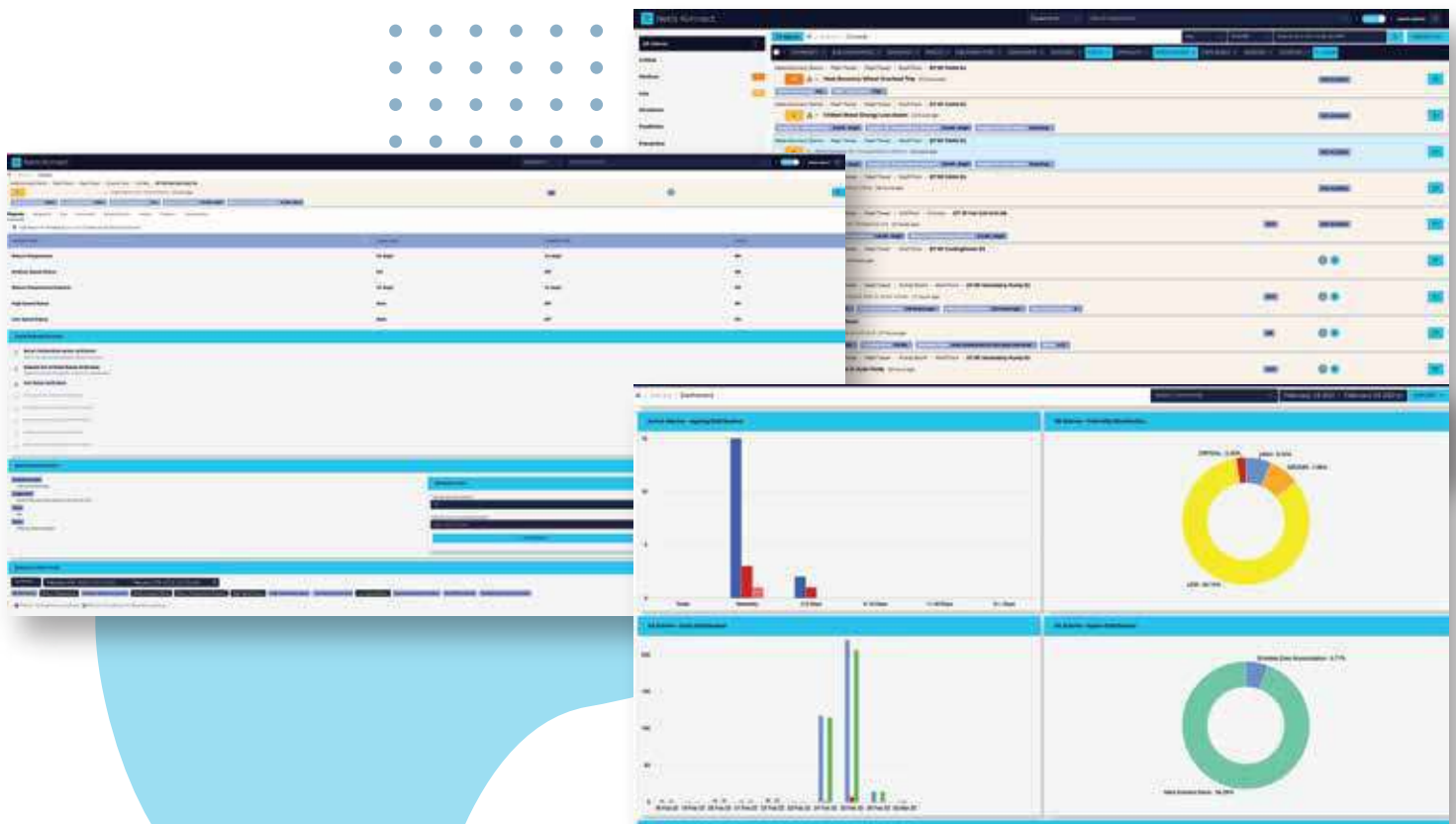
Real–time Alarm Management

- AI & ML driven alarm correlation and real-time diagnosis
- Intelligent false alarm differentiation and root cause analysis

