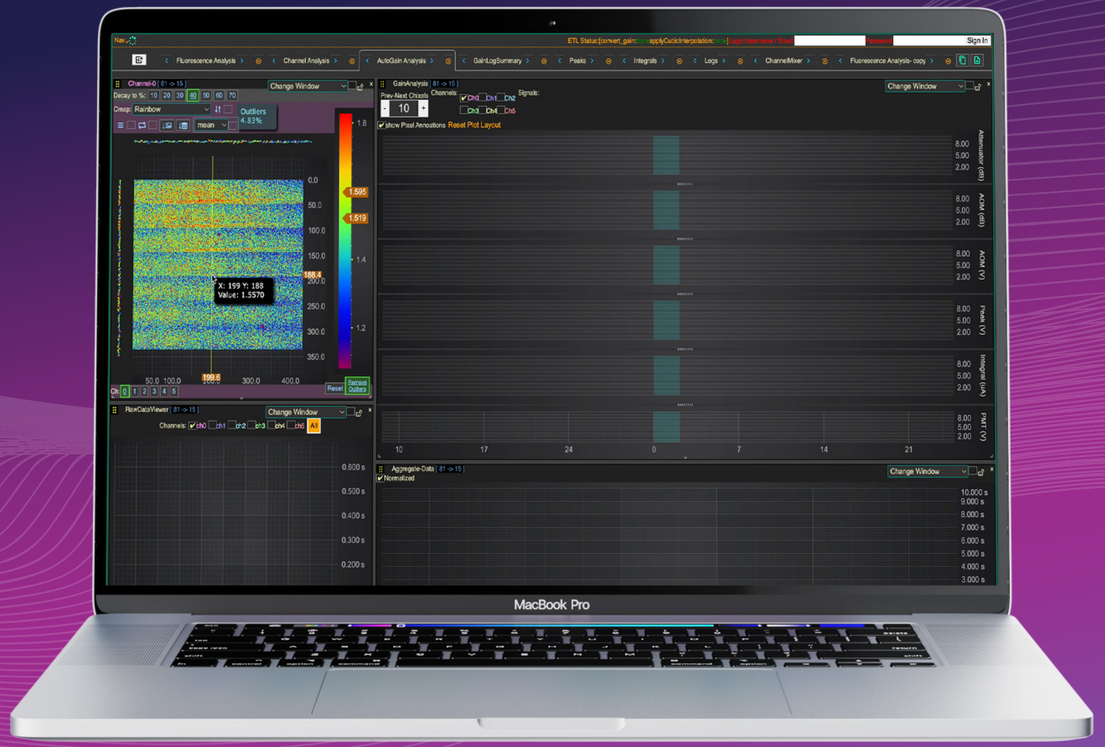
SCICHART



Case Study

Customer:

BlackLight Surgical

BLACKLIGHT SURGICAL

Industry:

Medical Imaging

BlackLight Surgical has developed a new biochemical imaging modality using Time-Resolved Laser Induced Fluorescence Spectroscopy to differentiate tissue types.

Who is BlackLight Surgical?

BlackLight Surgical has created advanced technology that revolutionizes medical imaging after conducting thorough research. Their innovative approach incorporates Auto-Fluorescence lifetime principles, providing highly precise tissue characterisation without the need for dyes or drugs.

