

AI-Driven OR Automation: Faster Workflows, Fewer Errors, Millions Saved

Turning manual OR processes into intelligent, hands-free, high-performance surgical operations with AI and predictive insights.

↑ **65%**

Faster Workflows

↑ **80%**

Fewer Errors

↓ **\$4M+**

Annual Savings

↓ **90%**

Tasks Automated

Domain

Intelligent Surgical Systems & OR Automation

Platform

Dynamic, AI-Powered OR Management System

Services

- AI/ML-Powered Object Recognition
- Workflow Automation
- Voice-Enabled Hands-Free OR Operations
- Predictive Analytics & Real-Time Surgical Dashboards
- HL7/FHIR & DICOM/PACS Integration
- Secure Multimedia Capture & Cloud Synchronization
- Compliance Logging & Audit-Ready Documentation

Intelligent OR for Measurable Impact

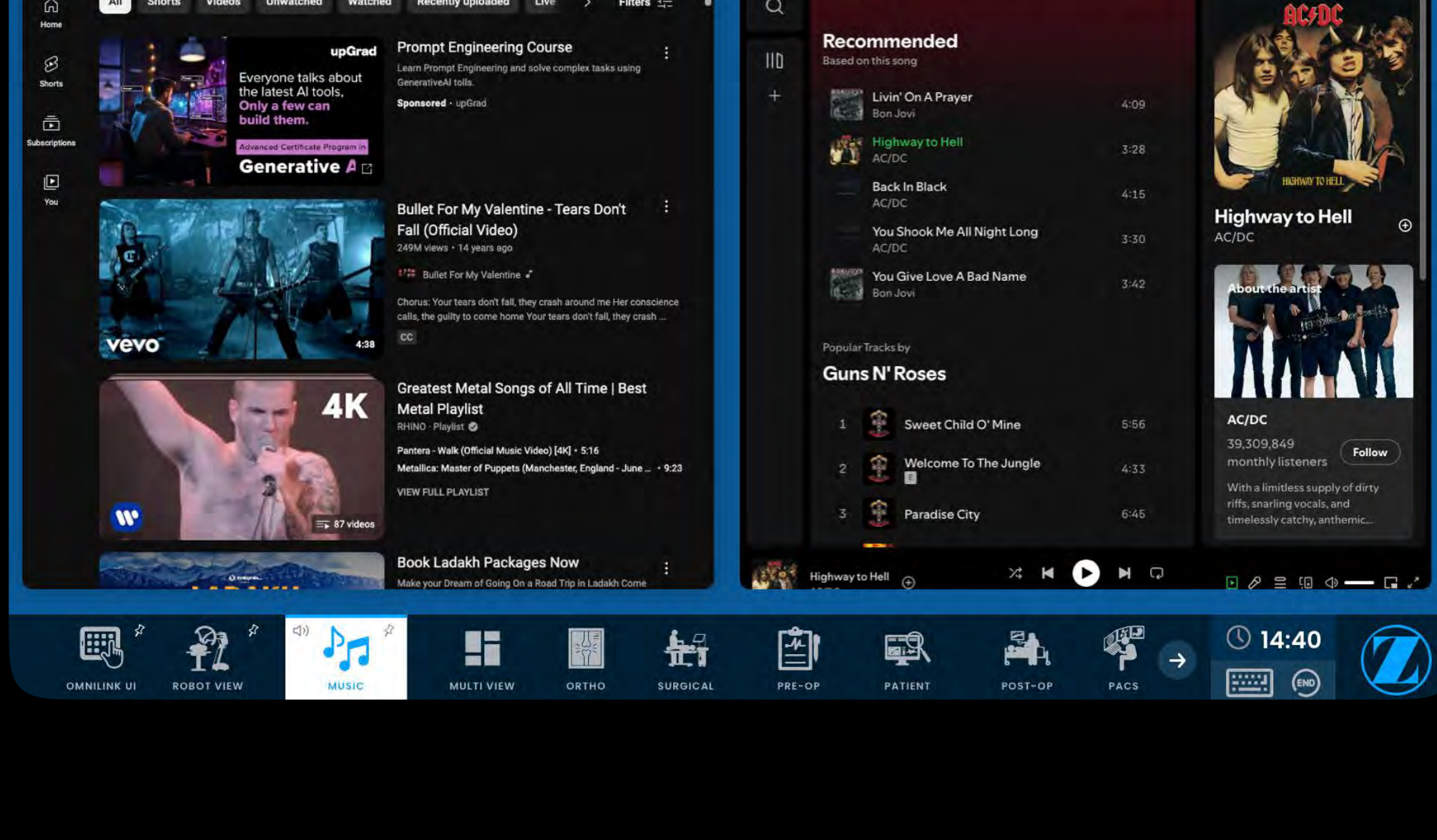
A leading global MedTech company, recognized for its precision-driven surgical innovations, set out to reinvent the modern operating room. Their vision was clear: create a smarter, connected environment where AI, automation, and real-time data converge to eliminate inefficiencies and empower surgical teams worldwide.

