

**Marc Grabalosa Gándara**

Associate Director Data Science & AI

**Data Science and Complexity in Fundamental  
Physics and the bridge to industry & society**

*Santiago de Compostela 2026*

**Re-imagining  
business  
finance with  
AI**

 **NOVARTIS**



# Who we are



**Marc Grabalosa Gándara**

Associate Director Data Science & AI



**Novartis Digital Finance Hub**

Barcelona

# Agenda

**0.1** Professional Path

**0.2** Novartis

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**1** Why

**2** How

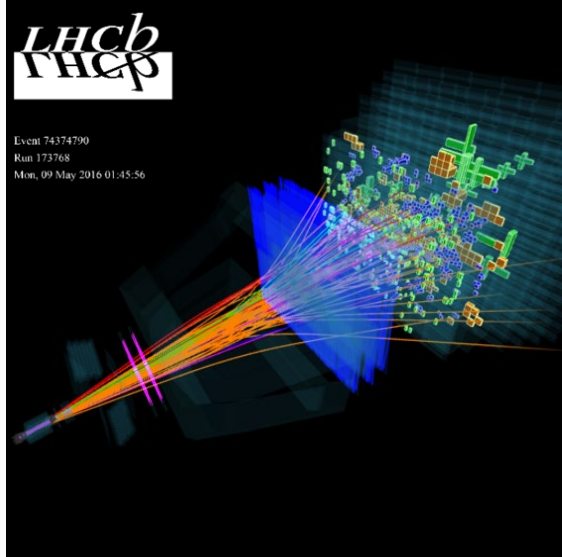
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**3** Key Success Factors

**4** Q & A

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# Professional Path



## 01 LHCb Collaboration — Physicist & Researcher

- Particle physics research
- Large-scale data analysis
- Scientific computing & statistical modeling
- International research collaboration
- PhD in Physics (UB)



## 02 SDG Group — Consulting & Analytics

- Business & data analytics consulting
- Data strategy across industries
- Machine learning applications
- Transformation projects
- Bridging science and business



## 03 DKV Seguros — Head of Data Analytics

- Built and led analytics capabilities
- Advanced analytics for insurance
- Predictive modeling & decision support
- Team leadership and data governance
- Data-driven business transformation



## 04 Novartis — Associate Director, Data Science

- Enterprise AI & Data Science leadership
- Digital transformation in pharma
- Scalable AI products and platforms
- Cross-functional global collaboration
- Innovation with AI, finance and operations

