

Realtime Charts for the CITREX H5

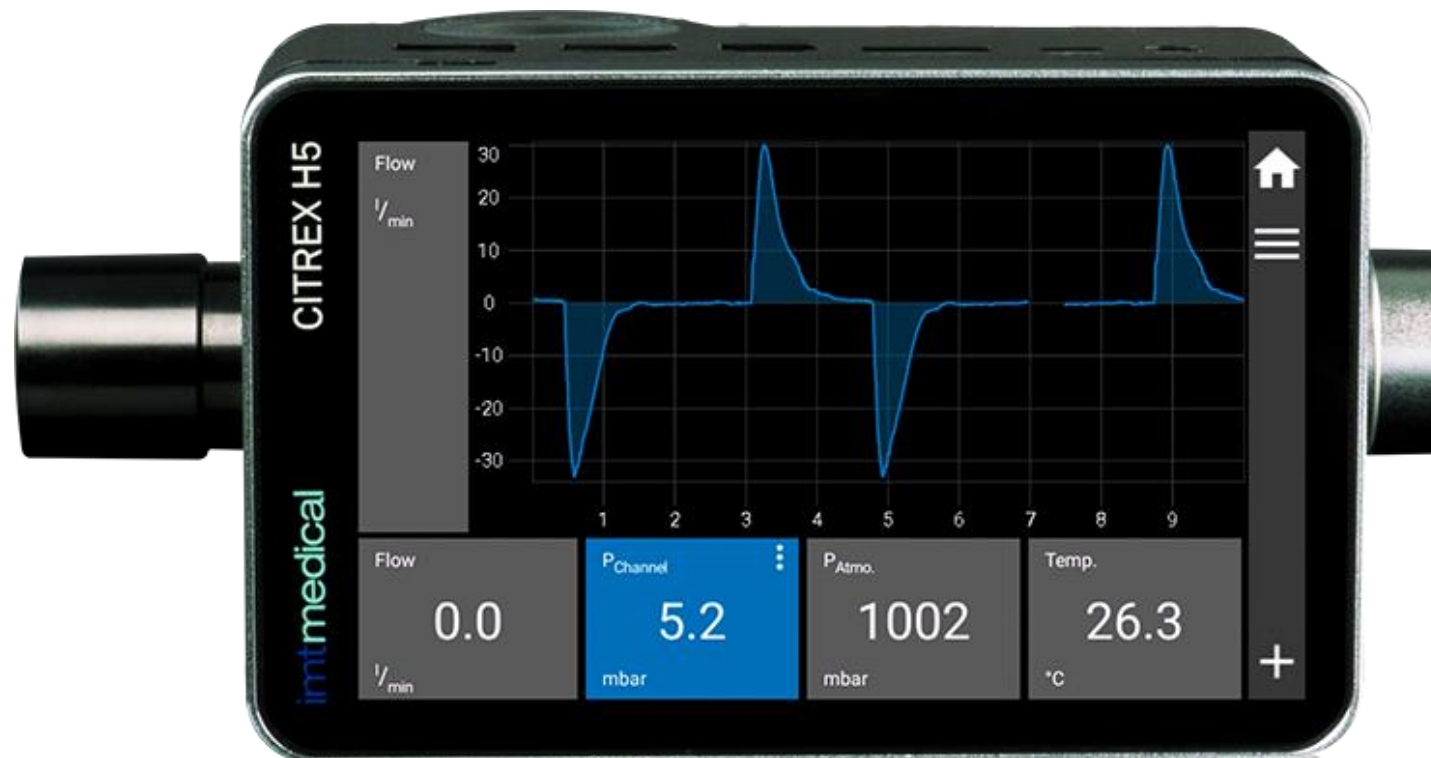
The ideal all-in-one testing device for medical technicians, independent service organisations, anaesthesia and respiratory equipment manufacturers.

Performed by

IMT AG, Engineering

Industry

Engineering, Healthcare



“The best mobile test device in its class”



Project Motivation and Goals

The purpose of the imtmedical CITREX H5 project was to build a mobile ventilator tester that will measure the performance of the breathing ventilators.

Described as a 'Gas Flow Analyzer', the CITREX H5 is the 'ideal all-in-one testing device for biomedical technicians, independent service organisations, anaesthesia and respiratory equipment manufacturers'.

The device uses about 20 to 30 sensors, and enables users to measure and test a variety of medical equipment including airflow, pressure, temperature etc...

The sensor values are shown in realtime on the screen allowing medical device engineers to verify the accuracy of the ventilators performance and provide the necessary maintenance.

