

*Case Study*

# **Precision in Dysphagia Care: The Swallow Study Recorder's Innovative Approach**

The Customized Embedded System



## Revolutionizing Swallowing Assessments with Advanced Recording Technology

Accurate swallowing assessments are essential for diagnosing and managing dysphagia, and the Swallow Study Recorder is transforming this process. With high-precision recording, real-time processing, and advanced analysis tools, it enables healthcare professionals to detect and evaluate swallowing disorders with greater accuracy and efficiency.

Its instant playback, seamless integration with imaging and sensor technologies, and optimized workflow enhance diagnostic confidence while streamlining assessments. By providing clearer insights and faster evaluations, the Swallow Study Recorder supports more effective dysphagia management and improved patient care.

### Challenges

The customer aimed to enhance the Swallow Study Recorder with cutting-edge technology to improve both performance and functionality. Their goal was to develop a high-resolution, medical-grade video recorder that would deliver exceptional recording quality while seamlessly integrating with proprietary medical software to enhance efficiency and usability. The challenge was to create a versatile, reliable solution capable of meeting the demands of modern healthcare.

#### Main Requirements:

- High-performance Intel® Core™ processors
- Seamless integration with the designated capture card
- Customized M.2 slot orientation for easy SSD installation
- 1 HDMI port and 1 DisplayPort++
- 4 USB 3.2 ports and 5 USB 2.0 ports

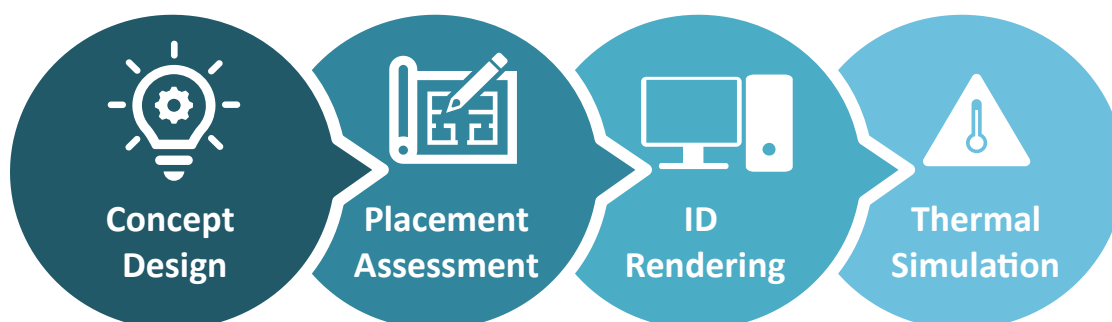
## Innovative Engineering for a Future-Ready Swallow Study Recorder

Axiomtek delivered a customized medical box PC powered by 12th Gen Intel® Core™ i7/i5/i3 processors, providing the performance needed for advanced medical applications. The system's slim design is compatible with an expandable PCIe x16 slot, allowing seamless integration with a capture card. To enhance versatility, it offers multiple USB connectivity options for seamless device integration and various mounting configurations, including round plate and VESA mount, ensuring flexible installation in different medical environments.

The medical box PC was precisely modified to integrate the customer's capture card and medical-grade adapter, improving compatibility and overall performance. Additionally, an integrated ventilation opening was thoughtfully designed to balance aesthetics with effective thermal management, ensuring stable and reliable operation. A custom thermal solution was implemented, with the optimal design chosen after evaluating multiple options, further enhancing system efficiency. These enhancements make the Swallow Study Recorder a flexible, efficient, and future-ready solution for modern healthcare.

