



Intelligent Industry

FROM COST CENTER TO GROWTH ENGINE

How Consumer Product organizations
can drive growth through advanced
R&D capabilities



To deliver the right products at the right time, organizations need to rethink the role of R&D, repositioning it from a cost center to a growth engine.”

Kees Jacobs

Vice President for Global Consumer Products & Retail

The success of consumer product (CP) companies has always been based on a relatively simple formula: delivering the right product at the right time.

Over time, that model has become increasingly hard to achieve as the market becomes more competitive and consumer preferences change rapidly. The shift to digital has also complicated matters as the “always-on” consumer not only expects brands to solve their problems, but deliver that solution with increasing levels of personalization, choice, convenience and speed.

For many consumer product organizations, it has become impossible to deliver the right products at the right time if they are relying on traditional research & development (R&D) processes and systems. In this paper we discuss how brands can accelerate digital transformation in R&D at scale to shorten research timelines, drive impact by focusing on viable products and unlock benefits throughout the value chain.

Using data & insights to pinpoint the “right” products and enhancements

What CP brands *think* consumers want and what they *actually* need can be two different things. Indeed, there is some evidence that what consumers *say* they need and want may not be completely accurate either.

Let’s take an example: The brand director for a washing powder wanted to reformulate the product to address specific stains consumers experience. The first step in a traditional R&D process would be to conduct a survey that asks people about stains they commonly encounter.

But there is some evidence that survey responses can be, at best, incomplete and, at worst, inaccurate. For example, by reviewing social media activity related to stains, we notice a disconnect between the top three answers; when we review search data, the answers change once again.

So what does this mean for brands and R&D in particular? First, organizations should consider a wider range of inputs to develop the insights that will guide business operations. Second, they should consider how and where to apply insights within the business. For example, reviewing how people interact via social media with a detergent brand can inform the marketing strategy, as well as decisions about packaging and fragrances. On the other hand, recognizing that consumers need a solution that will remove grease stains is an insight that can drive the R&D agenda.

“In reviewing search results, we can identify real problems that people need to solve,” says **Kees Jacobs**, Vice President for Global Consumer Products & Retail. “This is where R&D can leverage data and insights to make a product that addresses these issues and sets the brand apart from competitors and substitutes.”

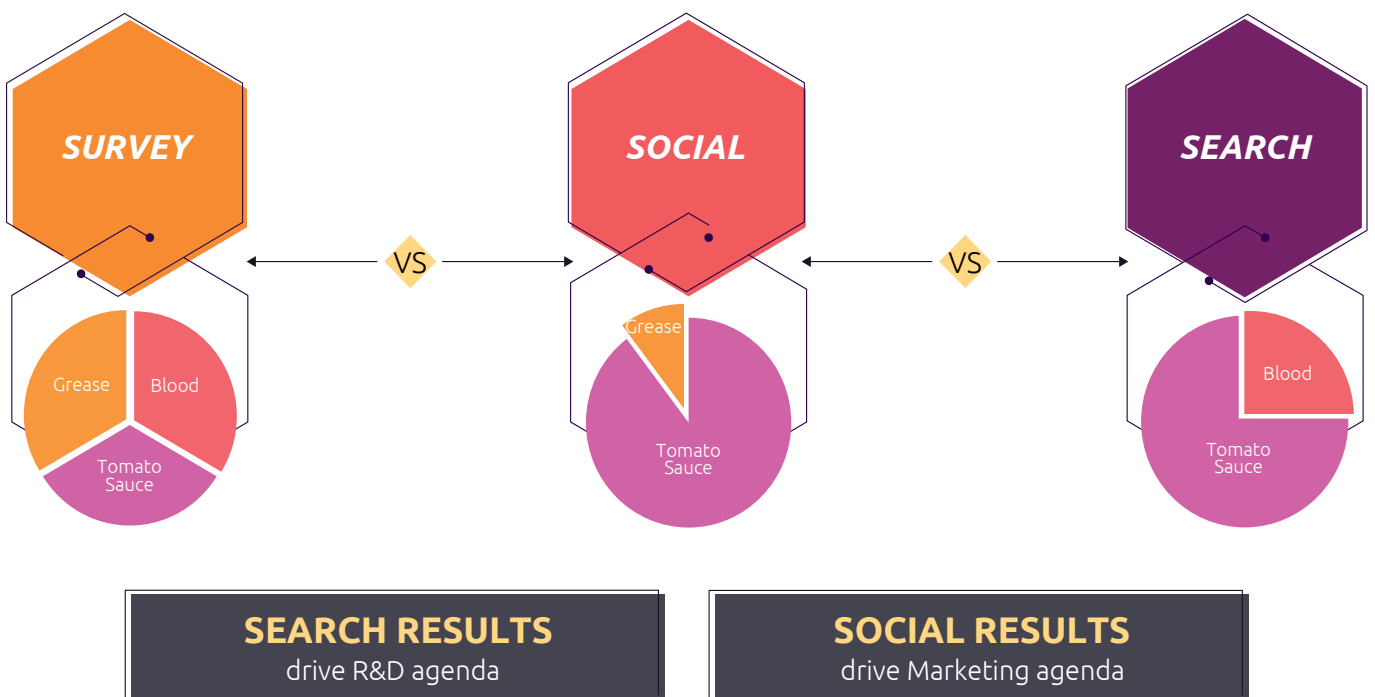
Transforming R&D to deliver the right product at the right time

