



Boost Food, Flavor, and Fragrance Innovation with Advanced Data Management

What to expect

This white paper explains how advanced data capture and analytics solutions by PerkinElmer Informatics speed new or innovative food, flavor, and fragrance ingredients and products to market.

- Discover how to increase efficiencies by recording experiments in a common digital platform.
- See how you can implement leading data management techniques that structure data for analysis in real time.
- Learn how to transform good data into great insights with smart analytics.
- This material should interest a diverse range of R&D organizations developing unique synthetic or natural ingredients to be used in flavors and fragrances for applications such as:
 - Fragrance, cosmetics and toiletries, including beauty and personal care products.
 - Foods, including snacks, dairy, bakery, confection, and meat and plant-based products.

- Beverages, including soft drinks, alcohol-based drinks, cannabis-infused drinks, and other emerging categories.
- Household and fabric care, such as cleaning products and air fresheners.
- And many others.

A faster, more reliable recipe for market readiness

Today's consumers demand a better sensory experience, whether they're encountering new and exciting flavors in foods and beverages or using scented personal or home care products. In addition, there is an increased demand for healthier, environmentally friendly foods, and more transparent ingredients labelling so consumers can make informed buying choices. Manufacturers strive to meet these needs with novel, healthy, and high-quality sustainable products while decreasing production costs and time to market.

PerkinElmer Informatics has solutions for data capture and analysis that accelerate food, flavor,

and fragrance R&D innovation, enabling new and improved ingredients and products to reach the market rapidly, reliably, and with maximum ROI. As you work to develop innovative approaches to improve quality and safety, maximize efficiency, and make chemical breakthroughs that will give your company and customers a competitive edge in food, flavor, and fragrance, there are a number of common challenges you must overcome:

- **Speed to market.** Move fast to beat your competition in the race to market.
- **Process improvement.** Balance your enhanced speed with attention to quality and smart risk management, ensuring the resulting products perform precisely as planned.
- **Cost of materials.** Factor in cost and availability of materials when selecting the best formulation to keep the research pipeline flowing.
- **Unmet market needs.** New advances in food, flavor, and fragrance must address emerging market needs to ensure customer adoption and ultimate satisfaction.
- **Quality control.** Because ingredients are often sourced from many regions around the world, consistency in quality, purity, and safety can be an issue.
- **Regulatory compliance.** Some ingredients permitted in one country are banned in others, so varying rules and regulations must be tracked and kept up to date in connected databases.
- **Intellectual property/trade secret protection.** A thorough review of the legal landscape is necessary to avoid future patent issues—and to protect your own IP. Controlled access to data ensures protection of trade secrets, such as botanical extracts and fragrances.

Advanced data management is the answer

Making commercially viable products is time-consuming if the way you handle data has not kept pace with the evolving demands of your business and marketplace.

PerkinElmer Informatics has found that 80% of data – even digital – becomes untraceable, often

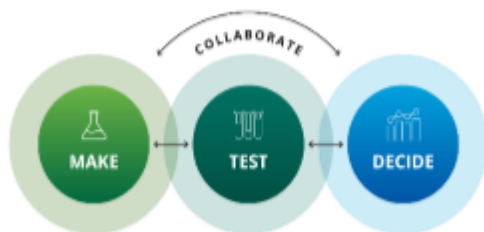


because it's stored on individual computers, and that not creating digital records of data accounts for 17% of data loss that delays or sets back research. These are questions that advanced data management software can help flavor and fragrance chemists answer more efficiently:

- Which ingredient, producing a certain odor or taste type, should we pursue?
- Which type of chemical structures should we explore, either based on the expected target or through a general exploration of a class of structures?
- Are botanical extracts derived from different geographies and supplier sources free of prohibited substances?
- Can a difficult-to-make ingredient can be made using a more cost-effective synthetic route?
- Do the new ingredients have a unique odor or taste that cannot be obtained any other way?
- Can the new ingredients be combined with other ingredients to create a unique olfactory or taste experience?
- How does the final fragrance or flavor smell or taste in various consumer product or food formulations?
- Do ingredients have different behaviors in certain consumer product or food formulations?
- Is the smell or taste of the fragrance or flavor stable in the consumer or food product, or will it change over time?
- Can existing experimental design be reused, saving labor and time, by searching the volume of formulations and ingredients?

PerkinElmer Informatics solutions provide a complete, consistent, and collaborative environment that meets the scientific and technical needs of your organization and team.

Our integrated solutions will speed up data capture, data processing, decision making, and material tracking—as well as overall data analytics—to give you greater maneuverability when responding to ever-changing market demands



Better data means better decisions, from lab to consumer

Whether your area of focus is manipulating volatile molecules to develop new aromas, extracting essential oils from botanicals, or developing novel coating applications that ensure purity and freshness, you need to be highly efficient when you develop new formulations and/or modify existing ones, conduct tests, and analyze results. You also need the insights and flexibility to pursue secondary options if they offer a better payoff.

PerkinElmer Informatics delivers advanced data capture and analytics solutions for food, flavor, and fragrance innovation—getting ingredients and products to market faster than ever before.

We understand the obstacles you face in your race to the marketplace. You need to ensure you're investing in the right formulations, collaborating effectively, and making the best decisions in the shortest amount of time with:

- A complete, consistent, and collaborative environment that meets the scientific and technical needs of your organization and users.
- Faster data capture, data processing, decision making, and material tracking.
- Data analytics that enable greater flexibility to respond to market demands.
- Collaboration across geographies, with shared access to data from complex workflows.

