

TURNING A LEGACY MEDICAL DEVICE INTERFACE

Into a Safer, Faster Clinical Workflow

Client Challenge

01

A medical device company developing a Medical Ablation System needed to replace an outdated **Visual Basic operator interface** used by physicians and technicians in catheter labs.

The old interface was difficult to maintain, hard to extend, and not aligned with the documentation and traceability expectations of a regulated medical device project.

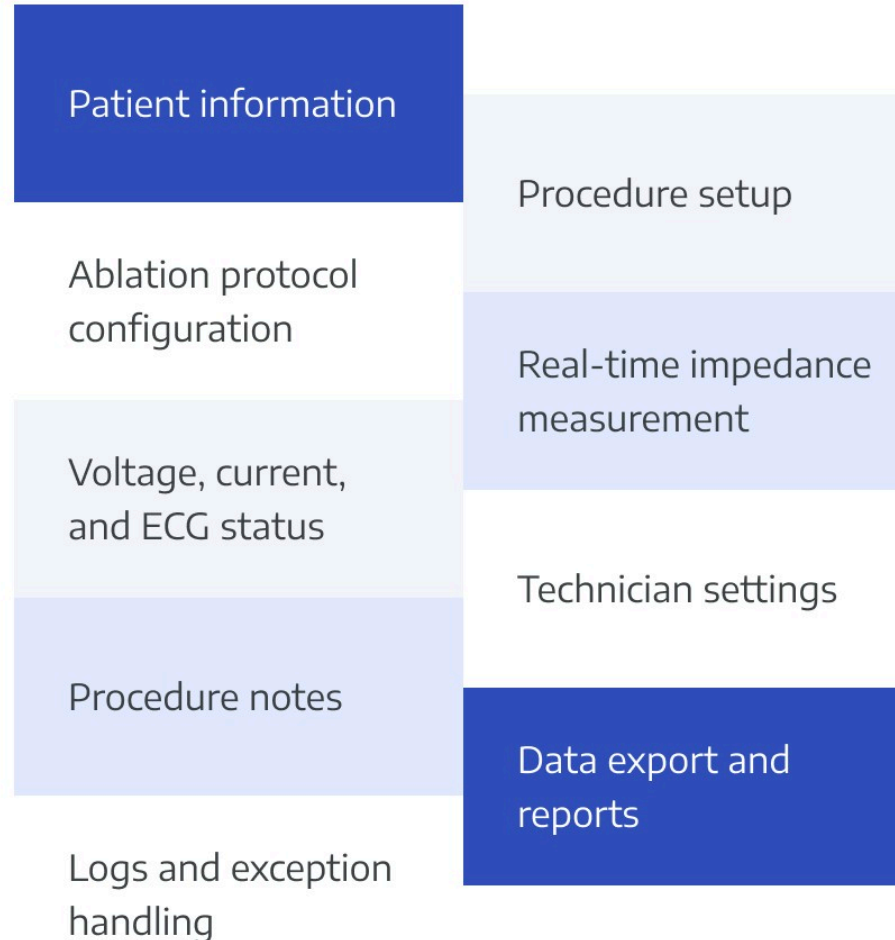
The system supports soft-tissue ablation using **Irreversible Electroporation**, so the UI had to guide clinical users through a high-stakes procedure while communicating with external hardware in real time.

The result: slower updates, higher support risk, harder validation, and more friction for clinical teams.

Solution Delivered by Zfort Group

Zfort Group built a modern **Windows tablet application** that serves as the operator interface for the Medical Ablation System.

THE APPLICATION GAVE CLINICIANS ONE CLEAR WORKFLOW TO MANAGE:



THE UI FOLLOWS A GUIDED FLOW:

01

Information

02

Procedure Setup

03

Measurement

04

Ablation Procedure

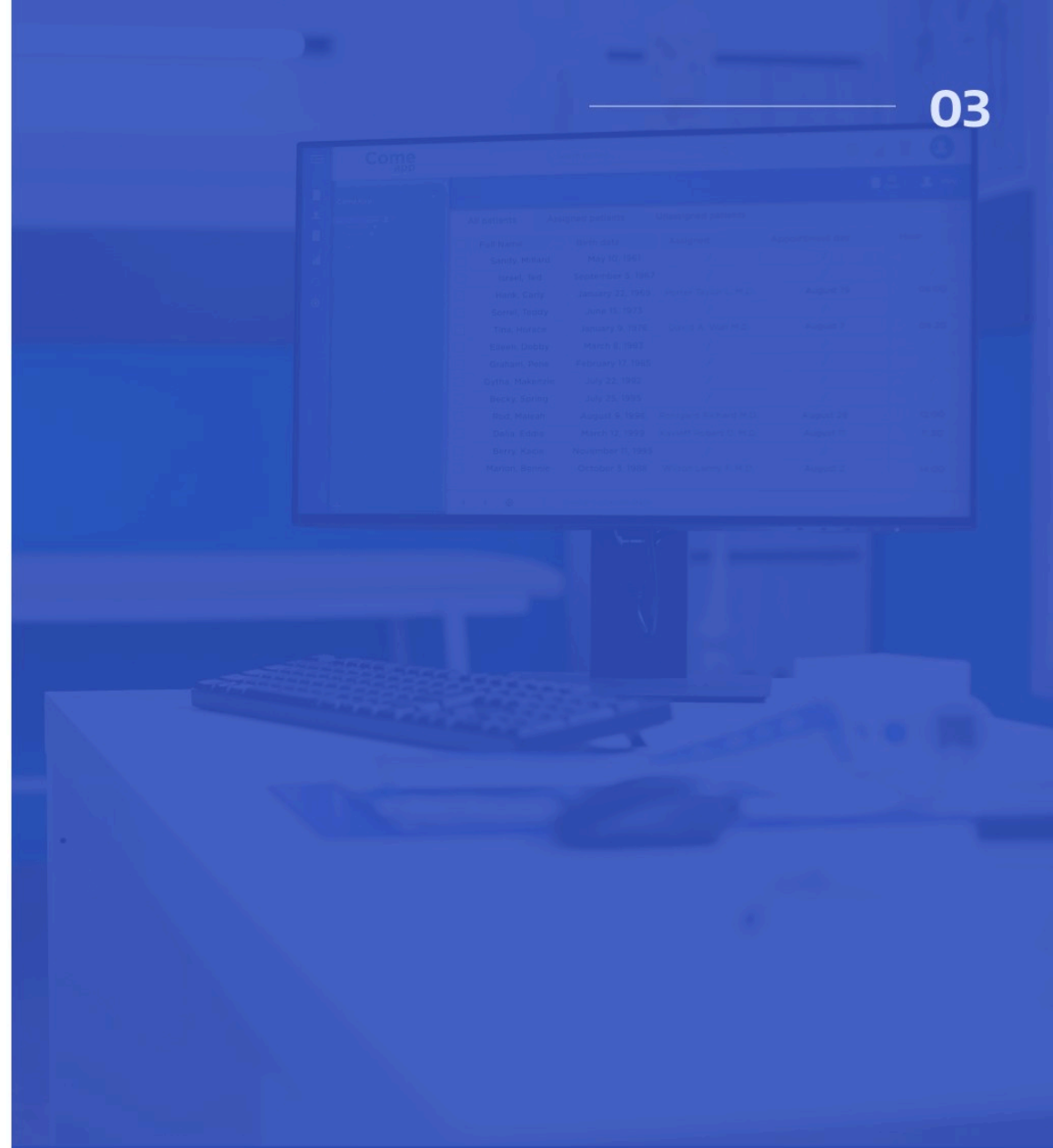
Think: fewer clicks, clearer steps, safer operation.