Data may bring brands closer to identifying the right products to develop but getting those products into market quickly requires a fundamental redesign of R&D processes and systems.

Traditionally, R&D is a slow and expensive process, relying on physical experimentation, fundamental chemistry and biology, ingredient substitution, panel tests and other arduous processes.

Advances in technology, such as artificial intelligence (AI), as well as the growing sophistication of data science and data engineering, makes it possible for CP organizations to modernize and digitize these processes. In so doing, the function is able to prioritize research for the formulations most likely to succeed.

WHAT STAINS DO PEOPLE EXPERIENCE?

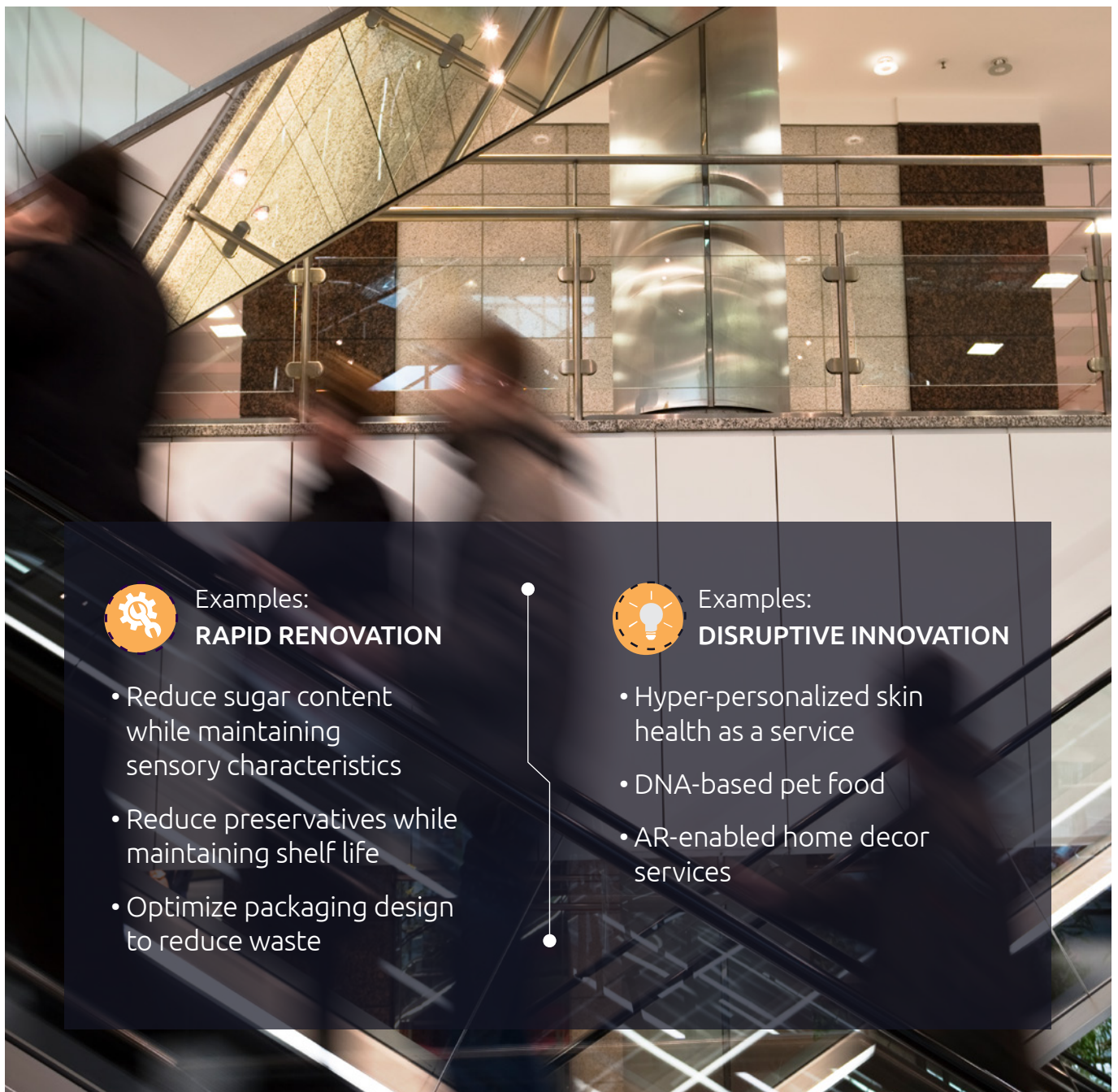


Another issue that hampers innovation is the siloed nature of R&D—both as a function and within the broader organization.

