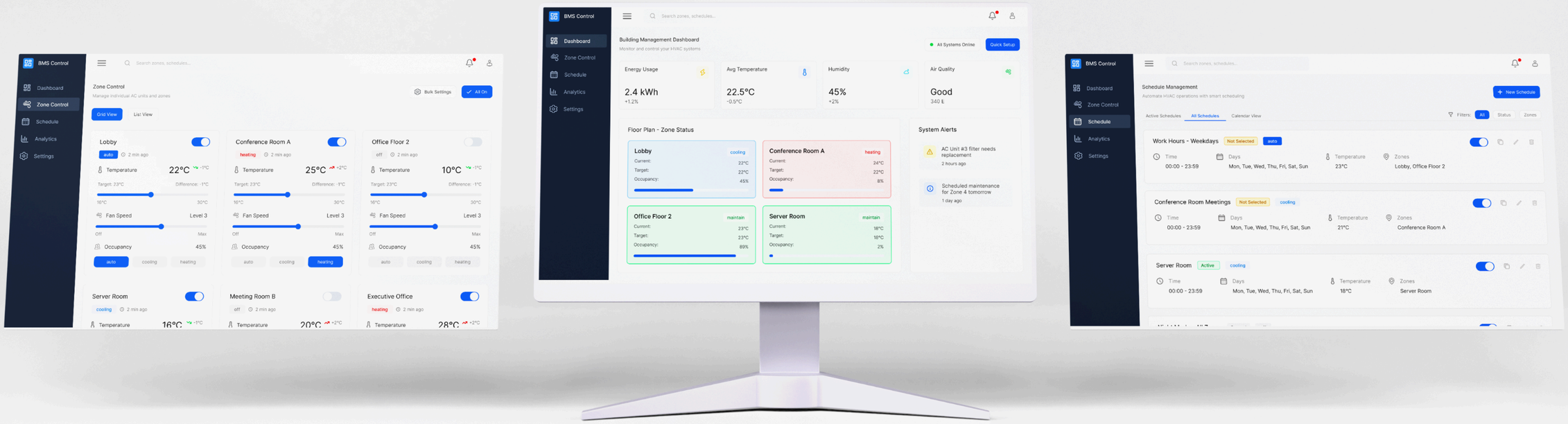
UX CASE STUDY

Transforming HVAC Control Through a Smart Building Management System (BMS)



Designing an enterprise platform to monitor, manage, and resolve building operations efficiently.

Enterprise SaaS · Lead UX Designer

01

Overview

Building Management System (BMS) is a web-based enterprise platform designed to help facility managers and operations teams monitor, control, and maintain multiple building systems from a single interface.

The goal was to simplify complex operational data and enable faster issue detection, investigation, and resolution across large commercial facilities.

Context

INDUSTRY

Enterprise Facilities & Infrastructure

USERS

Facility Managers, Maintenance Engineers, Operations Admins

PLATFORM

Web (Enterprise SaaS)

TIMELINE

8 months

MY ROLE

Lead UX Designer (end-to-end)

Problem Statement

Facility managers were relying on multiple disconnected tools to manage HVAC, lighting, energy usage, alarms, and maintenance workflows.

THIS LED TO:

- Delayed detection of critical issues
- High cognitive load due to data-heavy interfaces
- Manual coordination between teams
- Limited visibility into overall building health

Operational inefficiencies increased costs and negatively impacted tenant experience.

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My Role & Responsibilities

I led the UX design end-to-end, working closely with product managers, engineers, and domain experts.

KEY RESPONSIBILITIES

- Understanding operational workflows and constraints
- Conducting stakeholder and user discussions
- Defining information architecture and navigation
- Designing core user flows and dashboards
- Iterating designs based on technical feasibility
- Supporting design handoff and implementation

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Users & Key Insights

Primary Users

Facility Managers

Monitor building health and prioritize issues

Maintenance Engineers

Investigate and resolve system problems

Operations Admins

Manage configurations and reports

Key Insights

1. Users needed quick visibility into critical issues, not exhaustive data
2. Alert fatigue was common due to lack of prioritization
3. Switching between systems slowed down response time
4. Historical data was essential for identifying recurring issues
5. Mobile responsiveness was less important than desktop efficiency

These insights directly informed how information was structured and surfaced.

Design Challenge

How might we present complex, real-time building data in a way that supports fast decision-making without overwhelming users?

THE SOLUTION NEEDED TO BALANCE:

Depth of data

Speed of access

Clarity under pressure

Information Architecture

One of the biggest challenges was organizing features in a way that matched user intent, not system architecture.

