

SPEEDING UP THE PACE OF CPG PRODUCT INNOVATION

WHITE PAPER



INTRODUCTION

The Consumer Packaged Goods (CPG) Industry relies on continuous product innovation to introduce successful new products and drive business growth. Formulations are the lifeblood of the CPG organization and key to product innovation, particularly when adding new attributes to an existing product can extend that product's lifecycle as a revenue generator.

At the heart of formulation development is physical testing and the data capture. Physical testing accounts for roughly half the work done by Research & Development (R&D) laboratories. This testing is the basis for thousands of product decisions every day, including whether the product is safe, whether it does what it is supposed to do, and whether it provides a superior benefit to the consumer.

The amount of testing has grown significantly over time due to the increased pace of innovation and is accompanied by greater expectations for data management and compliance. As a result, a large increase in testing can equate to a much larger increase in data.

And yet a very small percentage of the data captured from all of this physical testing is leveraged and turned into reusable knowledge. The vast majority of it is lost and ultimately unusable. Meanwhile, annual testing grows and the problem is exacerbated. This unused data is considered “dark data”, or data that exists but is only used once and not leveraged for business intelligence or repurposed for multiple decisions. The result is that product innovation can be limited due to inefficiencies in laboratory research processes and lack of data access.

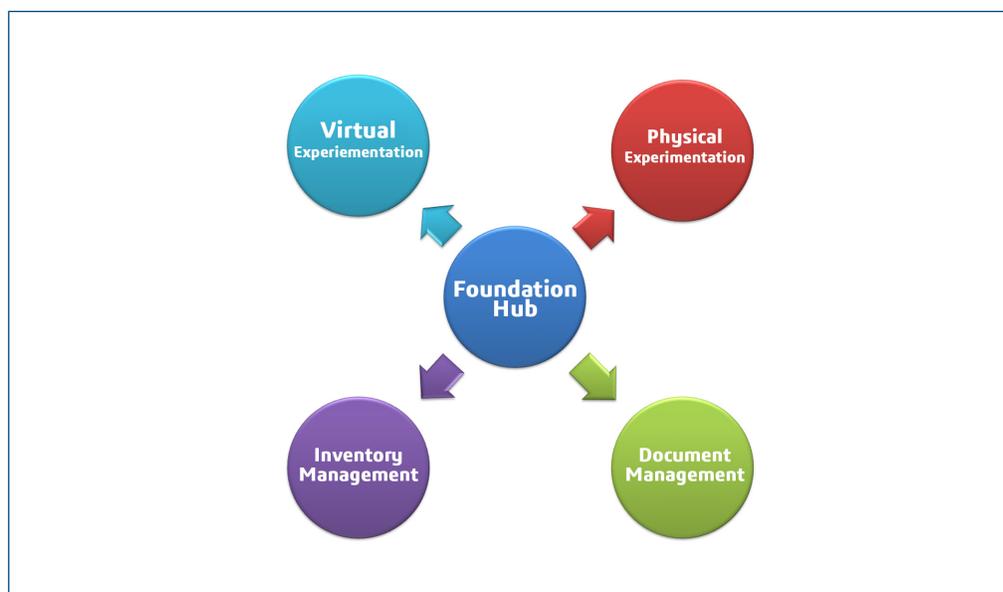


Figure 1: The process for CPG product development can break down as researchers lose time finding, sourcing and disposing of ingredients for testing. A digital lab that can integrate these processes saves time and money as scientists can do all of this work directly from their digital workspace.

In addition to testing, other workflows can provide barriers to innovation, particularly in the realm of materials management, safety and compliance. These activities include tasks related to data access, collaboration, traceability, reproducibility, reduction in repeated experiments and more -- all of which can add barriers to innovation.

Further compounding the challenge is industry competitiveness. The success rate of product introductions can be limited, and the window of a product life can be less than one year. Competitors are not only creating their own unique products, but also seeking competitive advantages with new claims and new features for existing competitive products. The result is a constantly shifting marketplace of changing products, market needs and consumer behaviors.

Digital solutions can help address those inefficiencies and market dynamics, and help the lab stay on the path for sustainable innovation.

CHALLENGES – REMOVING THE BARRIERS TO INNOVATION

For sustainable competitive advantage and growth, CPG businesses must achieve game-changing innovations and accelerate the ideation-to-commercialization lifecycle.

At the top of the list of barriers to innovation that impact the CPG organization are outdated methods for experimental processes and data management; specifically, performing tasks manually and recording formulation experiment data in paper lab notebooks.