“In many cases, businesses miss the opportunity to combine and reuse data for rapid innovation and research process automation,” **Mark Knight**, Sector Director, Consumer Products.

“This not only drives costs up for each project but also slows down timelines.”

The data principles to develop the “right products” and modernize R&D efforts to deliver them at the “right time” can be applied to all facets of the innovation agenda—fueling rapid renovation, disruptive innovation and development of companion products and services.



Examples:
RAPID RENOVATION

- Reduce sugar content while maintaining sensory characteristics
- Reduce preservatives while maintaining shelf life
- Optimize packaging design to reduce waste



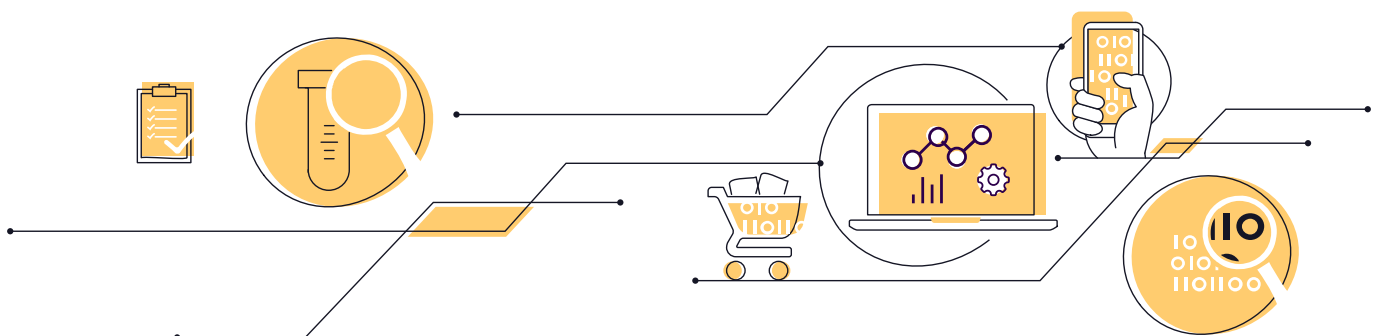
Examples:
DISRUPTIVE INNOVATION

- Hyper-personalized skin health as a service
- DNA-based pet food
- AR-enabled home decor services