The result was a dynamic, intelligent OR solution—powered by AI-driven automation, computer vision, speech recognition, and interoperability standards—that not only redefined hospital workflows but also reinforced the client's leadership in intelligent surgical systems. The transformation accelerated surgical outcomes, reduced manual interventions, and positioned the client's portfolio as future-ready for global deployment.



About the Client

A global MedTech innovator specializing in advanced orthopedic and surgical solutions, driving innovation in operating room technologies across hospitals and surgical centers worldwide.



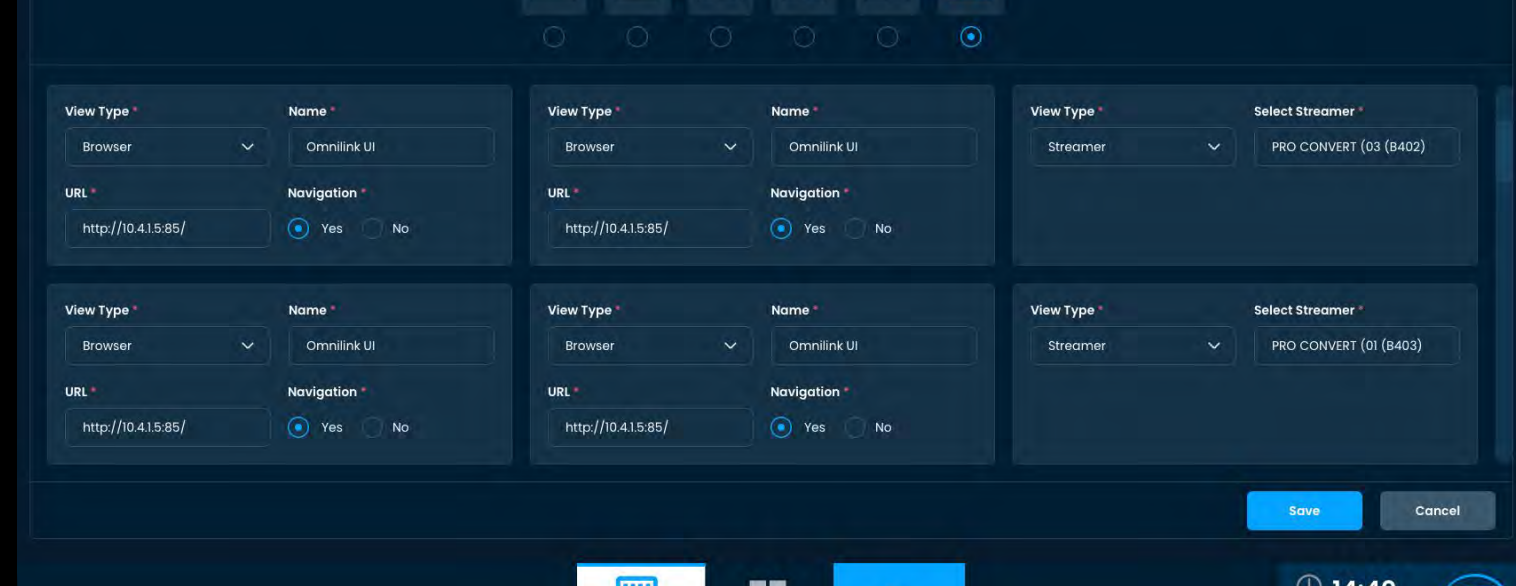
Automated event tracking, from patient entry to OR cleaning, delivered time-stamped insights that unlocked millions in hospital savings

Business Challenges

The client faced fragmented workflows, limited analytics, and cumbersome compliance processes across multiple operating rooms.