> KEY IA DECISION
>
> I structured navigation around what users want to do, rather than how systems are technically grouped.

Monitor
Overall system health and alerts

→

Investigate
Drill down into affected systems and components

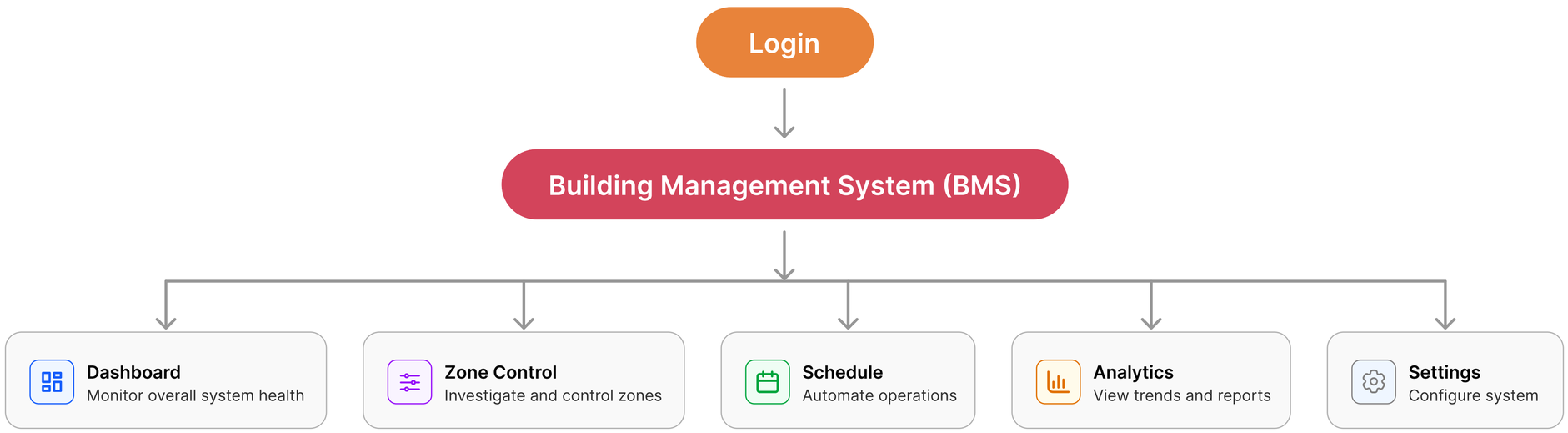
→

Act
Assign, track, and resolve issues

→

Analyze
View trends, reports & historical data

Primary Navigation Structure



Impact: This task-oriented navigation significantly reduced friction, allowing users to complete critical workflows 40% faster than the previous system.

Core User Flows

Primary Investigation Flow

How facility managers identify, investigate, and resolve system issues

1. **Alert Detection**
   User notices critical alert on dashboard (e.g., "AC Unit #3 filter needs replacement")
2. **Navigate to Zone Control**
   User clicks alert or navigates to Zone Control to see detailed unit information, current settings, and status
3. **Take Action**
   User creates maintenance schedule or assigns work order to resolve the issue

Key Insight: This 3-step flow reduced average resolution time from 45 minutes to 12 minutes by eliminating context switching and providing all necessary information at each step.

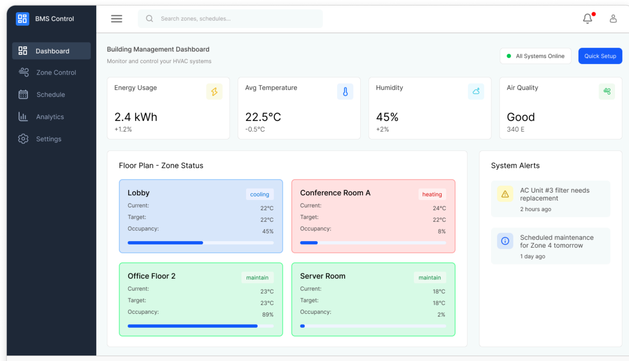
01

System Monitoring Dashboard

The dashboard was designed to provide an at-a-glance view of building health.