WHAT'S NOW/WHAT'S NEXT

HOW R&D CAN EVOLVE FROM A COST CENTER TO A VALUE DRIVER

TRADITIONAL R&D	DATA-DRIVEN R&D
<ul style="list-style-type: none">● R&D is slow and expensive, relying on physical experimentation and manual processes	<ul style="list-style-type: none">● Data-Driven R&D leverages AI, data science and data engineering to accelerate R&D processes and dramatically shorten time-to-market
<ul style="list-style-type: none">● Organizations struggle to focus on formulations most likely to succeed	<ul style="list-style-type: none">● Organizations use digital technology to predict how micro-adjustments within the product formula will impact performance, rapidly and at scale● Brands link formulation variables to complex process engineering variables to accelerate process design and rule out designs that will not meet requirements
<ul style="list-style-type: none">● Focus groups and panel tests are completed 'per project'● Results are not shared widely throughout the organization● Similar research is repeated	<ul style="list-style-type: none">● All R&D efforts are united, unlocking efficiencies within the function and throughout the business● Data sets are combined and reused to support rapid innovation and research process automation● Model development and management are unified so that multiple models can be chained together to enable rapid innovation



R&D ASSESSMENT

How mature is your organization's R&D function?

VISION & STRATEGY

Your Organization:

- A** Is in the process of defining our transformation roadmap.
- B** Has a clear vision for R&D data and modelling though research teams have limited ability to share results.
- C** Has a clear vision for R&D data and modelling; data activities are coordinated across departments.
- D** Is driving growth throughout the business through R&D.

ORGANIZATIONAL AGILITY

Which best describes your organization?

- A** Our research team is siloed; research is conducted on a project basis and results are often discarded once complete.
- B** Our organization is struggling to deliver a central capability due to infrastructure project overruns and/or an abundance of PoCs not in production.
- C** Our digital R&D teams use dedicated platforms to deliver modelling and simulation capabilities across teams and departments.
- D** Our organization is in a state of continuous iteration and capability expansion to drive further innovation.

CONSUMER INSIGHTS

Your Insights team:

- A** Relies mostly on traditional sources, such as panel tests, for macroscopic predictions.
- B** Occasionally leverages external data sources, such as social listening, in addition to traditional methods.
- C** Routinely leverages internal and external data for predictions and have automated some aspects of this process.
- D** Routinely generates accurate, hyper-personalized predictions based on complex combinations of source data.

RAPID RENOVATION

Your researchers leverage:

- A** 'What they know' to renovate products.
- B** In-silico modelling on a per project basis to identify candidate formulations and predict outcomes.
- C** Data and models from across R&D teams to bring renovated products to market faster.
- D** Advanced modelling and automation at each stage of the development lifecycle to move products rapidly and smoothly through the pipeline.