# Novartis footprint



**296m**

patients reached



**118**

Countries with products sold



**78k**

Employees



# Novartis: Our Medicines

## Core Therapeutic Areas



Cardiovascular, renal and metabolic



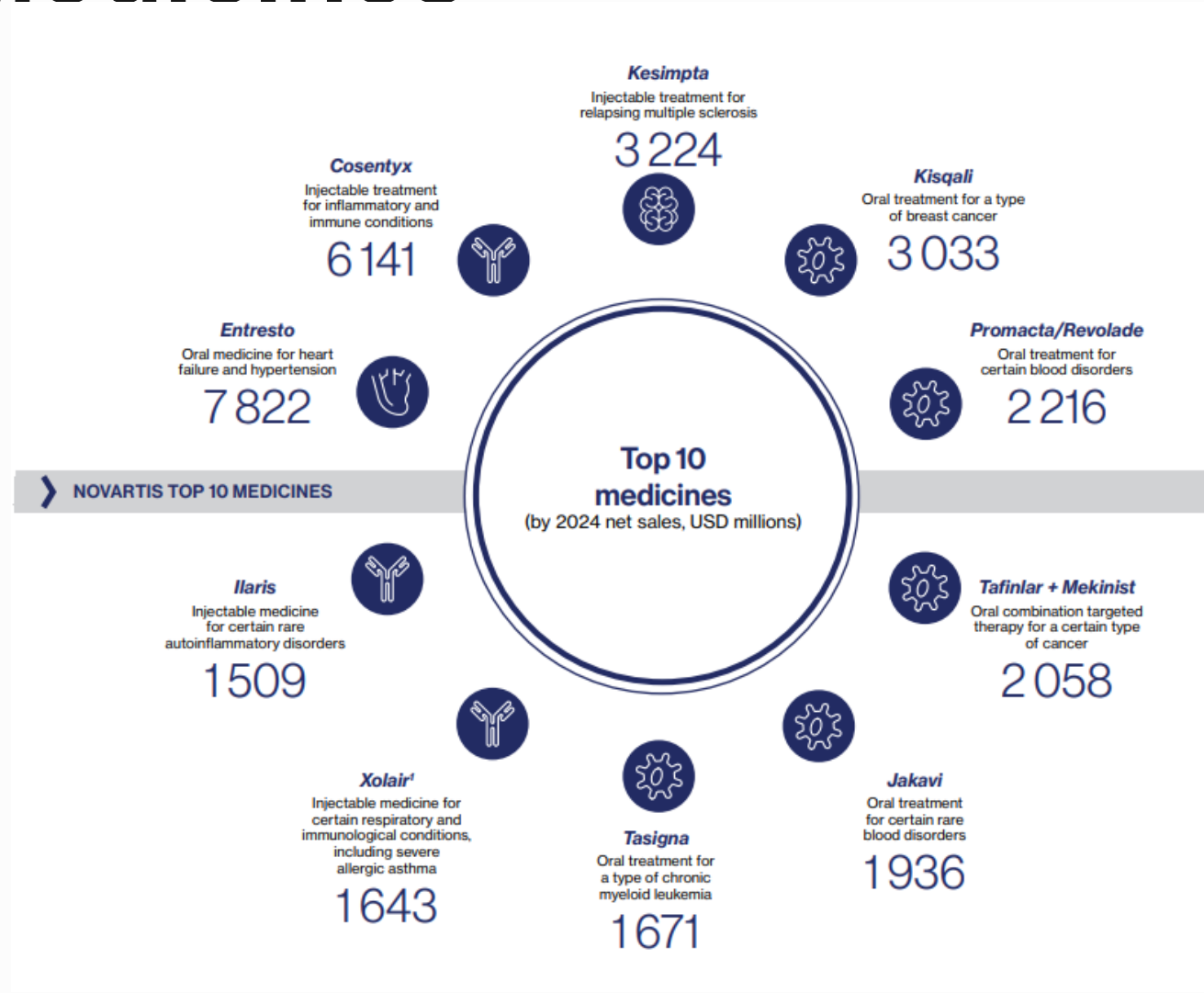
Immunology



Neuroscience



Oncology



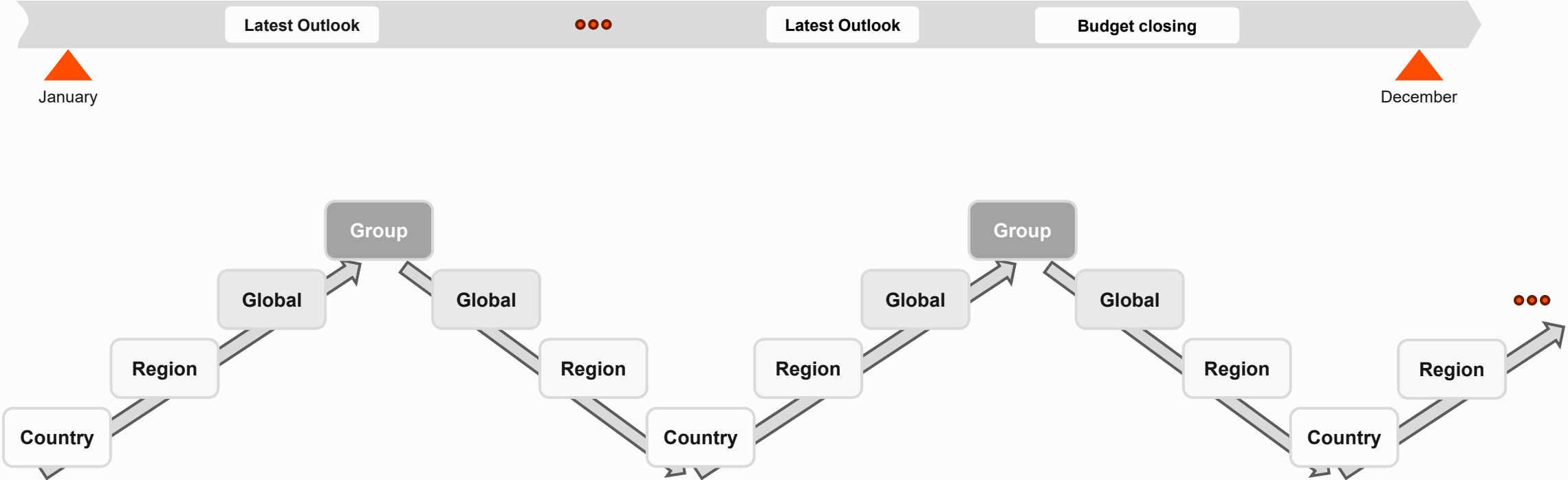
# Re-imagining business finance with AI

# Why

 NOVARTIS



# The former planning process was highly iterative and labor-intensive



# What sparked the need for innovation in Finance?

Several weaknesses exist in the traditional “bottom-up” planning process...



## Biased Financial Planning

Financials often affected by politics



## Single-scenario Planning

Defending a single Target number