Intelligent Workflow Automation

- Extensive FDD + asset rule library for simple and complex conditions
- Smart workflow Engine to automate complex use cases
- Real-time condition/threshold based monitoring for improved asset life

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NETIX.AI – Features
Energy Management

The platform hosts state-of-the-art energy monitoring dashboards, that provide data-driven insights in real-time to manage KPIs with the help of high-level analytics and an interactive interface. The platform's capabilities aid energy professionals to analyze the consumption and benchmarking it against market/industrial standards or previous year data and implement energy-centered maintenance on projects to achieve enhanced energy savings, optimized resource utilization, provide visibility on ESG, generate trends and summarized analysis on carbon emissions and increase profitability.
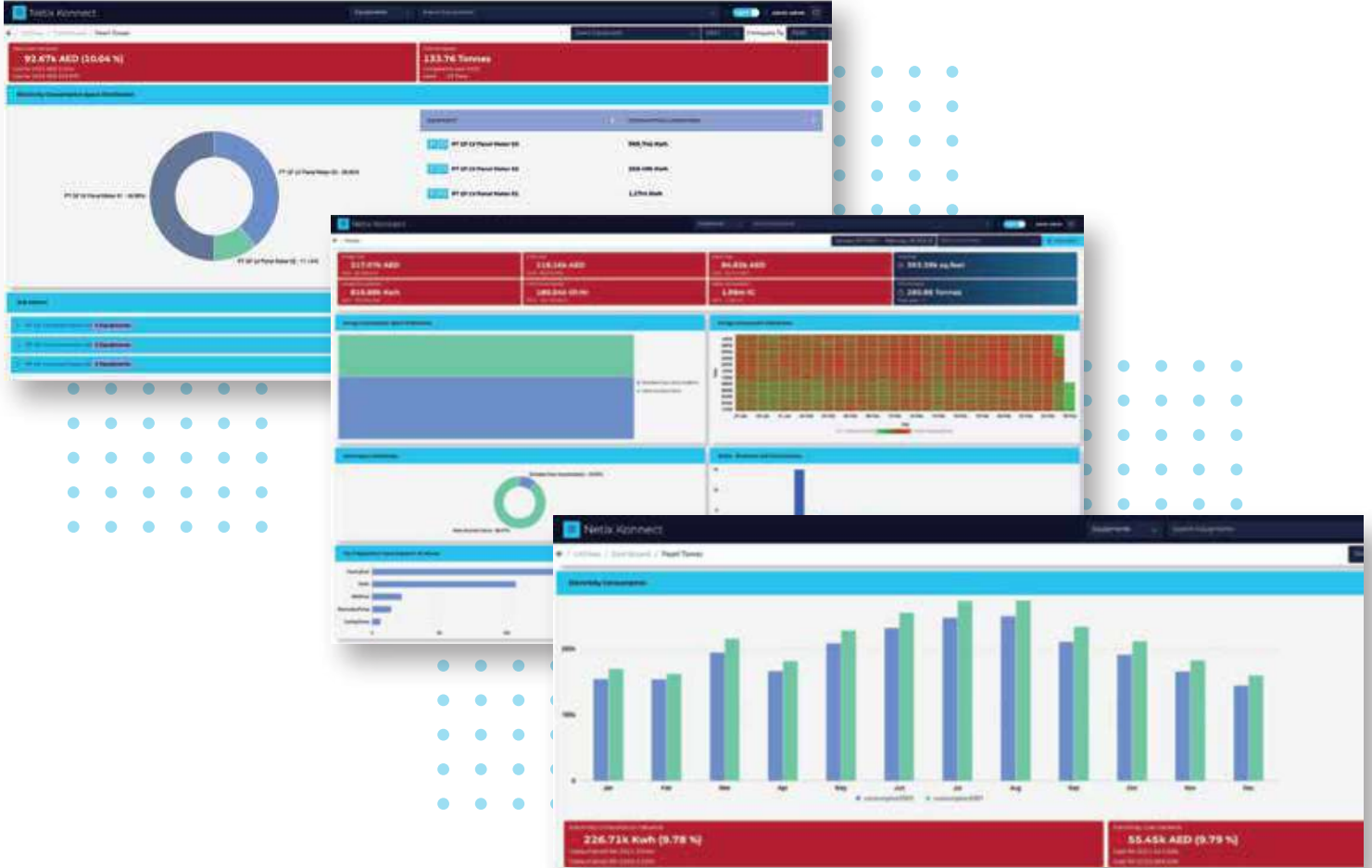
Drill-down Performance

