thermo**scientific**
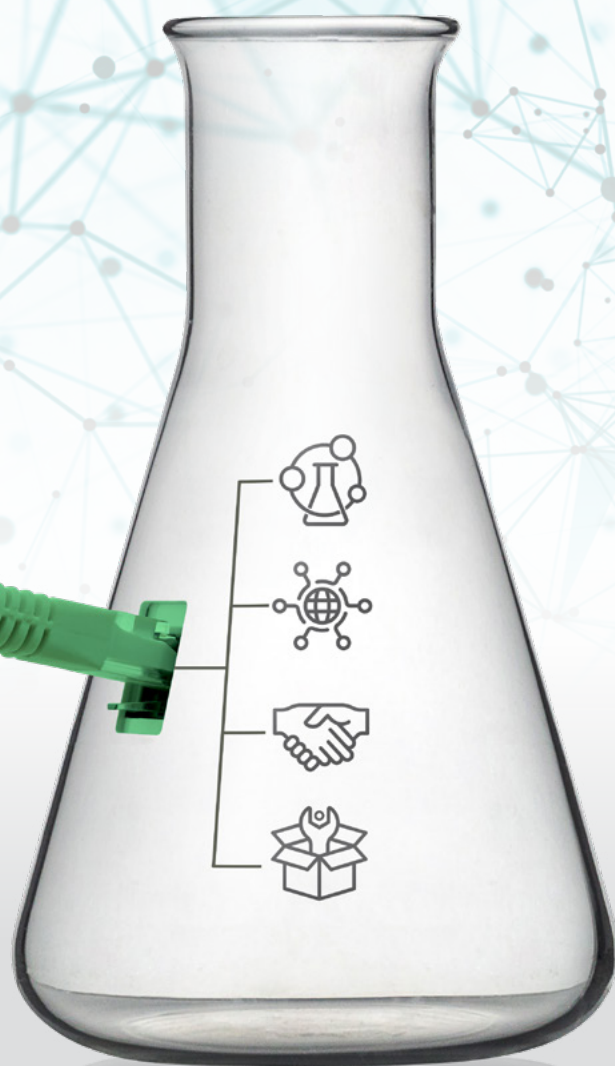
Built for **connectivity.**
Built for **collaboration.**
Across the lab and enterprise

Chromeleon
Chromatography
Data System

Thermo Fisher
SCIENTIFIC

The freedom to adapt

Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS) is the gold standard CDS from Thermo Fisher Scientific. From its earliest days it has pioneered multi-vendor instrument control as part of its core value proposition along with open connectivity to other software packages.

For the laboratory, this brings freedom of choice to instrument selection, all managed within a single software platform. Additionally, the ability to interface with other software applications delivers connected workflows that enhance data integrity and ease-of-use. This connectivity can be further extended throughout and beyond the laboratory, across the entire business, by further interfacing with other enterprise systems.

Thermo Fisher collaborates with many different hardware and software vendors, using either the Chromeleon Software Development Kit (SDK) or Driver Development Kit (DDK), to deliver added value to their products and connect them to the global Chromeleon CDS user community.

⟩⟩⟩ Chromeleon CDS is built for...

...connectivity for the lab ⟩⟩⟩

- Freedom of choice; select the best instruments and software for the application

- Optimize data integrity through seamless integration between systems

- Facilitate complex automated workflows between multiple software and instrument solutions

...connectivity to the enterprise ⟩⟩⟩

- Reduce risk, cost of ownership, and increase efficiency by deploying a single CDS

- Seamless integration with other enterprise software systems

- Track chain of custody, from sample to results with all relevant data linked for full traceability across integrated systems

...our partners

- Develop instrument control drivers for their instruments to support their customers

- Build interfaces to their applications for seamless, compliance-ready workflows and control Thermo Scientific instruments from their software application

- Create applications using the Chromeleon SDK providing added value to our mutual customer base

"Thermo Fisher Scientific's interest in supporting third party developers is evident by the work they have put into the Chromeleon API. The documentation is thorough and example projects permitted us to test concepts within an hour and develop a fully functional prototype in a day."

— Scitara Development Team, Geoff Gerhardt, CTO

"The DDK is a very comprehensive and intuitive driver development kit for Chromeleon CDS. Development of instrument drivers and their seamless integration with Chromeleon software is aided by adequate documentation, sample projects and Visual Studio templates in the DDK."