Data & AI Layer

The system turned live device and procedure data into structured, exportable clinical information.

Key capabilities:

- **EHR Data Integration and Normalization** readiness
- Real-time impedance and device status tracking
- Structured patient folders and procedure reports
- Export to TXT, XML, PDF, and logs
- Audit-ready activity and exception logs
- Foundation for future analytics and clinical reporting



CLINICAL USERS



Physicians & Technicians

Use the tablet interface to manage the procedure from start to finish.

MEDICAL ABLATION SYSTEM UI
Windows Tablet Application

GUIDED WORKFLOW


- 1. Patient Information**
Enter / review patient data
- 2. Procedure Setup**
Select procedure and settings
- 3. Ablation Protocol Configuration**
Configure ablation parameters
- 4. Measurement (Real-time)**
Monitor impedance, voltage, current, ECG
- 5. Ablation Procedure**
Execute ablation with real-time monitoring
- 6. Procedure Notes**
Add notes and observations
- 7. Technician Settings**
Adjust system preferences

MEDICAL DEVICE HARDWARE
Ablation System & Modules



- Impedance Data
- Voltage / Current Status
- ECG Status
- Device Status & Faults

EXCEPTION HANDLING & SAFETY



Detects faults or unsafe conditions

- Stop Sequence
- Disable High Voltage
- Fail-safe Shutdown

LOCAL DATA STORAGE
Structured & Secure



- Patient Data
- Procedure Data
- Real-time Measurements
- Settings & Notes


STRUCTURED REPORTS
Procedure Summary



DATA EXPORT
Multiple Formats

- TXT File
- XML File
- PDF Report
- Activity Logs

Exception Logs



EHR INTEGRATION (READINESS)

Bi-directional Data Exchange

- Patient Demographics
- Procedure Data
- Clinical Context

AUDIT & TRACEABILITY
Compliance & Documentation



- Activity Logs
- Audit Trails
- User Actions
- System Events

FUTURE ANALYTICS & REPORTING
Data Foundation for Insights



- Clinical Reporting
- Performance Insights
- Quality Improvement

FLOW LEGEND

- Device Data Flow
- Data & File Flow
- - - User Interaction
- - - - Safety / Exception Flow
- - - - External System Flow

Security & Compliance

Built for a regulated medical device environment:

IEC 62304-aligned
documentation

Requirements-to-test
traceability

Role-based access control

Secure device communication

Controlled local patient data
storage

Structured logging

Fail-safe shutdown behavior

Exception handling that
triggers **StopSequence** and
DisableHV

The application was designed to behave predictably during usb disconnects, network faults, or unexpected termination.

First functional release in about **10 person-weeks**

Full migration from **Visual Basic** to **C#/.NET WPF**

40-60% estimated reduction in future change-request effort

Stable REST/HTTPS and USB serial communication with hardware modules

Graceful recovery from induced USB and network faults

IEC 62304-aligned documentation delivered and accepted

25-35% fewer screens and taps for standard procedure setup

20-30% faster time-to-proficiency for new physicians and technicians

Structured data foundation for future analytics and reporting

Results & Impact

Why It Matters for Medical Professionals

Clinicians need tools that make procedures clearer, not more complicated.

This UI helps physicians and technicians move through ablation workflows with fewer distractions, better real-time visibility, and more predictable system behavior.

The result: safer operation, easier training, cleaner documentation, and more time focused on patient care.



Zfort Group's HealthTech Advantage

08

EHR Data Integration and Normalization

Secure healthcare workflow platforms

Medical device UI modernization

IEC 62304-aligned delivery

AI-assisted clinical documentation

Custom reporting dashboards

Reduce physician burnout while maintaining care quality

Build tools that complement Epic, not replace it

AI/ML pipelines for US payers under BAA

Contact Information

To coordinate next steps please contact:

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