Inefficient Formulation Processes and Data Management

Formulation research starts with an idea. Recording that idea, developing an experiment based on the idea, tracking the experiment results and modifying the experiment until a successful product is achieved is the essence of the research process. Along each step of the way, data is recorded, analyzed and managed. Unfortunately, when these processes are performed manually, the data could be illegible; transcription errors can occur; notebooks can be poorly maintained, lost, destroyed or misplaced; exact details and dates of conception may not be clear.

Disconnected Data - Lack of Integration

The sheer volume of data that is now being generated makes it extremely difficult to isolate relevant data, understand that data and act on it. Efficiency is paramount; time management is critical. Tasks that include recording ideas, formulations, experimentation records, observations and work details must accommodate prior research (which may have been performed by someone else in the organization), electronic signatures and more.

As the volume and complexity of formulation research data increases, so does the need to address the challenge of efficiently managing, searching, retaining and storing it. This data management challenge is exacerbated when data is managed in numerous ways, from paper lab notebooks to isolated, unintegrated applications that are difficult to access and search.

Difficulty Developing New Formulations

Developing new formulations that are differentiated and/or add value is challenging enough without impeding workflows by using outdated processes and technologies, such as the use of numerous disparate, disconnected systems that slow down research and force duplicate data input.

When researchers spend time on repetitious activities that essentially repeat work that has already been done, their time is not being spent efficiently. Inefficient workflows include processes that require scientists to search across different systems for data, product families that need to be reviewed, and regions where a test may have been done before. The data should be immediately accessible from a single source, not isolated in many places.

This leads to the most frustrating challenge for CPG labs: how to access and utilize 'dark data'. Dark data is vital information hidden in old notebooks, systems, and spreadsheets. This inaccessible data could be helping to create new formulations and eliminate wasted time and money spent on repeat experiments.

The answer to these challenges lies in removing barriers to innovation whereby formulation research workflows are optimized, data is accessible and the most promising new product ideas can be quickly identified and developed.

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SOLUTIONS – THE ROAD TO THE PERFECT LAB

By moving away from antiquated paper lab notebooks and to digitized records, CPG labs can achieve productivity gains while reducing wasted time and inefficiencies associated with searching for relevant experiment data.

Take the Paper Out of the Lab

There are a number of market challenges unique to the CPG industry: successful product introductions can be difficult to achieve; a product's lifecycle can be short; and data is often lost or inaccessible when not managed digitally. Of these three criteria, converting data management from manual to digital is the one aspect that can be easily and rapidly improved.

When a CPG lab moves from paper to digital solutions, a number of impediments to efficiency are removed. The keys to success include: centralizing data in digital solutions for fast data access and sharing; adopting digital tools to streamline workflows and ensure data compliance; and, leveraging digital tools to drive increased testing needed to support the increased pace of innovation.

When these three tasks are accomplished, CPG project teams benefit from the ability to:

- Collaborate instantly and provide immediate access to in-progress experiments, background information, past work on the project, as well as competitive insights and research literature – at any time and from any location
- Save valuable lab time by replacing paper lab notebooks and eliminating time-consuming manual procedures
- Ensure maximum Intellectual Property (IP) protection through digital signatures, experiment templates and workflow alerts
- Increase productivity and reduce wasted search time by reusing information, particularly through instant access to past experiment data

Easy-to-use digital applications with intuitive user interfaces reduce barriers for new users to adopt the new solutions. They also accelerate system adoption in the lab.



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Streamline the CPG Research Process

With the right digital tools in place, streamlining the CPG research process can become a reality. Digital tools can optimize tasks from experiment development to experiment data capture to expedited formulation insights.

Some of the benefits that can be achieved with streamlined processes include reduced process complexity. Redundant, duplicate work can be eliminated when prior research can be accessed and reviewed. Workflows are simplified when all searches can be done on a centralized system rather than searching through a number of disconnected systems.

Another benefit of a centralized, standardized system is that data will be consistent, legible and captured in an understandable data format.

With a centralized system, data will be available to all internal labs – from analytical to stability to performance testing – with each lab being able to contribute, access and search data by product family, region and more.

With an electronic lab notebook (ELN), for instance, users can collect research, share, collaborate and perform competitive intelligence. For instance, many product innovations are the result of isolating a single product attribute and reformulating it for better results. In the case of reformulating a successful shampoo, where the goal is to develop a shampoo formula that results in shinier hair, it is easier and more efficient to select samples and perform tests digitally, including building models with the data that replace physical tests.