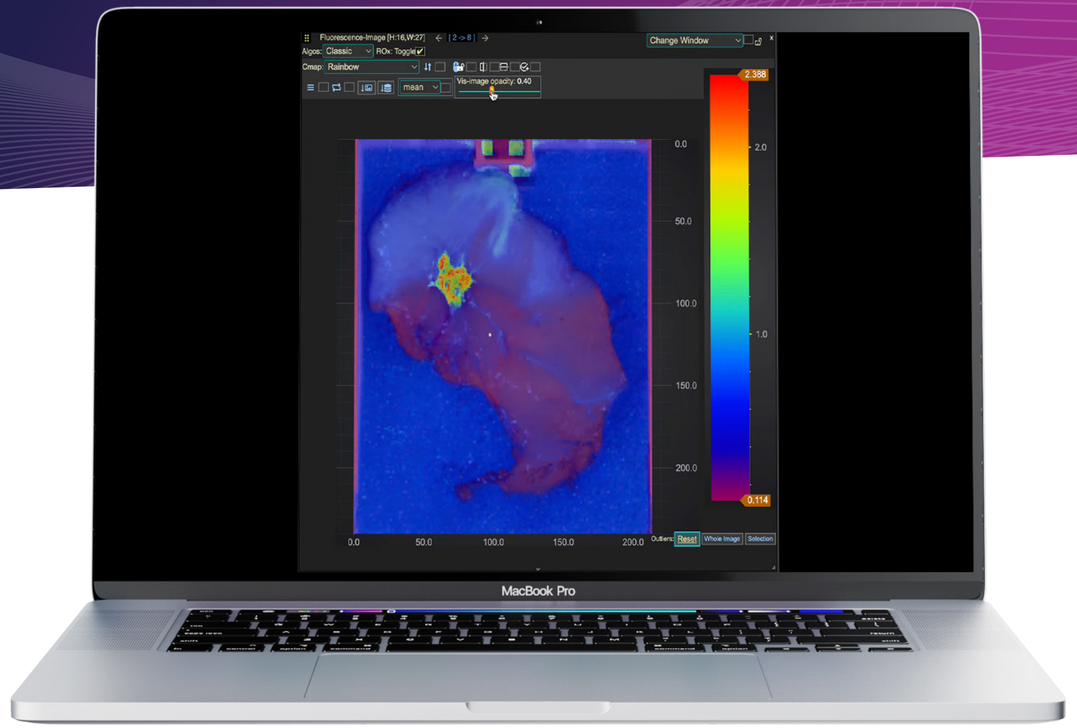


The primary focus is to address a significant challenge in breast cancer surgery: the requirement for multiple procedures after breast-conserving surgery (BCS) to ensure the complete removal of cancerous tissue.

BLACKLIGHT SURGICAL

What processes do BlackLight Surgical use?

The technology uses Auto-Fluorescence lifetime to distinguish cancerous tissue from normal tissue.



Laser-Induced Fluorescence

A 20-picosecond laser flash is used to generate fluorescence in the tissue. This brief exposure causes outer shell electrons in the tissue to move to a higher energy state.

Fluorescence Decay Measurement

After the laser is turned off, the fluorescence does not immediately disappear. The decay of fluorescence, measured in nanoseconds, is tracked. This decay varies based on the type of tissue, with cancerous tissue showing distt decay patterns compared to normal tissue.

High-Resolution Imaging

The imaging system captures data at a rate of 1.5 gigabits per second, generating up to 125 gigabytes of data per tissue scan. This high-resolution data allows for detailed analysis of tissue characteristics.

What drawbacks were BlackLight Surgical facing?

Before integrating SciChart's visualization tools, BlackLight Surgical encountered several significant drawbacks that affected the efficiency and effectiveness of its imaging technology.



Slow Data Processing

BlackLight Surgical used visualization tools like Plotly, which plotted data in SVG format. This method was not able to handle large volumes of data efficiently, resulting in slow performance and lag in data visualization.

Limited Charting Capabilities

The previous visualization tools did not support the advanced charting capabilities required for the detailed analysis of fluorescence decay and other complex data metrics.

Handling Large Data Sets

Managing up to 125 gigabytes of data generated per scan by the imaging system was a significant challenge with the existing tools, as they were not optimised for handling such large datasets efficiently.

Slow Data Retrieval

Retrieving and visualising large datasets was time-consuming, potentially causing delays in critical intra-operative decisions.

Inadequate Visualization Quality

The quality and clarity of the visualizations were not up to the required standards for high-stakes surgical decision-making.