- Access to audit trails and other information related to security regulations for proof your systems, data, and IP are secure and compliant.
- Improved business continuity, with efficient knowledge transfer in the event of job moves and attrition.

In fact, PerkinElmer Informatics solutions have delivered 20-30% time-savings, 15% cost reduction per user, 25% improvement in IP protection, and a fourfold increase in response time to regulatory questions and findings for a leading sustainable manufacturer.

In addition, users at a fine & specialty chemicals company have reported deeper collaboration across multiple management and technical levels, noting the functionality, intuitiveness, and rich APIs. Users were:

- Faster able to locate data vs its previously fragmented data landscape
- Improve recording and storage of R&D experiments to create more structure data
- More easily share data across R&D to boost collaboration
- More successfully search R&D data
- Control access to data for improved security of IP and trade secrets
- Visualize data for enhanced analytics
- Leverage digitalization during the COVID-19 pandemic

Integrated solutions to keep your team at peak performance

Each of PerkinElmer Informatics' solutions for the food, flavor, and fragrance sector targets specific information roadblocks that stand between you and your marketplace. Together, they offer an end-to-end ability to capture, manage, and analyze data so you're making the best choices at every process milestone.

Better collaboration through Signals Notebook

Signals Notebook, a cloud-native electronic laboratory notebook (ELN), enables better collaboration between innovators, decision-makers, chemists and formulators, process and production engineers, and product testing experts, as experiments and results are easily accessible to all team members. No matter how complex

your workflows are, or how geographically diverse your team is, Signals Notebook has the power to put everyone on the same page.

Signals Notebook is the only ELN that covers a comprehensive set of scientific use cases, spanning chemistry, formulations, analytical testing, and more. It puts you in the passing lane for digital transformation through an outstanding experience. It will also enable you to improve productivity and data transparency through enhanced collaboration, improved workflows, and lab automation.

Enhanced materials management with Signals Inventory

Signals Inventory, a component of Signals Notebook, automates inventory management, importantly, users can pull containers, materials, enabling users to lookup, link to, and update materials used within experiments without leaving the ELN. Importantly, users can pull containers, materials, and samples directly into the Plate feature within their experiments. Multiple barcodes, locations, and containers offer greater flexibility an inventory accuracy.

Accelerate scientific decision-making with Signals Inventa

Signals Inventa has the key capabilities food, flavors, and fragrance researchers need to identify structure performance relationships, as well as to optimize multi-parametric optimization and scoring tools.

Signals Inventa is a next-generation data management system for analyzing scientific results. Powered by PerkinElmer's innovative Signals Data Factory technology, it enables you to quickly access and analyze all scientific results collected throughout the research and development lifecycle. Inventa's powerful predictive analytics enable you to save valuable time when you need to focus solely on formulations that best meet the desired performance criteria.

Transform data into actionable insights with TIBCO® Spotfire®

TIBCO Spotfire allows researchers to correlate materials properties with performance. With powerful visualizations and predictive analytics, it gives you everything you need to prioritize work in the lab.

This enterprise-class visual analytics and discovery platform empowers your team or organization to easily mine scientific data, and

gain keen insights, to drive data-driven decisions record time.

With advanced visual analytics you can:

- Compare and contrast botanical extracts sourced from global regions
- Investigate counterfeit ingredients
- Evaluate for the presence of prohibited substances
- Screen for potentially allergenic substances



Optimize scientific communication with ChemDraw®

With its origins as a chemical drawing tool, ChemDraw® has steadily evolved to become the leading chemically intelligent solution to help you perform quick structure searches across all documents where chemical information is stored and manage collections of molecules and/or reactions with their associated properties.

Data management solutions formulated for your specific needs

Find out for yourself how PerkinElmer Informatics' solutions help optimize the innovation process to accelerate your speed to market, increase the likelihood for success, assure the quality of the final product, and minimize your ultimate development and commercialization costs.

Sample the unique value of PerkinElmer's solutions:

- Built to deliver specific end user functionality to support Make-Test-Decide workflows.
- Integrated workflows ensure smooth collaboration.
- Best-in-class visual/advanced analytics.

- Data for analytics is automatically associated together to provide holistic insights.
- Experimental narratives are captured to protect IP and available for learning through the enterprise.
- Faster product development with fewer failures through collaboration and information sharing.
- Scalable from small operations to enterprise companies with thousands of users across multiple locations.

One international chemicals company reported that PerkinElmer Informatics solutions transformed its R&D culture with easier collaboration and results-sharing. More than 60% of users reported the solutions were easy to use and helpful in improving daily productivity, while 66% reported improved security of R&D data.

Serving up faster innovation in food, flavor, and fragrance

Our solutions accelerate your innovation by helping you understand the relationships between components and product performance and enabling you to make insightful decisions based on predictive modeling



Powerful, highly scalable, and intelligent, our solutions leverage PerkinElmer Informatics' decades of experience in designing solutions for real-world problems

Join leading companies in the food, flavor, and fragrance sector who are using PerkinElmer Informatics solutions to refine their innovation. Take control of your data and soup up your ROI as you keep pace with consumer demand for new tastes and aromas in a safer, healthier, and ever-changing marketplace.

PerkinElmer Informatics
940 Winter Street
Waltham, MA 02451 USA
P: (800) 762-4000 or (+1) 203-925-4602

To contact us, visit www.perkinelmerinformatics.com/company/contact
Copyright ©, PerkinElmer, Inc. All rights reserved. PerkinElmer® is a registered trademark of PerkinElmer, Inc.
All other trademarks are the property of their respective owners. 014664_01 PKI