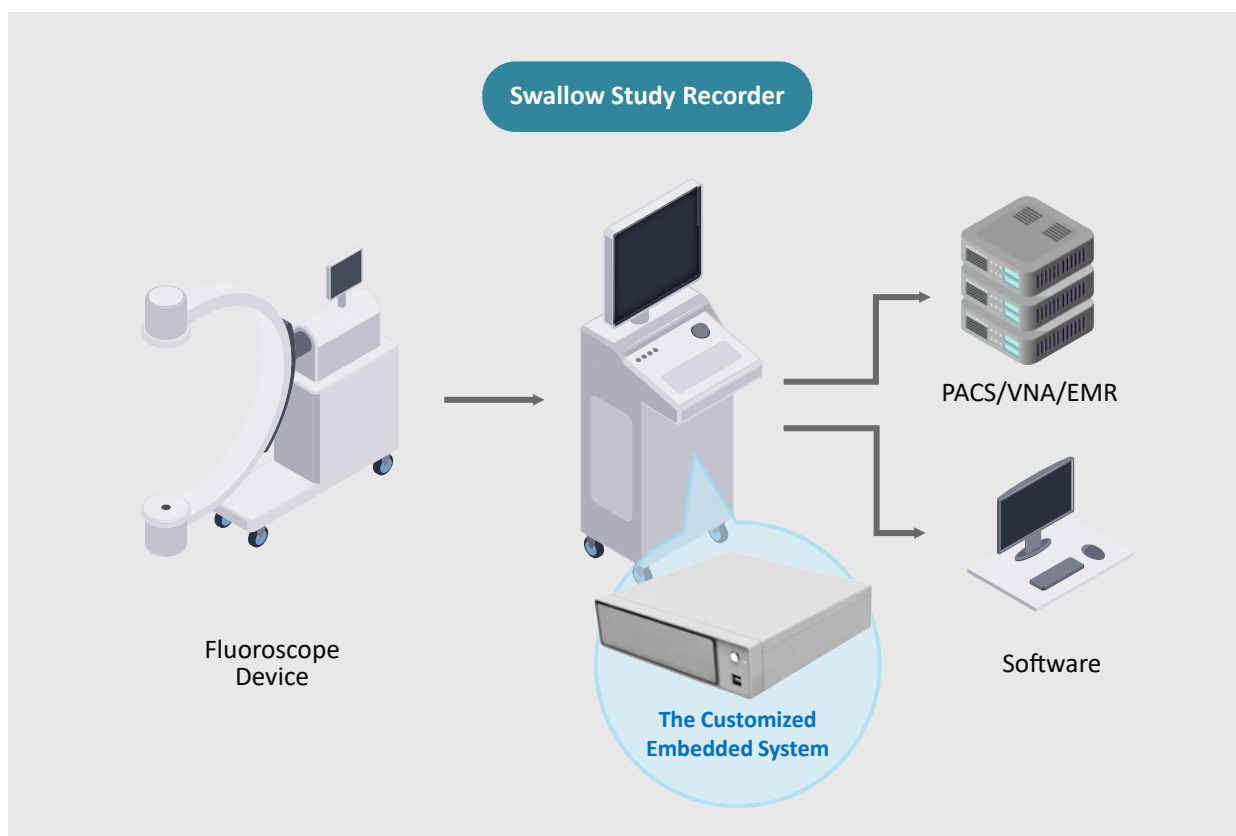


▲ The Customized Embedded System for Smart Healthcare



## Application

## Advancing Precision in Dysphagia Assessment



The medical box computer seamlessly captures high-resolution images and videos from medical imaging devices, such as endoscopy and fluoroscopy, via HDMI, USB, or PCIe capture card connections. Powered by proprietary software, it processes data in real-time, optimizing image quality for precise recordings. The processed data is securely stored and easily integrated with PACS, VNA, and EMR systems, ensuring smooth data management and quick retrieval. By streamlining workflows, the medical box computer enhances clinical efficiency, enabling healthcare professionals to access, analyze, and share imaging data faster and more accurately.

## The Customized Medical Box PC System Configurations

### Customized Embedded System:

- 12th gen Intel® Core™ i7/i5/i3 processor
- Versatile USB connectivity
- Multiple mounting options: round plate, VESA mount
- Slim design with expandable PCIe x16 slot
- Integrated ventilation for efficient cooling

## Why Axiomtek

Axiomtek specializes in high-performance, customizable embedded solutions designed to meet the evolving demands of the healthcare industry. With expertise in seamless hardware-software integration, thermal optimization, and advanced computing, we deliver reliable, future-ready systems. Our commitment to quality, flexibility, and innovation makes us a trusted partner for medical applications like the Swallow Study Recorder, enhancing clinical efficiency and patient care.

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**Business is built on relationships, and people do business with people. From the very beginning of our transition to Axiomtek, our collaboration with them has been seamless. The process was remarkably smooth, and our strong partnership has remained consistent over the years. We are fortunate to have Axiomtek as a trusted partner and look forward to many more years of success together**

– President/CEO of the customer

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## About **Axiomtek Co., Ltd.**

Axiomtek has achieved remarkable growth over the past 35 years thanks to our dedicated people, industry expertise, and commitment to delivering easy-to-integrate solutions. Celebrating 35 years of innovation, we continue to invest in our team of software, hardware, firmware, and application engineers who drive our progress.

As we look to the future, our success will depend on leading with advanced AIoT technologies and offering comprehensive hardware and software solutions. By providing exceptional engineering, value-added services, and innovative solutions, we help system integrators, OEMs, and ODMs overcome challenges and succeed in their markets.

In our 35th year, we are focused on building stronger partnerships and expanding our network of technology leaders. These alliances create synergy and enhance our ability to deliver the solutions and expertise our customers need.

Axiomtek is also a proud member of the Intel IoT® Solutions Alliance — a global network of over 800 industry leaders. This membership grants us exclusive access to Intel technology, expertise, and support, enabling us to deliver top-tier solutions to our customers.

With 35 years of experience behind us, we are excited to continue driving innovation and delivering value to our partners and customers.