## Time & energy spent on negotiating

No value-adding slide preparation and negotiations



## “Simple” resource allocation approaches

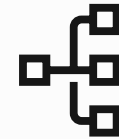
Non-dynamic & assumption-based models & industry heuristics

... that we aspire to turn into strengths to benefit the business



## Data-driven financial planning

Financials based on analytics & key events



## Multi-scenario planning

Providing a range of possible outcomes



## Focus on operationalization

More time spent on how to deliver the numbers



## RA based on advanced analytics

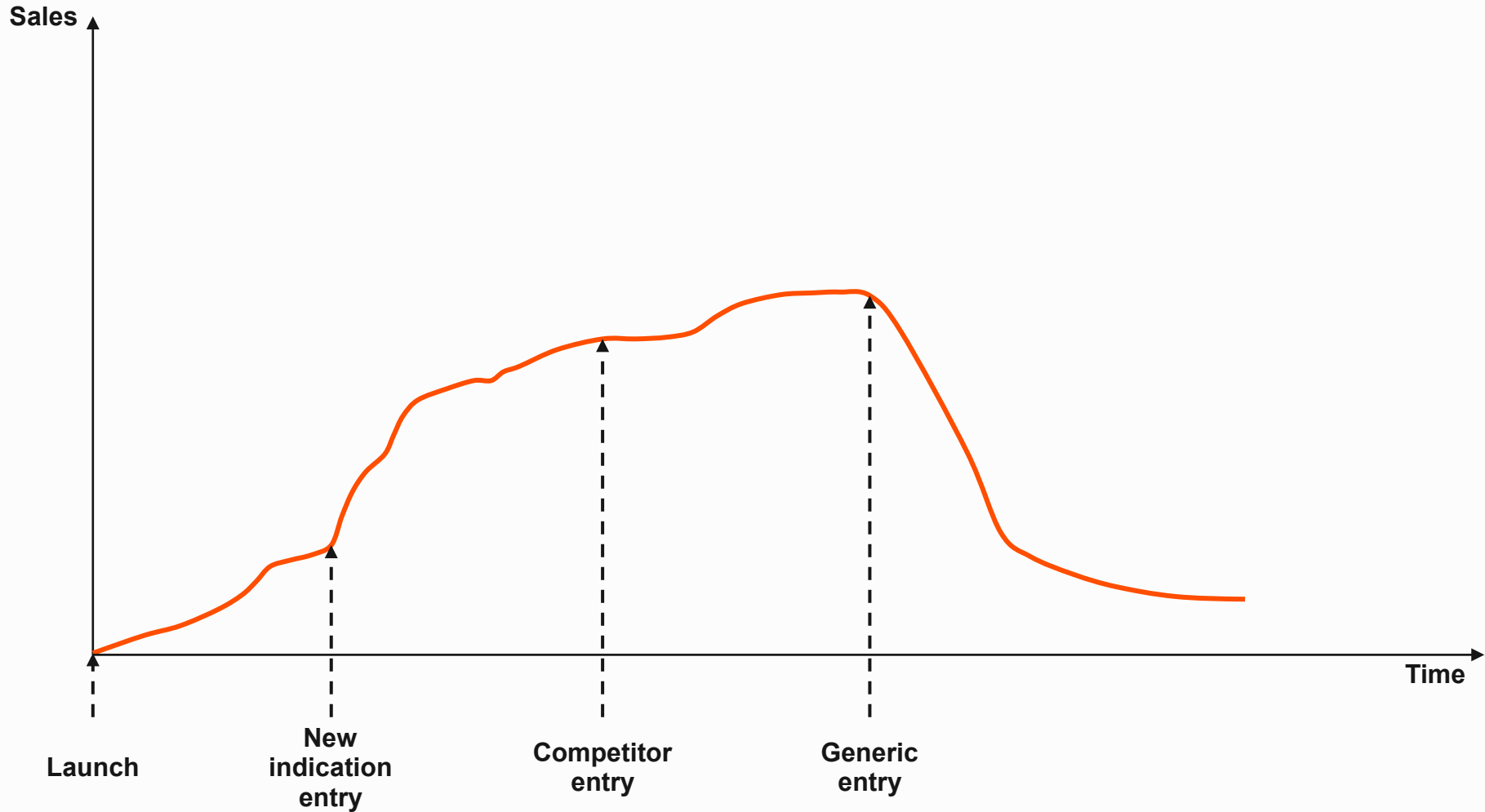
Allowing for real time recommendations across countries/brands