- Drill-down and peak energy analytics with consumption heatmaps
- EnPI based regression analysis and performance benchmarks

Portfolio-wide centralized insights

- Live metrics and insights on portfolio-wide centralized dashboards
- Baseline comparison to track ideal asset and energy performance across portfolio

Fully customizable Dashboards and Reporting

- Intuitive UI to customize and create widgets or reports on your own
- User-dešned text, image and readings based cards
- Role-based sharing of dashboards with operators and supervisors on same page

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NETIX.AI– Features
Resource Optimization and Asset Management

NETIX.AI is an open platform capable of interfacing with any application software over REST APIs and other industry-standard APIs. The platform can provide a CaFM module or interface with an existing facilities management software. This allows to seamlessly convert an anomaly into a service ticket and push the same to the designated technician/engineer who will resolve and return the close-out status back to the platform. The platform is designed to help avoid any human error and ensure all deviations from pre-configured thresholds are captured and resolved and thus all assets function as per the defined SOP.
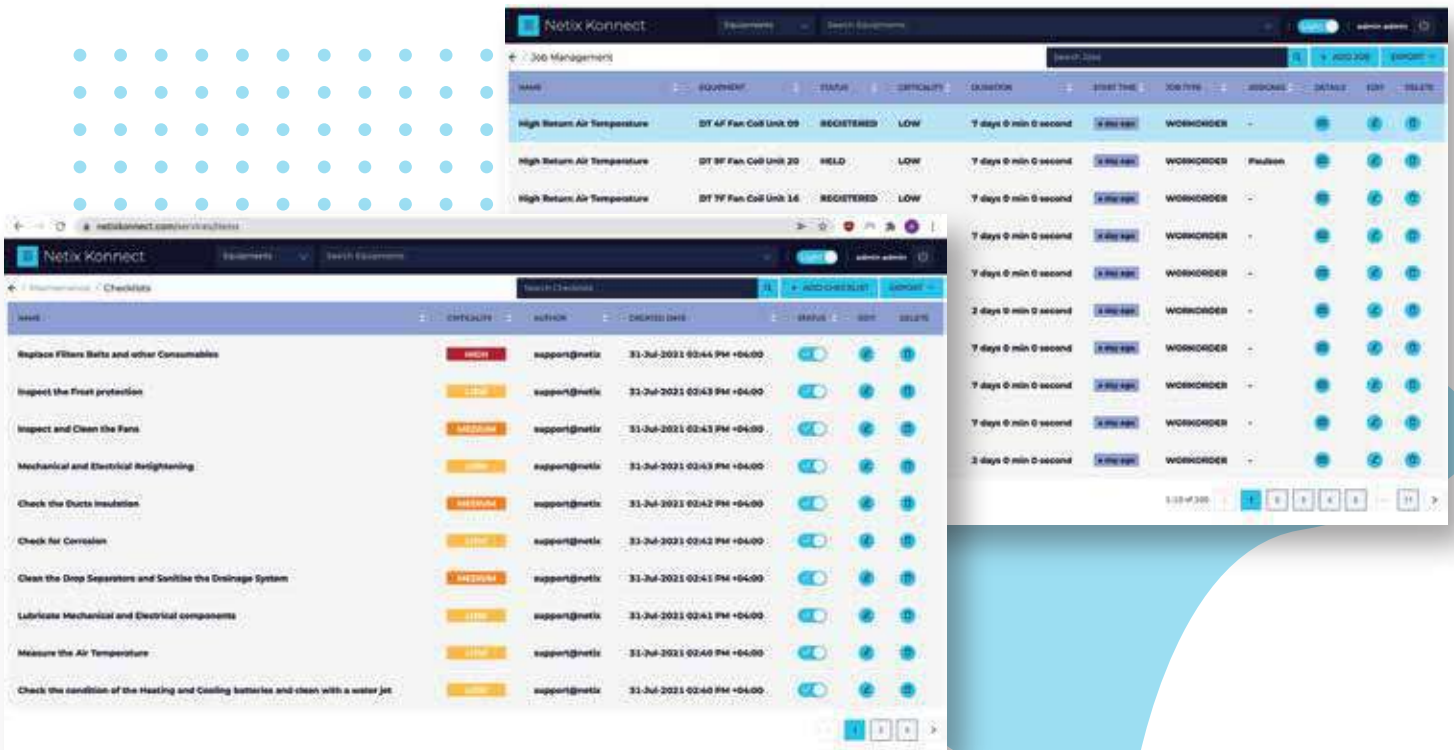
Real–time Context–aware Maintenance