— Mphasis, Medical Devices and Analytical Instrumentation, Sujit Sudhaman, Business Development Manager

Connectivity for the laboratory

Laboratory workflows often require many preparation steps before sample analysis. These steps frequently involve non-chromatographic instruments, like balances, liquid handlers, dissolution baths, solvent extractors, or titrators. While these usually come with proprietary software, the data is typically needed later for analysis in the CDS, for example to perform calculations, trigger actions or prove compliance. Therefore, it's important that these instruments and software can seamlessly exchange data with the CDS.

This connectivity and integration can be achieved with:

- The Chromeleon SDK to connect systems to Chromeleon CDS and enable seamless workflows.
- Instrument control drivers specifically written for Chromeleon software using the DDK.
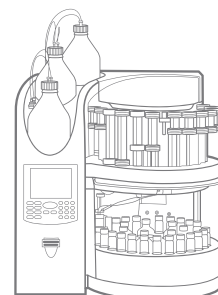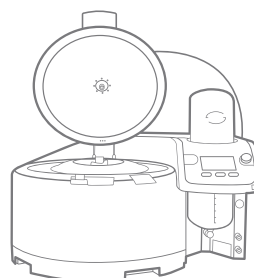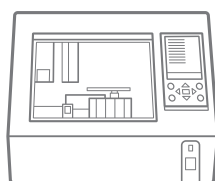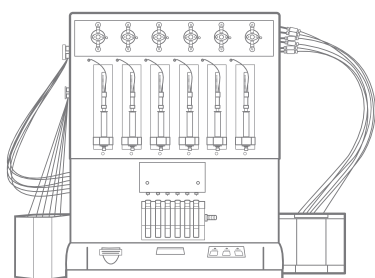
The power of SDK and DDK solutions

- Weighing is the most common sample preparation technique and modern balances do more than just weighing. A direct plug-in provides a paperless solution for Sartorius Cubis® MSA premium analytical balances, while Mettler Toledo's precision balances, controlled by LabX™ software, are seamlessly integrated into Chromeleon CDS supporting complex weighing workflows with step-by-step guidance. This integration provides full audit trails, increasing traceability and data integrity.

- Method development solutions for liquid chromatography (LC) are available. Collaboration with ChromSword SIA produced ChromSword Chromeleon Connect, which includes fully automated method optimization with support for ultra violet (UV) detection, charged aerosol detection (CAD) and single quadrupole mass spectrometry (MS) with peak tracking. A plug-in for Fusion QbD® enables connection to S-Matrix® software. Both offer support for Thermo Scientific LC Instruments.

- For customers in biopharma that perform in-depth characterization of biotherapeutic proteins, Thermo Fisher Scientific offers tight integration of Chromeleon CDS with Thermo Scientific™ BioPharma Finder™ software, incorporating powerful deconvolution algorithms, the direct import and export of protein/peptide component lists and additional features to support the Thermo Scientific™ MAM 2.0 workflow. These capabilities are further expanded by the integration with Byosphere™, which enables the transfer of MS and UV data from Chromeleon CDS for further investigation.

- Other examples of interfacing 3rd party systems and Chromeleon software include:
  - Sample Preparation: TPWSoft from Sotax Corporation, Accrolab™ from Accroma labtec Ltd and Maestro software from Gerstel GmbH
  - Workflow automation and orchestration: Scitara DLX™ (Digital Lab Exchange) platform
  - Gel permeation chromatography (GPC)/size exclusion chromatography (SEC) data processing: WinGPC from PSS (Polymer Standards Service) GmbH
  - Data analytics, visualization and archiving: Tetra Data Platform from Tetrascience Inc.
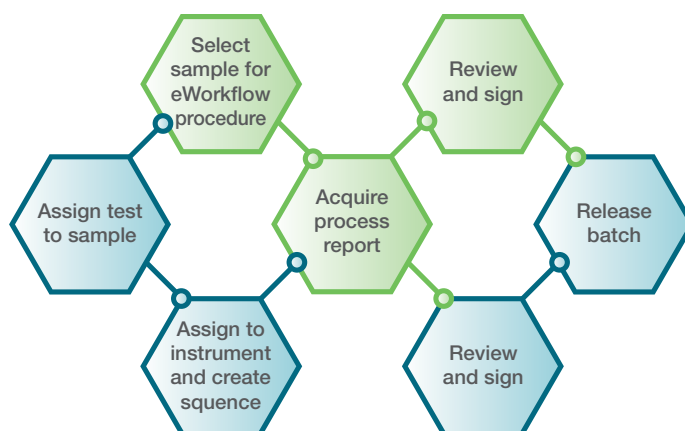
Connectivity to the enterprise

The laboratory is an essential part of any scientific business so the CDS must communicate with business-critical software, like Laboratory Information Management Systems (LIMS), Electronic Lab Notebooks (ELN), Lab Execution Systems (LES), Scientific Data Management Systems (SDMS) and other enterprise applications.

