

Visualization of data from more than 300 sensors from a race car

Customer

Revolve NTNU Norwegian University of Science and Technology

Industry

Engineering, Racing, Formula Student

Notes

This implementation has been done as part of SciChart's "Free Educational license" for academic and non-profit projects.





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Background

REVOLVE NTNU: An independent student organization at the Norwegian University of Science and Technology.

THE MISSION: “From theory to practice” with a team consisting of 64 members who work voluntarily parallel to full time engineering studies from 13 different engineering fields

GOAL: To develop and build a race car from scratch in one year with the help of the engineering students unique skill sets.

ACHIEVEMENTS: Revolve now creates a highly complex race car for competition year in year out since 2014.

Data & Preconditions

- Data from over 300 sensors
- Multiple Chart types
- Realtime Monitoring
- Easy to use charting solution for Students

Requirements

Revolve needed a charting tool that could handle visualisation of data received from over 300 sensors at a time **to be displayed in:**

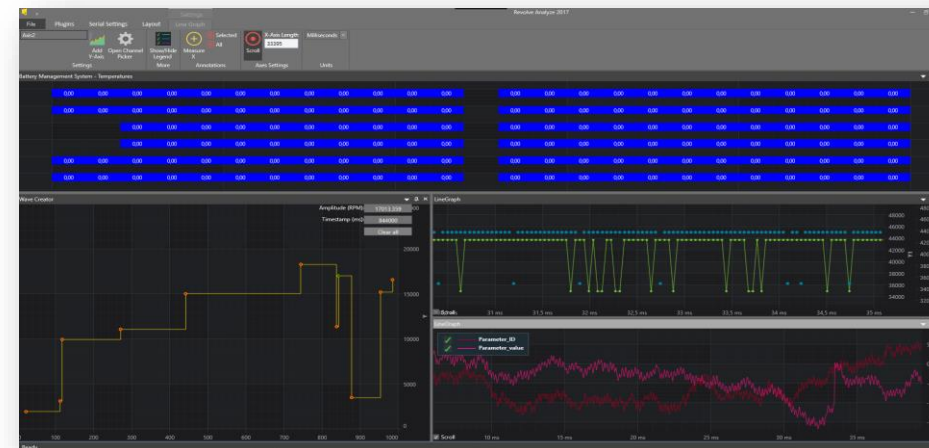
- Line graphs
- Scatter plots
- Heatmaps

The sensors collected data from **temperature** and **voltage** as well as **performance**.

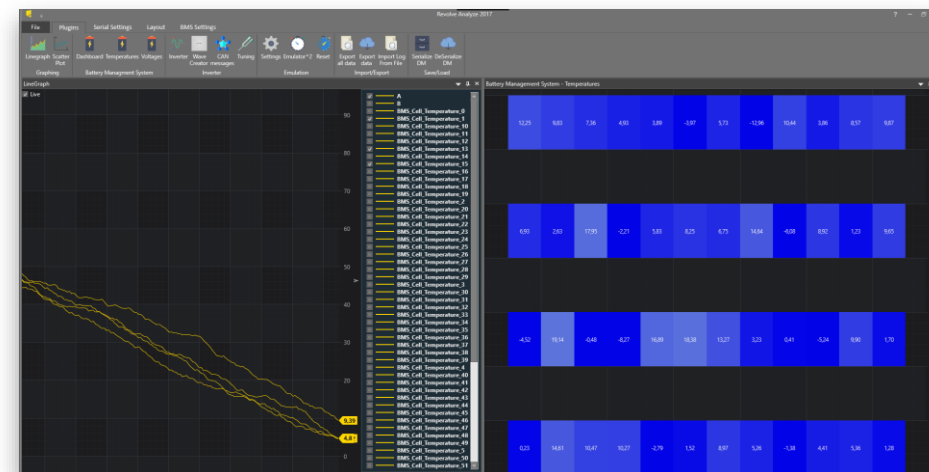
Data needed **to be analyzed for:**

- Car Performance Adjustments
- Battery Management
- Testing and tuning the control unit
- Monitoring the essentials about the inventor

The Charting solution needed to be Easy To Use and flexible with extensive documentation, FAQ's and general all round usability.



Plugin, displaying the information on battery management, car and inventor performance



Heatmap for visualization used for battery management



CASE STUDY

SciChart.WPF



Solution

Data from all 300+ Sensors

Handled in Realtime with a smooth UI using SciChart High Performance Charts

Data was interpreted and annotated

For performance analysis and testing with SciChart rich core Charting API

Line Charts, Scatter Plots & Heatmaps

Were implemented from readily available SciChart extensive example library.

Further Project results

The hard work results in a highly complex product, a proper race car.

The car offers innovative solutions and complex design in order to optimize traction, aerodynamic properties, data acquisition, vehicle control and minimize weight in order to achieve the best performance.

read more: <http://www.revolve.no/revolveanalyze/>



SciChart is a flexible, high-performance graphing tool, which has made a great difference for us. As students, it's been challenging to dive straight into developing a program on our own. With the support of SciChart, graphing has been a cinch. Not only was it easy to use, but if we ran into trouble, the SciChart team always had our backs. Since we are all students working on this project, good documentation, FAQ answers, customer service and usability was a major factor as well. In these departments, we are very pleased with SciChart, and would definitely recommend it to others.

**Maja Worren,
Revolve team**

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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