- Daily tasks, operations & maintenance checklists scheduled as PPMs or rounds
- Real-time integration of data from BMS, Chiller Systems, Fire Panel etc.

Paperless, Synced Collaboration

- Fully mobile work orders and tasks for BMS technicians
- Paperless collaboration of technicians with central view of operations and tasks

Fast and Highly Responsive Team

- Act quickly with contextual service tickets from real-time data & maintenance complaints
- Digitize, track and update stock details, spare consumed across portfolio

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NETIX.AI – ROI
Return on Investments

$$ROI = \frac{Total\ Gains - Total\ Cost\ of\ Investments}{Total\ Cost\ if\ Investments} \times 100$$

In Simple words the ROI is the total gains against the total costs of an investment. In order to calculate the optimal ROI, it is mandatory to consider all the costs incurred in the property management operations. A few of them are listed down

- Total man-hours for maintaining an asset
- Total resources used for site accessibility and visibility
- Hardware replacements
- Recurring maintenance costs
- Software upgrades
- Asset breakdown and repair
- Energy consumptions
- Asset life cycle and replacement costs
- Customer feedbacks and foot fall reduction

Holistic Overview of NETIX.AI – Case Studies:

Optimization of Resources:
With the help of detailed auto Fault Detection and Diagnosis, which carries out the initial trouble-shooting based on the configured algorithms, the man-hours resolution of a fault time frame is optimized from 3 - 5 hours to 1 hour. This can be scaled from 10,000 hours for a small-scale building to over 400,000 hours for a large-scale portfolio with multiple properties.

Optimization of Resources:
With the help of ML analytics and predictive incident/maintenance reporting algorithms, the NETIX.AI platform aids in reducing up to 80% of the critical breakdown of assets. This in turn increases the asset life cycle, which is a tangible benefit to the operational costs for repair and maintenance.

Being Adaptive Not Disruptive:
With an open-source platform, NETIX..Ai empowers the end-user with a brand agnostic solution to repair/retrofit the field peripherals and schedule a phase-by-phase migration from legacy or obsolete devices/systems and thus eliminating the option to completely uproot the existing system and thus disrupt the existing operations and infrastructure. This android approach to BMS can ensure up to 30% savings in CAPEX budgets.