# How

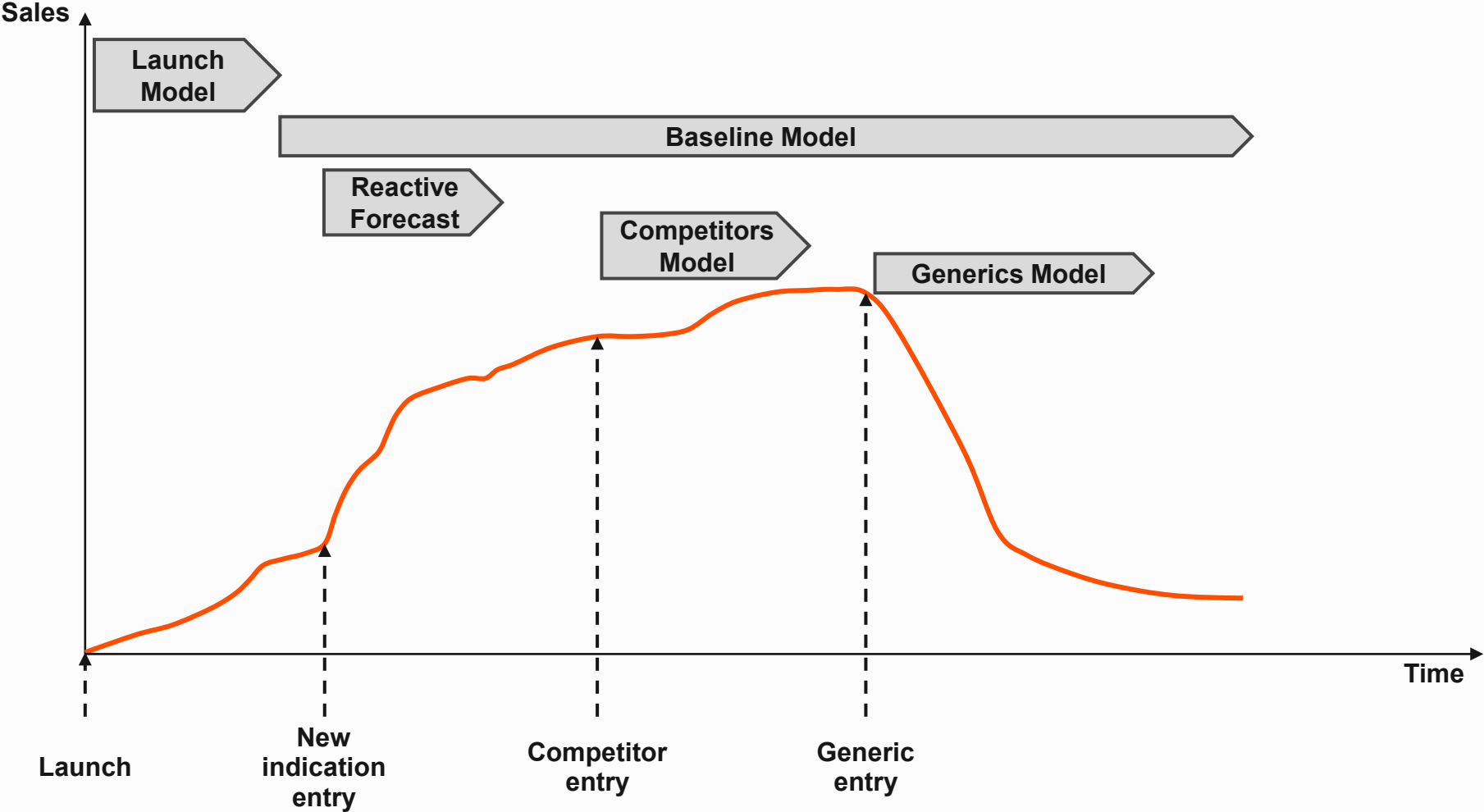
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# (Simplified) lifecycle of a pharmaceutical drug