For BlackLight Surgical, relying on post-surgery pathology analysis is time-consuming and can result in missed cancerous tissue, leading to the need for additional surgeries. This not only causes significant stress for patients but also places a substantial financial burden on the healthcare system.

Unlocking BlackLight Surgical's potential:

How did SciChart help?

High-Performance Rendering

SciChart provided high-performance rendering capabilities that could efficiently handle the large volumes of data generated by BlackLight Surgical 's imaging system, enabling real-time data processing and visualization crucial for intra-operative decision-making.

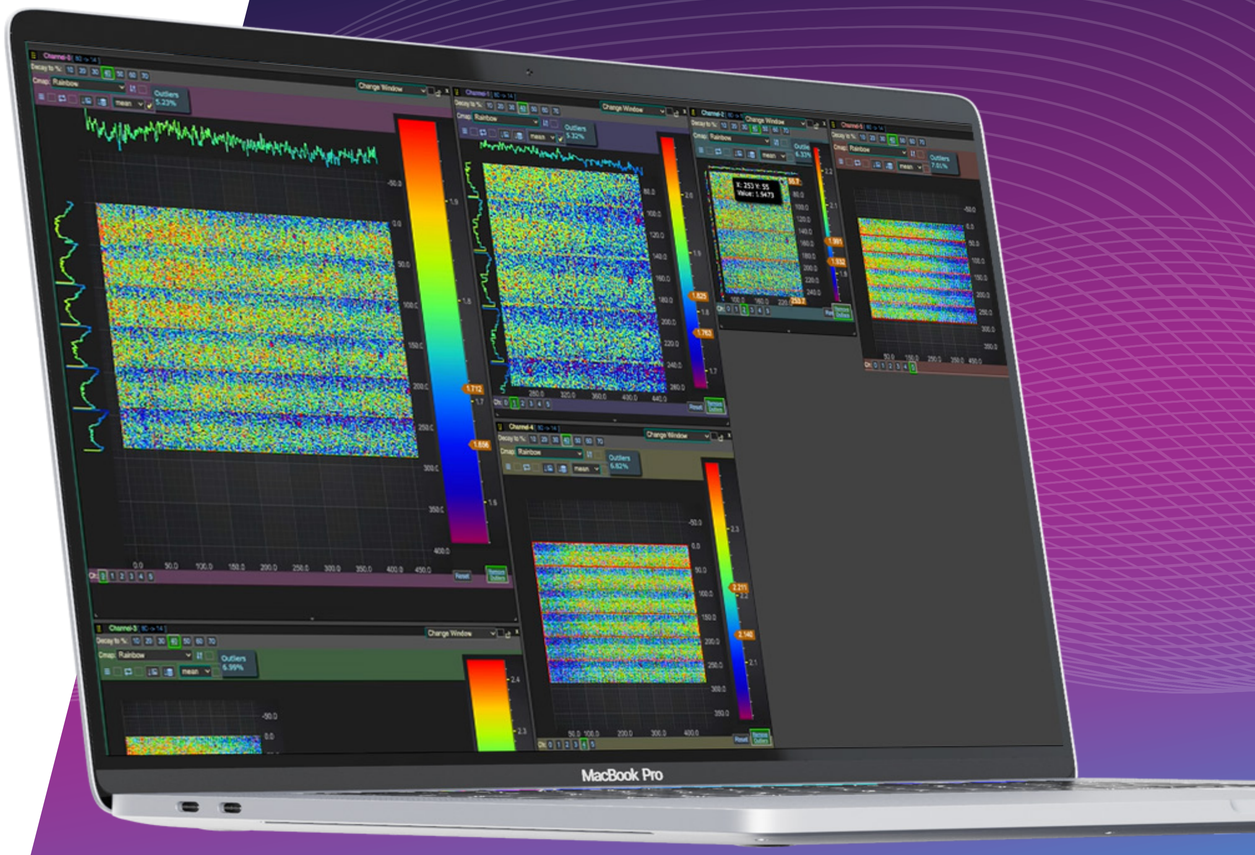
Optimised for Large Data Sets

SciChart's charting tools are designed to manage large datasets effectively, ensuring quick data retrieval and smooth visualisation, even with terabytes of data.