Energy insights:
The energy management module provides insights from a holistic distribution of costs across a group of communities or buildings and also a detailed drilled-down view of consumption to individual building or meter levels. This allows the management and maintenance team to identify pain points and implement necessary methods to achieve energy savings by up to 25% or even more in certain cases.

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USE CASE – RESOURCE OPTIMIZATION FOR 100 BUILDINGS
Witness Exponential Results With NETIX.AI

As per calculations, adopting the centralized IoT & AI powered platform can optimize manpower utilization and deliver up to **75%** of man-hour savings throughout the year.

RESOURCE UTILIZATION BEFORE NETIX.AI

RESOURCE UTILIZATION FOR 1 BUILDING

Alarms per day	Man-hours dedicated per alarm	Man-hours per day	Man-hours per year
10	2	20	7,300

RESOURCE UTILIZATION FOR 100 BUILDINGS

Alarms per day	Man-hours dedicated per alarm	Man-hours per day	Man-hours per year
1,000	2	2,000	730,000

RESOURCE UTILIZATION AFTER NETIX.AI

RESOURCE OPTIMIZATION FOR 1 BUILDING

Alarms per day	Man-hours dedicated per alarm	Man-hours per day	Man-hours per year
10	0.5	5	1,825

RESOURCE OPTIMIZATION FOR 100 BUILDINGS

Alarms per day	Man-hours dedicated per alarm	Man-hours per day	Man-hours per year
1,000	0.5	500	182,500

- Asset condition based algorithms to avoid critical breakdowns
- Increase operational efficiency by upgrading with machine learning logic
- Fault detection and auto diagnosis
- Optimized resource utilization savings of approximately $30K* anually on each site
- Enhanced asset performance through predictive maintenance configurations hich will deliver a minimum saving of $5K* per year per site, thus providing a tangible saving of half a million dollars, and based on the number of assets this value can increase.

MAN-HOURS SAVED
500K

CRITICAL BREAKDOWNS ARE DOWN BY
80%

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*Above figures are based on approximate calculations and may differ as per site conditions

USE CASE – ENERGY SAVINGS FOR 100 BUILDINGS
Witness Exponential Results With NETIX.AI

NETIX.AI delivers energy management services through energy monitoring, power quality analysis, smart metering, and tailored solutions to the client's specific requirements.

NETIX.AI provides consultation for energy, water, and waste management. We Ensure optimal design and implementation of integrated energy solutions, achieving sustainable infrastructures, and long-term payoffs for individual buildings, communities, and smart cities.

RESOURCE UTILIZATION BEFORE NETIX.AI

TYPICAL ENERGY COSTS FOR 100 BUILDINGS

BUILDING TYPE	ANNUAL COST	NO OF BUILDINGS	ANNUAL COST
TYPE A	340,000	20	6,800,000
TYPE B	520,000	20	10,040,000
TYPE C	900,000	60	54,000,000
TOTAL			70,840,000

RESOURCE UTILIZATION AFTER NETIX.AI

OPTIMIZED ENERGY COSTS VIA NETIX.AI

BUILDING TYPE	ANNUAL COST	NO OF BUILDINGS	ANNUAL COST
TYPE A	300,000	20	6,000,000
TYPE B	435,000	20	8,700,000
TYPE C	720,000	60	43,200,000
TOTAL			57,900,000

TYPE A – LOW RISE | TYPE B – MEDIUM RISE | TYPE C – HIGH RISE

ENERGY SAVINGS ($) BEFORE VS AFTER MODEL

13 million

ENERGY SAVINGS PROPOSED VS CURRENT MODEL

18%

*Above figures based on approximate calculations ($) and may differ as per site conditions

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NETIX.AI Pioneers in Building a Sustainable Future

Sustainability is central to our purpose, our business adopts a holistic view taking safety, health, and the environment into consideration. As part of our commitment to the environment and the well-being of the community, our technology, and innovative solutions are designed and developed to address the climate crisis and expand the sustainability capabilities of our world.

White paper: True sustainability in the era of digital transformation

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