# Sales Forecasting: a multi-model approach for full-lifecycle estimation



# AI Framework

We enable scalable forecasting for global country-brand portfolios by producing explainable adjustments on top of baseline forecasts. For that, we combine internal and external data, use analogue-based learning across countries and brands.

## Launches

*Forecast new product adoption curves*

>1,200 analogue launches across 50+ countries using DTW similarity matching

## Competitors

*Estimate impact of competitor entry*

~200 competitor analogues with Quantile Regression Forest

## Lifecycle

*Adjust forecasts for maturity-driven deceleration*

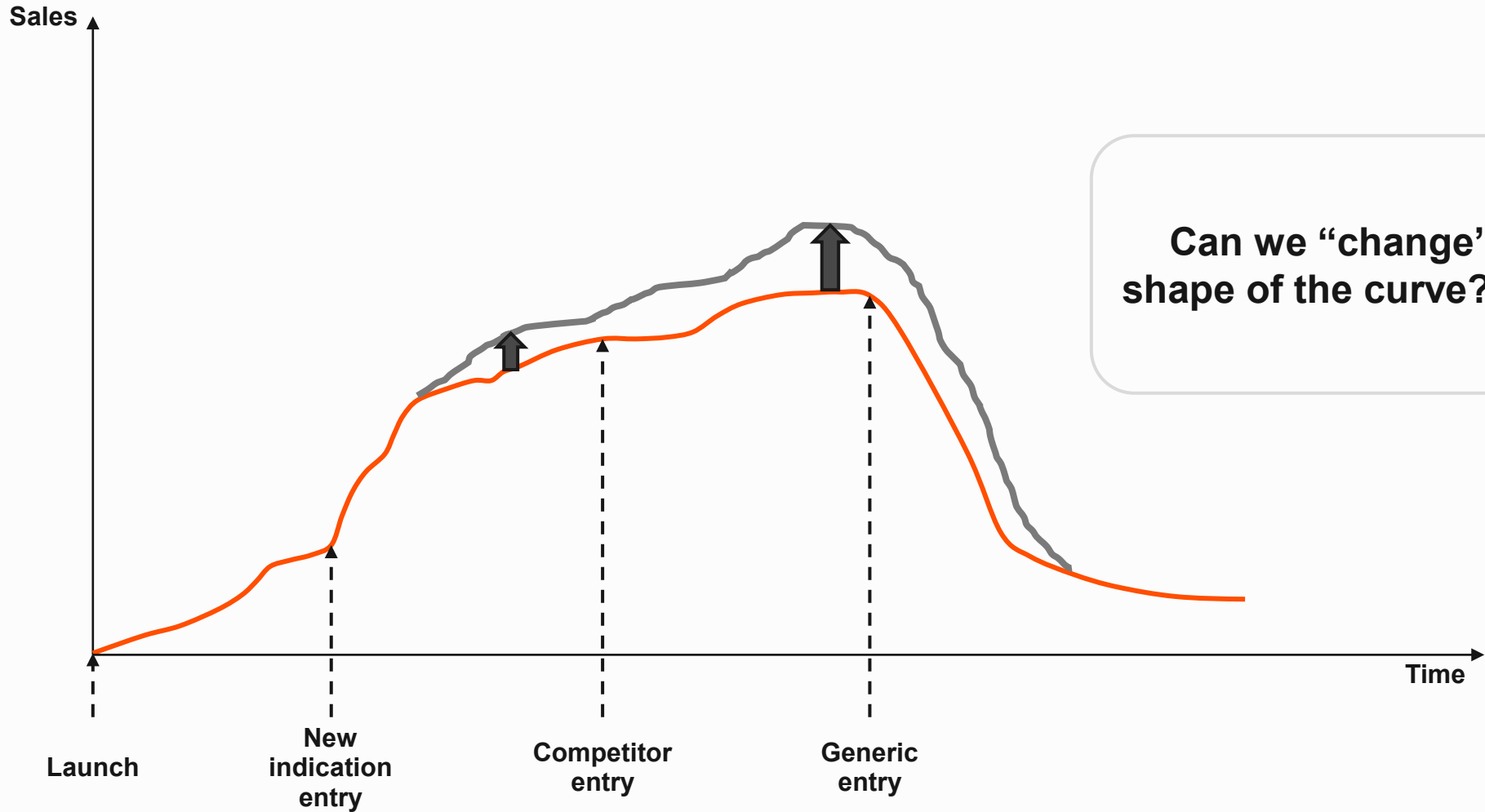
Random Forest + Survival Forest models on historical transitions

