TARGET-DRIVEN RECIPE DEVELOPMENT

REFORMULATING RECIPE DEVELOPMENT IN A WORLD OF CONSTANT CHANGE
The principal driver? Customers. What they look for in the products and services they buy is in a state of constant flux. More connected and better informed than ever before, they are eager to share their experiences and learn from others. And their constant chatter across social media channels means perceptions, tastes and desires can arise or decline in the time it takes to read (and share) a tweet.

Nowadays, consumers also take a far more active interest in the provenance of the ingredients that go into the products they buy. They are acutely aware of both the environmental and health impacts of the choices they make—and expect companies to act in line with those concerns. In fact, they are so engaged in the world around them, that they are keen to co-create with process companies like consumer goods and services brands to personalize and even take control of product development.

In short, consumers are a formidable force. As a brand’s advocate, they’re invaluable. As an adversary, they can inflict lasting damage. Process industry businesses ignore them at their peril.

While enormously significant, consumers are far from the whole story. Increasing regulation covering ingredients, allergens, packaging, safety and compliance continues to proliferate with growing sanctions for transgressors. Global competition and increasing industry disintermediation are reshaping marketplaces everywhere. Smaller, nimbler entrants are stealing market share and there’s a greater need for effective collaboration across rapidly expanding ecosystems of suppliers.

Against all this complexity (see Figure 1), it’s never been more important for process industries to innovate and optimize how they create, develop, adapt and manufacture their products.

Figure 1: Product development challenges drive the case for improved efficiency

- **PERSONALIZATION**
  Manage growing number of individualized products with new moments of truth, increasing complexity and demand for better and more accessible information

- **SPEED**
  Shorten innovation cycles and bring products to market faster, considering renovation versus innovation, innovation & development speed

- **INTELLIGENCE**
  Develop products that meet market needs and keep development cost on target, balancing features versus costs

- **COLLABORATION**
  Manage complex supply chains and development across departments and companies

- **COMPLIANCE**
  Meet requirements from authorities, different markets, customers, and other stakeholders, regulations on compliance and security

Target-driven Recipe Development
One key area for process industry businesses is the process they deploy to develop the recipes for each and every product.

Over the past ten years and more, SAP has developed some crucial assets that help enable recipe managers to work more effectively. These include fundamental building blocks to track a list of ingredients, allergens and so on as well as the processes, security and control required to deliver a complete recipe.

Since then, it’s been a continuous journey towards greater control and integration with other functions including Environment, Health & Safety (EH&S), packaging and manufacturing. But now, recipe development is poised to take a significant leap forward. In close collaboration, Accenture and SAP have developed a breakthrough solution based on SAP S/4HANA: target-driven recipe development (TDRD)—that will support recipe managers to respond to the new demands of a customer-driven world (see Figure 2).

So, what’s the key difference? Rather than working from a bottom-up approach, TDRD takes the customer requirement as the key determinant of every recipe and then cascades those requirements through development and manufacturing. TDRD takes an integrated and data-driven ‘system’ view of recipe management, coordinating and integrating the variables that could affect a product—from the imposition of a sugar tax to the growing demands for vegetarian or vegan products.

**Figure 2: The journey to TDRD**

TDRD enables real-time and intelligent R&D with requirements-driven development

Recipe development in SAP S/4HANA brings enhanced UX, internal and external collaboration support, with analytics

Recipe development in SAP ECC 6.0

- Specification
- Recipe
- Formula
- Transformation process
- Mass item replacement
- Physical property analysis
- Calculation (loss & gain)
- Quality control
- Formula security
- Tracking changes
- Compliance information

Recipe development in SAP S/4HANA

- Seamless user experience
- Analytics and overview page
- Recipe finder for hierarchical search & streamlined ingredient replacement
- CoPilot integration
- Collaboration integration

Target-driven recipe development in SAP S/4HANA

- Activate insight & visibility
- Permanent innovation
- Customer centric
- Improved compliance validation integrated with new compliance solution
- Requirement & target collaboration

2010 2015 2019
THE RECIPE AS A SYSTEM

While all the information recipe managers needed was previously available somewhere across the organization, TDRD’s unique strength is to bring the data together, in real time, accessed and visualized through a user-friendly interface.

That means recipe developers and managers can now collaborate more easily and see all relevant formulae, calculations and checks on a single screen, on demand. What’s more, TDRD’s user interface is flexible, enabling individual recipe managers to adapt the display to provide insights and to suit their working style. Recipe managers can easily conduct simulations and experiments to understand the impact of recipe changes including nutrients explosion, cost and product compliance considerations that may arise on the fly.

TDRD enables recipe managers to reach target values for a product (e.g., in response to consumer and/or regulatory demands) by providing an end-to-end, detailed overview of the nutrients and other components.

The solution also helps enable rapid re-use of existing recipes, that can be tweaked to meet the demands of different markets and segments, as well as to discover how even the slightest change to overall ingredients can impact a formula’s cost.

Taking such an integrated ‘system-based’ view of recipe management also helps enable better integration with the processes and supporting systems that deal with EH&S, manufacturing, labelling, compliance and regulations.

Target-driven recipe development provides real-time cost, nutrients or ingredients calculation, through a role and web-based user interface that gives the recipe developer or raw material manager all the relevant information on formula, calculations and checks in a single place.
ALL THE RIGHT INGREDIENTS FOR SUCCESS

TDRD’s advanced capabilities drive new value (see Figure 3) and are a step-change towards truly intelligent, collaborative, customer-centric recipe development.

So how will companies in the process industry benefit?

• Accelerate new products to market: real-time product information provided in a collaborative environment increases both the speed and quality of product development.

• Reduce risks of non-compliance and any associated penalties and sanctions, protecting reputation as well as the bottom line.