DISRUPTIVE INNOVATION

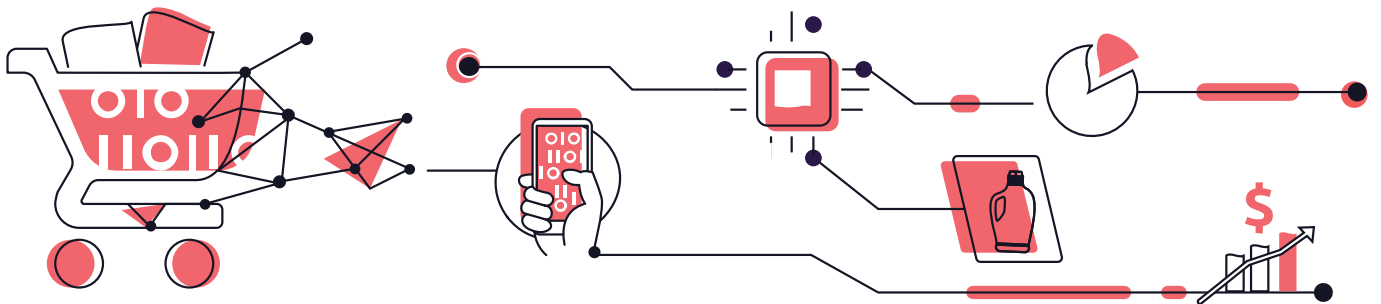
Which best describes your organization?

- A** A high proportion of products researched do not make it to market.
- B** In-silico modelling is used as a tool for innovation to explore a wide range of solution space and predict likely product outcomes.
- C** Consumer insights are plugged directly into in-silico product models to rapidly innovate results.
- D** New products are delivered to market frequently and often launch with intelligent digital services.

DATA & AI PLATFORMS

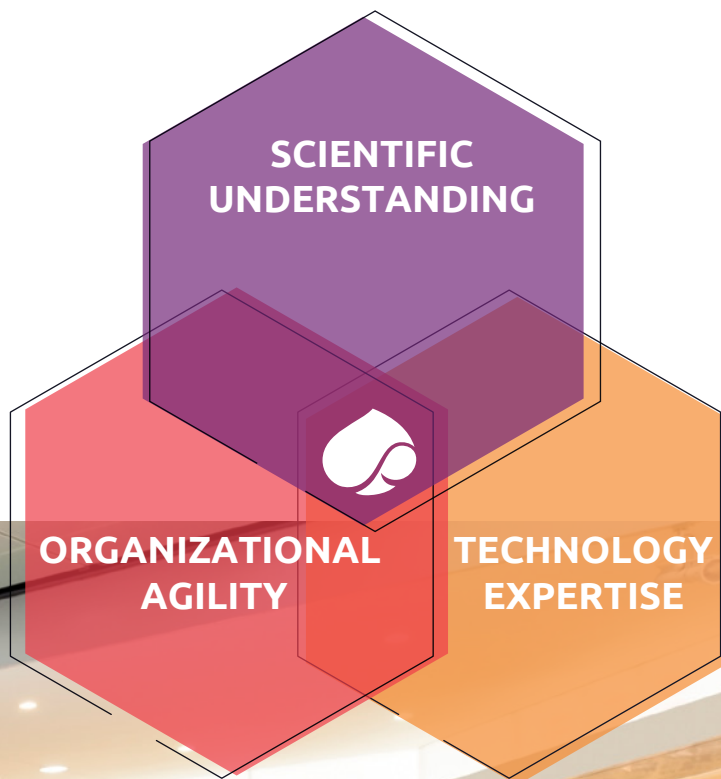
Which best describes your organization?

- A** Data is used primarily within research teams, or centrally for reporting.
- B** Some centralized data platforms exist but are typically not connected or in consistent formats.
- C** Data and analytics are well connected and collaborative in delivery through organization-wide ontologies and knowledge graphs.
- D** Capability and advanced use cases are centralized; automation of R&D pipelines across the organization is possible.