Centralize Materials Management

Another barrier to innovation that impacts the CPG organization involves materials management – particularly when some of those materials are scarce or expensive. Most CPG labs do not manage materials digitally, but rely on paper checklists and isolated spreadsheets to track and manage chemicals used for experiments. These lists are typically outdated and incorrect, leading to non-compliance and higher material costs.

However when materials management is centralized in a digital chemical inventory management system, the CPG organization can benefit substantially.

The road to the perfect lab is digital. CPG labs need systems that request, prepare, test, report and re-use data – using data for knowledge that is no longer trapped in paper notebooks or hard drives. With such a system, CPG product labs can improve productivity, reduce safety and compliance risk, and accelerate the pace of innovation.

From the electronic lab workspace, researchers can quickly locate and request the materials needed for further experimentation, regardless of where the material is stored. With a single digital system, it is easy to track the location of the materials throughout their testing life, from receipt through safe disposal. Other benefits include the ability to:

- Run fast searches for needed ingredients
- Streamline material searches from a variety of sources
- Obtain current, real-time material safety and inventory data on-demand

Beyond enabling CPG labs to manage materials more efficiently and cost-effectively, a centralized digital system enables on-demand communication and reporting of hazard and regulatory compliance, and safety and compliance inspection reporting. The lab is assured of having the right material in the right place at the right time, thus eliminating tedious manual processes that foster noncompliance and inaccuracies.

Even better, a best practices solution will be able to easily track lots and batches used for formulations – an important capability for IT and the lab.

Make Data Relevant - One Integrated System for All Testing Needs

As research needs grow, so do the capabilities needed for the optimized lab. These capabilities include reducing the need for physical testing and saving time. With digital tools it is easy to request, prepare, test, report and re-use data, all from the electronic workspace. 'Dark data' previously hidden in remote labs and on researchers' hard drives in different formats is now accessible with a centralized digital system.

Tools such as chemical inventory management systems can be used to support strategic tools, such as ELNs, that drive better experiment management.

Accessing a wide range of functions and capabilities from one integrated solution that gives scientists one place to work saves time. The ability to capture knowledge and data once can significantly improve lab productivity.

An integrated digital solution streamlines workflows and delivers end-to-end traceability, data reuse and efficient collaboration to every researcher's lab bench.

A scientifically-aware data management solution built on a service-oriented architecture can seamlessly connect a number of systems with specialized capabilities for specific tasks across the innovation and commercialization lifecycle. Such a system delivers workflows with fewer steps, reduces errors and improves data quality. It delivers access to all physical testing data, with end-to-end traceability, enabling better learning, stronger product claims and improved overall compliance.

The solution enables workspaces that deliver critical scientific capabilities including:

- Multi-scale material discovery, modeling and simulation
- Enterprise lab operations and asset management
- Protocol authoring and automation for accessing, analyzing and reporting scientific data
- Ingredients-to-product genealogy and pedigree
- Scientific recipe/formulation/ingredients and data analytics management
- Easy integration to enterprise and legacy systems

A solution that accommodates formulation research needs has the potential to digitally transform CPG businesses, bridging the innovation productivity gap by deploying enterprise-class, science-based predictive capabilities throughout the process manufacturing value chain, from discovery to lab. The result is a leap forward in accelerating discovery, innovation and time-to-market, while maximizing productivity through operational excellence.

SUMMARY

The road to the perfect lab is digital. With these digital tools, CPG product teams can:

- Improve productivity, maximize compliance and optimize innovation
- Accelerate the pace of innovation by converting the lab to paperless data management
- Access past experiments is available at a keystroke
- Streamline processes including sourcing new ingredients and materials for formulation testing
- Efficiently track materials from receipt to disposal
- Reduce wasted time while increasing productivity.

An integrated digital solution streamlines workflows and delivers end-to-end traceability, data reuse, efficient collaboration and more to every researcher's lab bench.

All data becomes useable data. You can eliminate 'dark data' that is used only once and not leveraged for business intelligence or repurposed for multiple decisions.

BIOVIA can deliver the capabilities CPG labs need to get on path to faster innovation. Find out more about the BIOVIA CPG Formulations Development for CPG Solution. Request a no-obligation web demo at www.accelrys.com that shows specific capabilities your lab can implement in CPG formulation development.

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