"It was actually IMT's prompting and early adoption of SciChart Android which caused us to develop this platform, so we really have to thank them for their input into making this product!"

Andrew Burnett-Thompson, SciChart CEO

The Challenge

IMT AG needed to have smooth real-time line and mountain charts on a testing device / embedded system for medical industry with very low power & low cost hardware.

The first choice was to choose between existing real-time chart components or port existing C# codedbase to Java.

None of the existing components were targeting high performance scalability and none had the "spirit" to take on this challenge.. But SciChart did.

Hardware limitations

- Freescale i.MX6 Running Android Lollipop 5.1.1
- Dual Core A9 CPU @ 692MHz with 1 GB RAM
- Vivante GC 320 GPU

Requirements

Chart types: Single X-Axis (relative time) with one or two Y-Axis;

Scrolling behavior data rollover:

Once the values reach the end of the X-Axis (time), the data needs to rollover and replaces the oldest data. Between the oldest and the newest data should be a placeholder gap;

Presentation: Single X-Axis with one Y-Axis with independent scaling.

A title, legend and a label for each axis should be configured. The scale for each axis can be adjusted;

Zooming & Interactivity: Solution requires auto scaling, multi touch drag, pan, scroll and multi chart synchronization;

Annotations: Line annotations with a label to be added to the chart.

The position and visibility of the annotation can be programmatically manipulated;

Theming & Styling: Color (for background, axis, grid lines and line series) and Font (for font style and color of title, axis labels, axis values and legend) need to be configurable;

Performance:

Data is added with 200Hz update frequency (new data each 5 ms).

CASE STUDY

SciChart.Android



Solution Provided

Android Chart Design & Integration

SciChart Android Charts were designed in collaboration with Michael Guntli from IMT AG in order to meet the specifications of their bespoke hardware. This allowed us to build a library which was extremely high performance, efficient and lean.

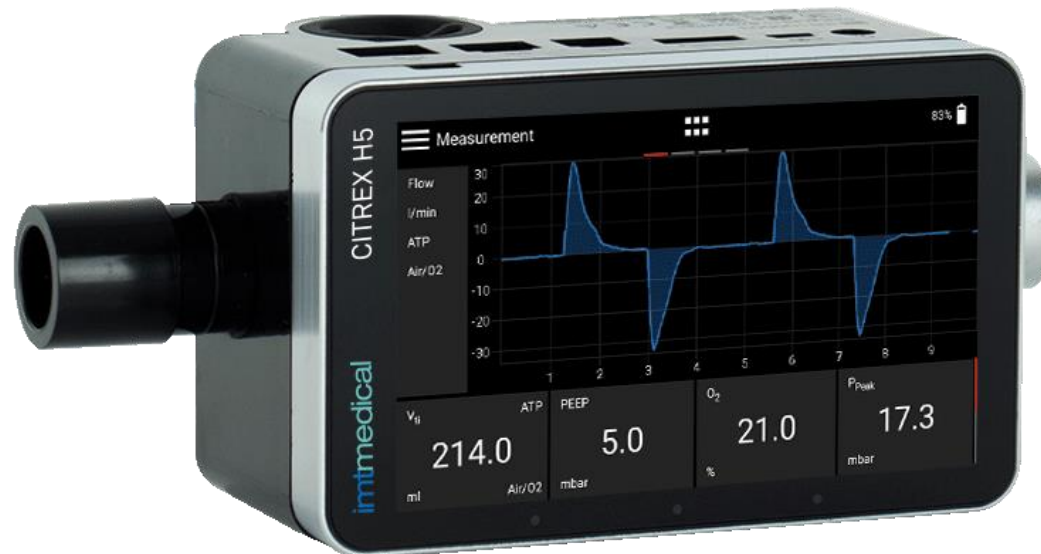
High Performance Capabilities

SciChart's high performance capabilities were developed and honed on the extremely low power hardware provided by IMT AG, including a Freescale IMX-6 'Wandboard' which was given to us for testing.

Using a mixture of Java, C++ with the Android NDK, and OpenGL ES2.0, SciChart's developers refined the performance of our Realtime charts until they were able to run at 30 FPS on only 400MHz of CPU.

Smooth, rich touch interaction

was enabled, to allow Pinch to Zoom, Drag/Touch to Pan, Axis Drag and tooltips on all SciChart.Android charts.



Believe us, we implemented the charts our own in our software, we wouldn't do it again... just use SciChart and it just works!"

M.Guntli, IMT AG

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.

SciChart Ltd

16 Beaufort Court, Admirals Way,
Docklands. E14 9XL. London.
United Kingdom

Web: <https://www.scichart.com>

Contact us at: sales@scichart.com