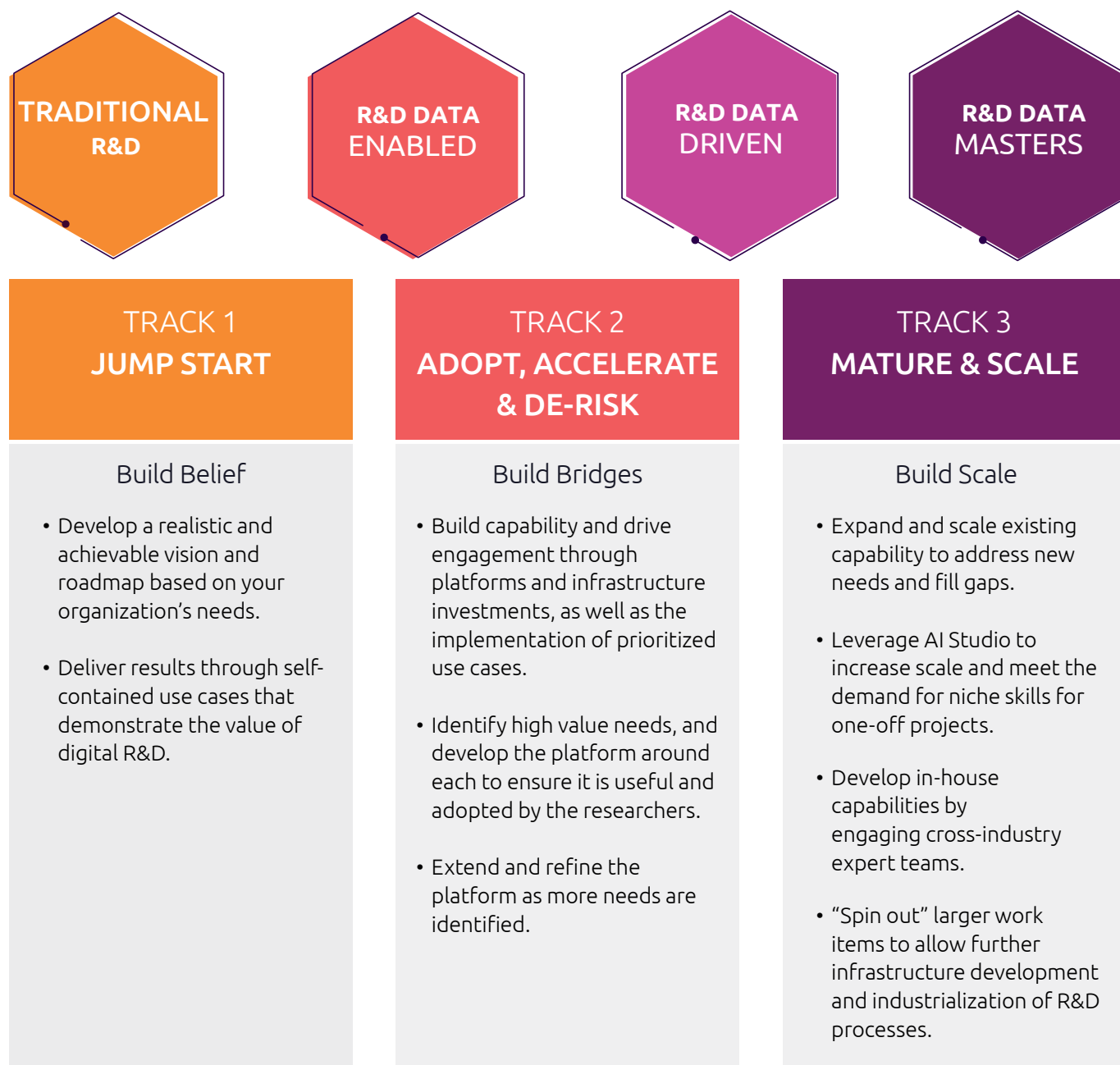


WHAT'S NEXT: BUILDING THE DIGITAL MATURITY OF YOUR ORGANIZATION'S R&D CAPABILITY WITH CAPGEMINI'S DATA-DRIVEN R&D FOR CONSUMER PRODUCTS

Data-Driven R&D for Consumer Products is a market-leading offer from Capgemini that brings together all of the elements needed to accelerate digital transformation in R&D and build maturity.