• Lower cost by decreasing rework and reuse of existing specification and product data.

• Massively improve the overall efficiency of product development through the reuse of approved and available materials and components.

• Refresh existing products to prepare them for rapid launch in new markets.

• Use an appealing user experience for teams working in a fully-connected, collaborative way.

![Figure 3: TDRD value drivers](image)

<table>
<thead>
<tr>
<th>Trends &amp; challenges</th>
<th>High-value business initiatives</th>
<th>High-value business levers</th>
<th>TDRD added value</th>
<th>TDRD key functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing regulations</td>
<td>Growth opportunities</td>
<td>Develop innovative and differentiated products</td>
<td>****</td>
<td>Contribution view: Get a detailed view of how a product is built up, with formula and process information aggregation.</td>
</tr>
<tr>
<td>Increasing complexity</td>
<td>Lower costs</td>
<td>Strengthen consumer proximity</td>
<td>****</td>
<td>In-place explosion: Understand product complexity. For a semi-finished ingredient, you can expand this item (explode), and include it in a single hierarchical view.</td>
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<td>Pressure for efficiency</td>
<td>Mitigating risk</td>
<td>Integrate sustainability in innovation &amp; product design</td>
<td>****</td>
<td>Cost calculation: Helps to decide which ingredient needs to be changed or reduced to meet ingredient cost targets.</td>
</tr>
<tr>
<td>Development speed</td>
<td>Collaboration</td>
<td>Innovate with suppliers and partners</td>
<td>**</td>
<td>Fast formulation: Check items with too much sugar or carbs.</td>
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<td>Structured formulation: Scale formula quantities in read mode to adapt quantities.</td>
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<td>Split calculation parameters: Enable flexible recipe calculation, setting various reference quantities for diverse types of calculations e.g. calculate cost/nutrient/later component per 100 litres, per 100g etc.</td>
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<td>Compliance check: Track how to change the recipe to go below or above the required amount, in real time, with defined target location/country/positioning/…</td>
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<td>Inspirational recipes: Find and add inspirational recipes to the workspace to see how similar recipes would look like.</td>
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OVERCOMING KEY CHALLENGES IN RECIPE-BASED PRODUCTS

Process industries face some key business challenges in developing, marketing and distributing recipe-based products. TDRD’s advanced capabilities address each of them:

Meeting stakeholder and market needs

- Displays an early nutrient loss calculation to enable better estimates of the impacts of any reductions in nutrients on the final product.
- Provides a consolidated real-time view of the impacts of any modification to a recipe at the moment modifications are made. This allows adherence to any limits placed on a product’s specification and compliance with the marketing brief.
- Defines and categorizes ingredient/nutrient limits on each product so teams can adjust the formula to address market demands.

Improving development efficiency

- Provides a customizable layout so product developers can see the information they need—in one place, at one time.
- Incorporates an in-place explosion mechanism to help product developers understand product complexity in the process; if an ingredient is adjusted, users can expand that item, include it in a single hierarchical view, and work on it to see knock-on effects during development.

- A formulation workspace enables linkages to be made between different recipes that have the same targets but may be at different stages in development trials.

Securing product compliance

- Consolidates the compliance rules and flags warnings during formulation where specific ingredients/nutrients risk not meeting the specified limits or targets.
- Defines target location/country/positioning within then formulation workspace and automates compliance assessment by embedding specific requirements in the calculation steps, with relevant information available at point of need.

Optimizing product costs

- Helps product developers to understand which ingredient should be changed or reduced to meet ingredient cost targets, as well as showing how any modification to ingredients will impact the formula cost.
HOW CAN ACCENTURE HELP?

To reap its full benefits, TDRD needs to be implemented as part of a wider, end-to-end Product Lifecycle Management (PLM) transformation.

In our experience, this can lead to significant gains (see Figure 4).

We enable and support the wider PLM transformation and implement TDRD by coordinating the key elements for performance. To enable business process transformation and accelerate value, we provide:

- Process industry best practices and industry-specific business models
- Customized business case around product development
- Business processes to optimize end-to-end capabilities to transform at scale
- Digital agenda for transformation and a related product development roadmap
- Value-led program management
- Industry-specific, industrialized and scalable SAP S/4HANA implementation and delivery

Figure 4: Potential TDRD benefits

<table>
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<tr>
<th>Accelerating time to market</th>
<th>Decrease cost</th>
<th>Decrease cycle time</th>
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<tbody>
<tr>
<td>4–35% Faster product launch</td>
<td>5–15% Direct materials cost</td>
<td>10–55% Change control cycles</td>
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<tr>
<td>10–30% Improved product development</td>
<td>10–30% Operational and development/engineering expense</td>
<td>5–35% Design cycles</td>
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</table>

WHY ACCENTURE

Engineering X.O
Helping our clients increase speed to market with processes and technologies throughout the product design cycle from prototyping to simulation and visualization. Our solutions boost engineering efficiencies and maximize returns from R&D investments, resulting in improved innovation and product development performance.

Our delivery excellence makes your digital transformation a reality
Targeting and delivering tangible value for our clients is our primary focus—and delivery is where we turn solution into action and action into results.

Leading SAP partner for services and innovation
We have early access to SAP innovations and help shape them.

49 Industries served
350+ SAP PLM experts
400+ PLM strategy and business consulting experts
10K+ Industry X.O professionals

Industry X.O
Global practice focused on the entire product value chain to help our clients innovate, engineer, manufacture and operate in a connected world.

50+ Delivery centers
120+ Countries
40+ Industries

Professionals
with deep industry, technology, business and process skills

Intelligent tools
to transform client data into intelligent insights

16 Liquid Studios for SAP Solutions
100+ SAP awards in the last 5 years
>50K SAP practitioners
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