- **Workflow Bottlenecks**
Surgeons and OR staff spent excessive time on documentation, device toggling, and non-clinical coordination.
- **Limited Data Visibility**
Hospitals lacked granular insights into equipment usage, procedure durations, and workflow efficiency for data-driven optimization.
- **Compliance & Audit Challenges**
Manual checklists and logs made HIPAA adherence, regulatory audits, and litigation readiness cumbersome.
- **Siloed Systems**
Video feeds, imaging systems, EHRs, and PACS were scattered, preventing real-time synchronization and interoperability.
- **Remote Collaboration**
Consulting surgeons, guardians, and stakeholders could not securely access live surgeries or procedural updates.
- **Global Scalability Needs**
The client needed a multilingual, voice-enabled platform capable of adapting to diverse OR environments worldwide.

AI-driven object detection reduced manual workflows by **65%**, transforming surgical efficiency and unlocking measurable hospital value



Transforming Surgery: The Journey to a Smart OR

Setting the stage

DASH Technologies executed a multi-phase transformation roadmap, layering automation, interoperability, and AI-driven orchestration to re-engineer the OR experience from the ground up.

Phase 1

Foundational Automation & Object Detection

We made the OR self-aware with AI-powered computer vision, automating instruments and events while delivering real-time insights, setting the foundation for intelligent workflows.

How we built it

- Deployed computer vision pipelines (Azure Custom Vision + ONNX Runtime) to auto-detect instruments, devices, and procedural steps from live video feeds.
- Automated event recognition for milestones (Anesthesia Start, Surgery Start, Incision, Closure, Cleaning)—triggering real-time workflow updates.
- Integrated with Azure Blob Storage for secure, HIPAA-compliant multimedia capture and archival.
- Added NDI protocol streaming + hardware routers for low-latency, dynamic feed switching across OR monitors.
- Designed predictive dashboards to display KPIs like surgical duration, instrument usage, and staff efficiency.

Impact

- The OR shifted from manual logging to AI-driven self-documentation, cutting workflow latency and creating the foundation for predictive analytics.

Phase 2

Dynamic Workflow Engine & Remote Access

Building on this foundation, we created a cross-platform, interoperable OR system with live streaming and adaptive workflows, enabling real-time monitoring and global collaboration.

How we built it

- Built a multi-modal OR management platform (.NET WPF + ASP.NET MVC) delivering cross-platform access (desktop + web).
- Integrated DICOM and PACS viewers directly into the OR dashboard, providing instant access to diagnostic imaging.
- Enabled secure live broadcasting of surgeries with Azure AFD for real-time consultation and stakeholder visibility.
- Deployed HL7/FHIR interoperability modules + HIE engine for seamless integration with hospital systems.
- Added offline-first architecture with local caching + cloud auto-sync to guarantee data persistence in downtime.
- Rolled out Exceptionless-powered monitoring for proactive error detection, anomaly tracking, and root cause analytics.

Impact

- OR workflows became dynamic, surgeon-personalized, and globally visible. Hospitals gained a networked surgical command center with remote and real-time collaboration capabilities.

Phase 3

Voice-Enabled Automation

Finally, we added voice-driven automation and real-time transcription, achieving hands-free control, instant workflow updates, and heightened precision, efficiency, and compliance across the OR.

Future Capabilities in Development

- Embedded Microsoft Speech Services + Azure Cognitive NLP for real-time voice-driven workflows.
- Built voice-activated patient safety checklists, auto-updating dashboards with spoken confirmations.
- Enabled context-aware commands (e.g., "Switch to MRI feed" or "Start incision") to trigger OR events instantly.
- Added multilingual speech support for international deployment.
- Integrated real-time voice transcription + compliance logging for regulatory audit readiness.

Impact

- Surgeons and staff now operate in a true hands-free environment, eliminating manual system toggling and alleviating surgical focus, safety, and precision.

Voice-driven automation eliminated surgical checklist bottlenecks, **cutting documentation errors by 80%** while ensuring faster, compliant procedures.

The Dash difference

65%

Faster OR workflow execution with AI-driven automation.

80%

Reduction in clerical errors through automated, auditable event logging.

50%

Faster OR turnover, increasing daily surgical capacity.

\$4M+

In annual cost savings per hospital network via operational efficiencies.

Real-time OR intelligence dashboards for administrators to optimize resources at scale

Future-ready foundation for robotic surgery, predictive AI, and global tele-surgery.

DASH's Intelligent Dynamic OR is not just a product—it's a strategic differentiator that transforms the OR into a living, intelligent ecosystem

Client Testimonial

GC

The Dash team did an exceptional job and kept me involved at every stage, which was so important to me. Everyone, from the developers behind the scenes to the project team, played a critical role in bringing my app to life. I couldn't be happier with my decision to partner with Dash and will continue working with them as the app grows nationwide.

- Kevin Unger | Experienced Medtech Executive & Entrepreneur

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Certifications