DATA-DRIVEN R&D FOR CONSUMER PRODUCTS OFFERS CP ORGANIZATIONS THREE DISTINCT TRACKS BASED ON WHERE THEY ARE IN THEIR CURRENT TRANSFORMATION JOURNEY:



Track 1: Jump Start

Demonstrate what Data-Driven R&D can do for your organization with a bespoke vision and roadmap based on your organization's unique needs and goals.

Next Steps

- Define a realistic transformation roadmap that balances short-term "quick wins" with long-term maturity
- Implement self-contained use cases that demonstrate the value of digital R&D

Key Components

- Digital R&D Roadmap
- Art of the Possible Workshops
- Proof of Value
- RAPIDE
- 890 Data and Insights Exchange
- People Data Centre, delivered in partnership with Unilever
- Data Science Platforms
- OutPerform

Track 2: Adopt, Accelerate and De-Risk

Build the capability and drive engagement through platforms and infrastructure investments as well as the implementation of prioritized use cases.

Next Steps

- Identify high-value current and future research needs across research teams
- Iteratively build and extend platforms with new capabilities that meet these needs and deliver value now
- Drive adoption by working closely with research teams throughout the process creating ambassadors that see the value on a daily basis

Key Components

- RAPIDE
- 890 Data and Insights Exchange
- Trusted AI
- Data Science Roadmap
- Intelligent Process Automation
- AI/ML DevOps
- People Data Centre, delivered in partnership with Unilever
- IDEA: Industrialised Data & AI Engineering Acceleration for R&D

Track 3: Mature & Scale

Expand and mature the R&D capability by developing the breadth and depth of data science skills and intelligent process automation.

Next Steps

- Leverage Capgemini's AI Studio to meet demand for one-off projects while also developing in-house capabilities
- Spin out larger work items to enable further infrastructure development and industrialization of R&D processes
- Work with an on-site partner team to identify and prioritize un-filled data-driven R&D needs
- Tap the global pool of on-demand technology and R&D experts to fill skills gaps and increase scale

Key Components

- AI Studio
- RAPIDE
- 890 Data and Insights Exchange
- Trusted AI
- Intelligent Process Automation
- AI/ML DevOps
- People Data Centre, delivered in partnership with Unilever
- Augmented global talent pool
- Global partnership network

CAPGEMINI'S PROPRIETARY APPROACH: OUR ACCELERATORS, FRAMEWORKS AND METHODOLOGIES

- **RAPIDE:** Governance framework to build accurate AI & Data Science solutions
- **People Data Centre:** Market-leading capability to identify and analyze consumer and competitor insights, delivered as a low-cost managed service in partnership with Unilever
- **890 Data and Insights Exchange:** Catalyst to fast track your AI & analytics journey in R&D by enabling access to insights and data services to all at their point of need
- **Outperform:** Industrialized approach to help CP companies leverage data and insights for purposeful outcomes at scale
- **Trusted AI:** Framework that ensures the delivery of trusted AI systems in order to minimize reputational risk, avoid bias, reduce discrimination and withstand malicious attacks
- **AI Studio:** Managed service that provides specific AI & science skills for research projects on demand
- **Intelligent Process Automation** for human & machine collaboration

4X

increase in
productivity
through RAPIDE
& AI Studio

WHAT CAN DATA-DRIVEN R&D DO FOR YOUR ORGANIZATION?

- In-silico product testing enabled a **20% acceleration** in discovery of high shelf-life formulations
- Automation of lab equipment setup **doubled experiment capacity** and improved effectiveness
- Virtual packaging redesign resulted in **annual savings of 230K tonnes of plastic** plus significant cost savings
- **20% reduction in physical samples** produced due to use of digital models
- Maximize value from pilot plant trials using data science to pinpoint processing factors, driving **83% of variability**
- AI-enabled smart search for R&D data led to the discovery of "unknown unknowns," **saving research scientists months of effort annually**
- Personalized digital services resulted in **87% of users changing a habitual product** for a healthier alternative
- Digitally enabled panel test data analysis **reduced analysis time from weeks to minutes**