Using the Chromeleon SDK, third party applications can trigger and start sequences in Chromeleon CDS without the need to even open the Chromeleon Client. This can drive increased efficiency and productivity alongside improved data integrity.

Out-of-the-box integration with Thermo Scientific™ SampleManager LIMS™ and Thermo Scientific™ Watson LIMS™ software is available.

- Seamless integration with SampleManager LIMS eliminates manual steps and provides users with increased confidence in their digital workflows. Connecting the procedural capabilities of SampleManager software and Chromeleon CDS eWorkflow™ procedures delivers unique possibilities across the two systems.
- The Watson LIMS Gateway harmonizes and automates the complete bioanalysis workflow with bi-directional data flow between the Watson study and Chromeleon CDS.

Select sample for eWorkflow procedure

Review and sign

Assign test to sample

Acquire process report

Release batch

Assign to instrument and create squence

Review and sign

○ Chromeleon CDS
⬡ SampleManager LIMS

Other examples of interfaces from external vendors providing bi-directional data transfer between Chromeleon CDS and enterprise systems, include:

- LabWare® Module for Labware's Enterprise Laboratory Platform (ELP) incorporating LIMS and ELN applications
- Interface for Abbott's STARLIMS LIMS software
- AniML and SiLA 2 bidirectional integration for LabVantage Solutions Inc.'s LIMS platform
- Add-in for the Biovia ELN from Dassault Systemes

Want to become a partner?

For Thermo Fisher's partners, the Chromeleon SDK and DDK provide the opportunity to integrate their products and services with Chromeleon CDS, accessing all its capabilities including:

- Connecting to instruments from multiple vendors and Thermo Scientific MS instruments
- Connecting to software from other vendors
- Streamlining chromatography and MS workflows with eWorkflow procedures
- Complete coverage for compliance and data integrity

Thermo Scientific software

Thermo Scientific instruments

Third party software

Third party instruments
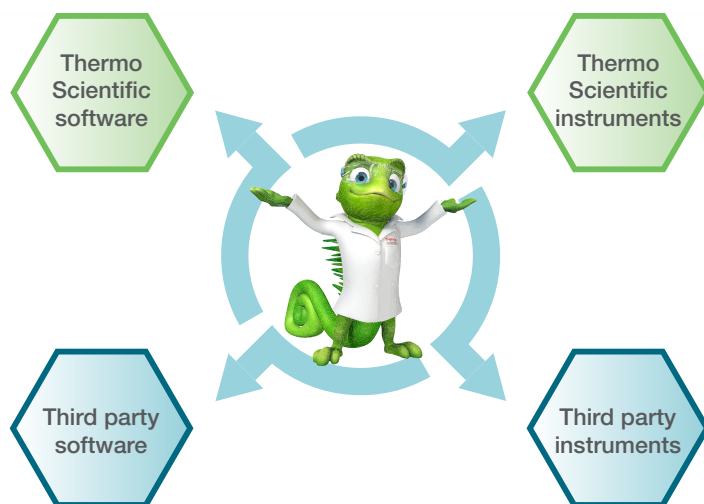
Instrument control via DDK

With the Chromeleon DDK, developers and instrument vendors can easily implement instrument drivers, including configuration and method editor plugins for Chromeleon CDS. All DDK drivers are certified by Thermo Fisher Scientific and are included in the List of Supported Instruments (LoSI), distributed with each release of Chromeleon CDS.

The DDK is designed for forward compatibility, protecting investment going forward.

Drivers written with the Chromeleon DDK can also be utilized in Thermo Scientific™ SII for Xcalibur, which can increase the value of investing in a DDK driver

For more information on SDK and DDK-based interfaces, please visit our **Chromeleon CDS business partner program page**.

Join the Chromeleon CDS community to future proof your investment: **thermofisher.com/chromeleonsupport**

Like Charlie Chromeleon on Facebook to follow his travels and get important updates on chromatography software! **facebook.com/CharlieLovesChromatography**

Visit AppsLab Library for online access to applications for GC, IC, LC, MS and more. **thermofisher.com/AppsLab**

Find out more at **thermofisher.com/chromeleon**

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