KEY DECISIONS

- Prioritized alerts based on severity and impact
- Used visual hierarchy to surface critical information first
- Reduced noise by hiding non-actionable data



Real-time monitoring dashboard with at-a-glance system health and zone status

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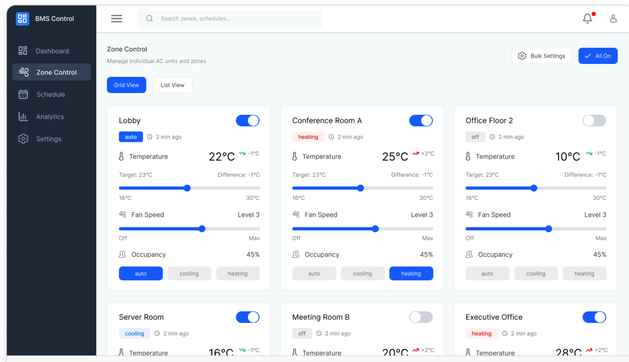
02

Zone Control Flow

Once an alert was triggered, users needed to quickly understand what system was affected, where the issue originated, and what components were involved.

KEY DECISIONS

- Designed a drill-down flow: Alert → System → Subsystem → Component
- This reduced time spent switching between screens



Granular zone control for investigating and adjusting individual system settings

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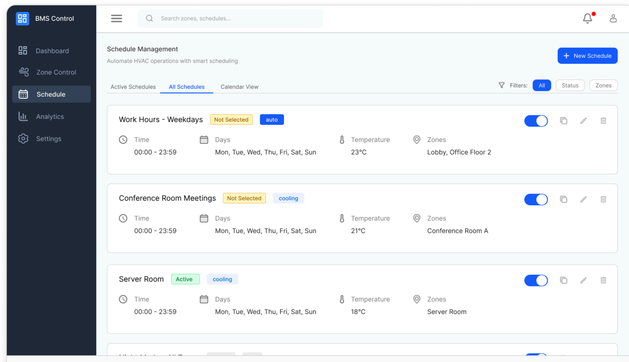
03

Action & Resolution

For effective issue resolution, the system enabled users to assign issues to maintenance teams, track status and resolution progress, and add notes and reference historical fixes.

KEY DECISIONS

- The focus here was clarity and accountability, not feature overload



Schedule management for proactive maintenance and automated system control

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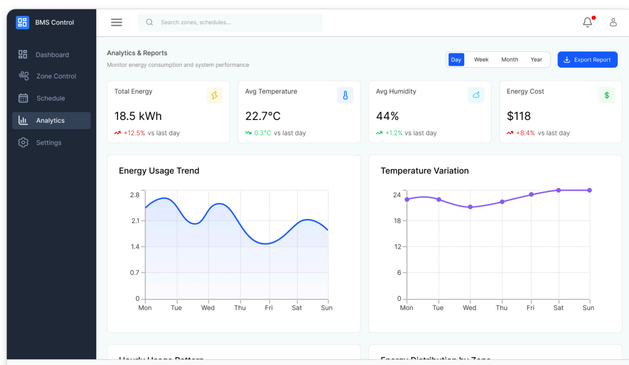
Analytics & Reporting

Analytics helped teams move from reactive to preventive maintenance.

KEY DECISIONS

- Trend-based views over raw tables
- Clear time filters and comparisons
- Exportable reports for stakeholders



Analytics dashboard enabling data-driven decisions and preventive maintenance

Prototype: Click here

Visual Design Approach

The visual language was intentionally restrained to support long-duration usage.

THIS LED TO:

- High contrast for readability
- Consistent component patterns
- Minimal color usage reserved for alerts and status
- Layouts optimized for large screens

Visual Hierarchy
Critical metrics prominently displayed at the top with clear iconography

Status Color Coding
Zones use color to indicate state (cooling, heating, maintain) for instant recognition

Alert Prioritization
System alerts positioned for immediate attention with severity indicators

COLOR SYSTEM

Primary	Background	Critical	Warning	Success	Info
(Black #171717)	Grey #f5f5f5)	(Red #e7000b)	(Yellow #fe9a00)	(Green #00a63e)	(Blue #155dfc)

The goal was to reduce fatigue during extended operational use while ensuring critical information stands out immediately.

Collaboration & Constraints

Worked closely with engineering to align designs with real-time data constraints

Adapted layouts based on system performance limitations

Iterated frequently to balance usability with technical feasibility

This collaboration helped avoid rework and ensured smoother implementation.

Outcome & Impact

The redesigned BMS platform:

- Improved visibility into building operations
- Helped teams identify and respond to issues faster
- Reduced dependency on multiple disconnected tools
- Received positive feedback from internal stakeholders and users

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The solution successfully supported day-to-day operations across complex facilities.

Key Learnings

In enterprise UX, prioritization matters more than completeness

Clear information hierarchy reduces cognitive load significantly

Early alignment with engineering saves time later

Designing for operational users requires empathy for high-pressure scenarios

FINAL NOTE

This project reinforced my approach to enterprise UX: designing systems that respect complexity while enabling clarity and control.