Customizable Charts

SciChart offered highly customizable charting options that allowed BlackLight Surgical to tailor visualizations to their specific needs, including advanced chart types essential for analysing fluorescence decay and other complex metrics.

Continues overleaf >



Efficient Data Handling

SciChart's ability to handle large data sets and generate visualizations quickly helped manage the massive data volumes produced during scans, reducing the time needed for data processing and visualization.

Scalable Solutions

SciChart's tools are scalable, meaning they can grow with BlackLight Surgical's needs as the imaging system expands to handle more patients and data, providing fast and reliable performance.

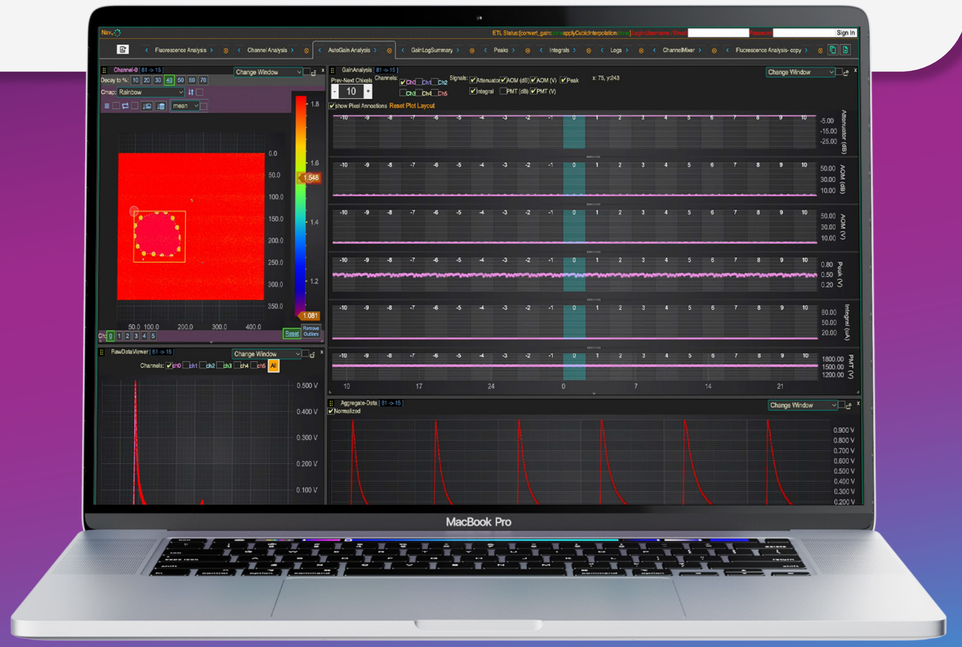
High-Quality Visuals

SciChart's high-quality visual representations of the imaging data provided clear and precise images, essential for accurately assessing tissue characteristics and making surgical decisions.

High-Quality Visuals

Advanced visualization capabilities, such as displaying the decay of fluorescence in nanoseconds and comparing different tissue types, providing deeper insights into the data.

In addition to their ground-breaking imaging technology, BlackLight Surgical integrated SciChart's high-performance and highly customizable charting library into their workflow. SciChart's tools provided the necessary speed, flexibility, and capabilities required to analyse and visualize the large amount of data generated by BlackLight Surgical's technology.



Further results

SciChart's high-performance visualization tools with BlackLight Surgical's imaging technology offer substantial benefits that can revolutionize breast cancer surgery and other medical applications.

The ability to provide real-time, accurate tissue characterization during surgery can significantly reduce the need for repeat procedures, lower healthcare costs, and improve patient outcomes.