Adoption of the AI studio gave one client the scale to run over **140** innovative projects requiring **70** highly specialized data science skills

THE BENEFITS OF DATA-DRIVEN R&D FOR CP

AGILITY	PROFITABILITY	ENHANCED CX	BRAND IDENTITY	SCALABILITY
<p>Get to market faster with the right products</p> <p>Reduce time to market from months and years to weeks</p>	<p>Focus resources on the products that are most viable and will have the greatest impact with consumers</p> <p>Increase efficiency by streamlining and automating repeatable research pipelines</p>	<p>Unlock hyper-personalized predictions</p>	<p>Build trust with evidence and traceability for product claims</p>	<p>Access new markets and revenue models</p>

Driving impact across the value chain with Data-Driven R&D for CP

Data-Driven R&D for CP helps brands dramatically improve the scope, integration, speed and success of their R&D function. Our approach has a cascade effect, driving innovation and unlocking benefits across the entire value chain.

Intelligent Manufacturing

- Link formulation variables to complex process engineering variables to accelerate the journey from lab to pilot plant to factory scale production.
- Leverage digital manufacturing to connect data back to R&D processes.

Supply Networks

- Rapidly renovate depending on changes in supply.
- Assess the impact of changes in raw materials to inform procurement decisions.

Commerce & Distribution

- Optimize storage and distribution through formulation and packaging changes.
- Share distribution data to address constraints within R&D, e.g. storage times and temperatures.

Connected Digital Services

- Unlock digital services that enhance the consumer experience.
- Ensure data from digital services are fed back to R&D.

Pioneering Intelligent Industry with Cargemini

Data-Driven R&D for CP is the latest offer within Intelligent Industry—Cargemini’s cross-industry application of new technologies and supplemental services to help our clients foster innovation through new and differentiated smart products, supply chain optimization and an enhanced customer experience.

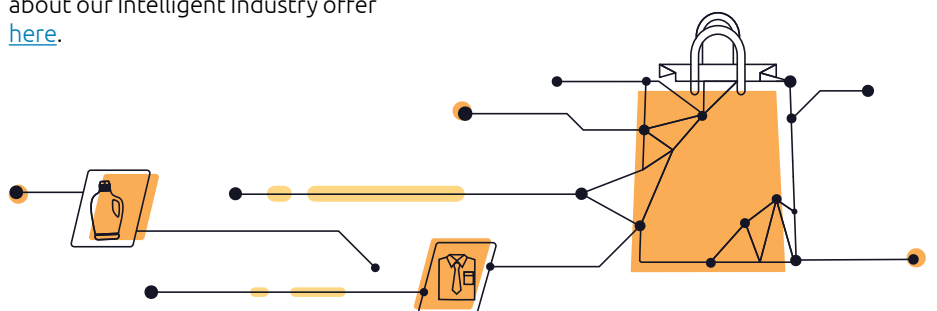
Following the launch of Intelligent Industry, Cargemini is the only global firm with both the depth of product engineering and breadth of specialist capability to master complex data and deploy novel AI solutions and technologies at scale. Find out more about our Intelligent Industry offer [here](#).

Conclusion

The rapid pace of change within the global CP landscape, an onslaught of new competitors and the ongoing evolution of consumer behavior has made it exponentially more difficult for brands to pinpoint viable products and introduce them to market quickly.

At the same time, the digital world has unlocked new possibilities for CP organizations. Advanced technology, when combined with the proper scientific understanding and organizational agility, can help the R&D function operate with enhanced speed and precision, allowing them to focus and prioritize efforts that will address consumers’ unmet needs.

Delivering the right products at the right time will never be a simple feat, but with Data-Driven R&D, doing so is far less complex.





About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of 270,000 team members in nearly 50 countries. With its strong 50 year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fuelled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2020 global revenues of €16 billion.

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