By addressing the challenges related to data management, cost, complexity, integration, and technical limitations, BlackLight Surgical can enhance the efficacy and adoption of its innovative imaging system.

Whether you need the tools to pioneer life-changing medical devices, advance cutting-edge research, or elevate your healthcare services, download our SciChart software today.

BLACKLIGHT SURGICAL



"We used to rely on a different charting library, but over time, it became too slow for our needs due to the large volume of high-resolution data we work with. Our previous tool rendered charts in SVG, which caused significant performance issues. We needed a faster, more capable solution that could handle complex, data-heavy visualizations without slowing down.

When we looked at SciChart, it solved our problems right away, and we never explored anything else. The rendering speed is impressive, even with high-resolution images and large datasets, allowing us to work more efficiently. The overall experience has been smooth, and we're very satisfied with how it handles our specific requirements."

Why choose SciChart?

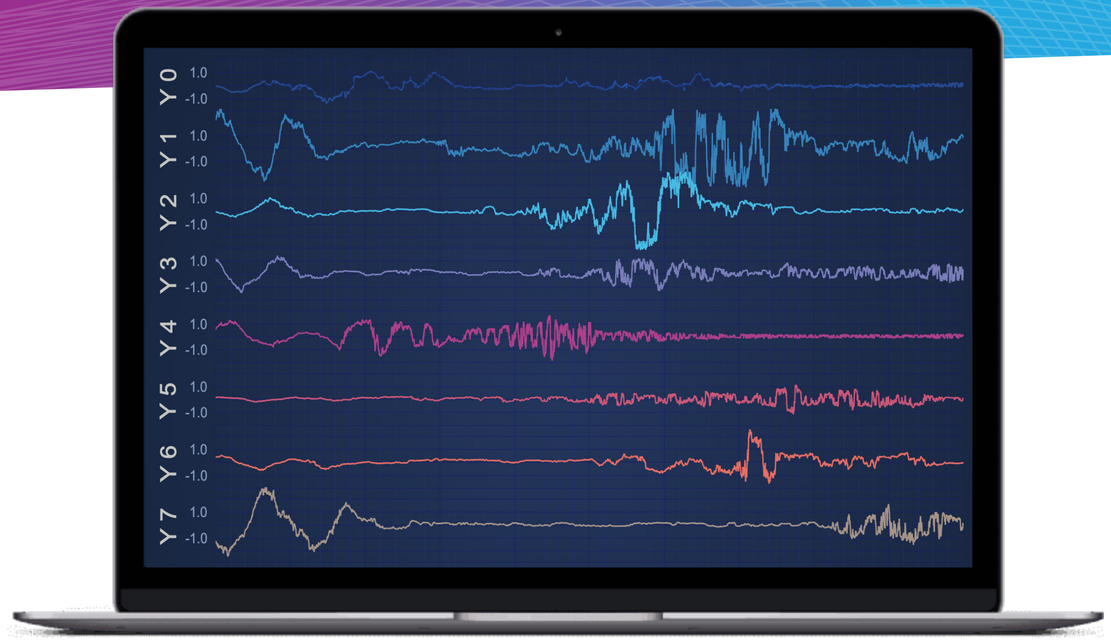
SciChart’s visualization tools enhanced the efficiency and effectiveness of BlackLight Surgical ’s imaging system, providing real-time, visually intuitive data during surgery, and enabling informed decisions with confidence.

Rapid Data Analysis

SciChart’s high-performance charts facilitate quick analysis of complex datasets, essential for real-time intra-operative decision-making.

Customizable Visualisations

The ability to customize visualisations allows for the presentation of data in a manner most useful for surgical applications, such as heat maps and line charts.



About SciChart

SciChart is a cross-platform WPF, iOS, Android and Xamarin Scientific & Financial Charting Library.

SciChart supports rendering of complex, interactive, real-time charts with many millions of data points for demanding scientific, medical and financial applications and embedded systems that require high performance, rich interaction and smooth updates.



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