## Generics

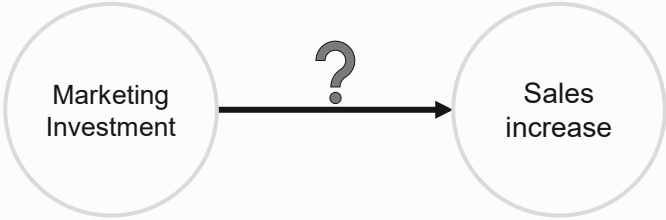
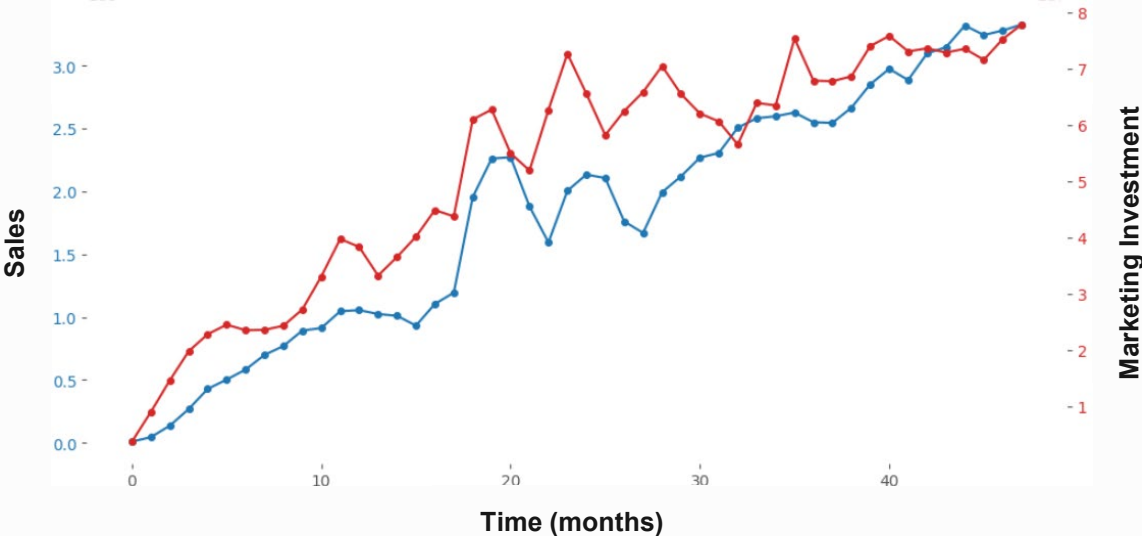
*Predict erosion after generic entry*

>3,400 generic analogues using LightGBM

# After forecasting sales... What's next?



# Are investments driving up the sales? How do we make sure?



# Causal AI models allow us to optimize investments and generate insights on performance

## Resource Allocation

Estimation of influence of Advertising and Promotion investment on sales, and optimization across countries and products

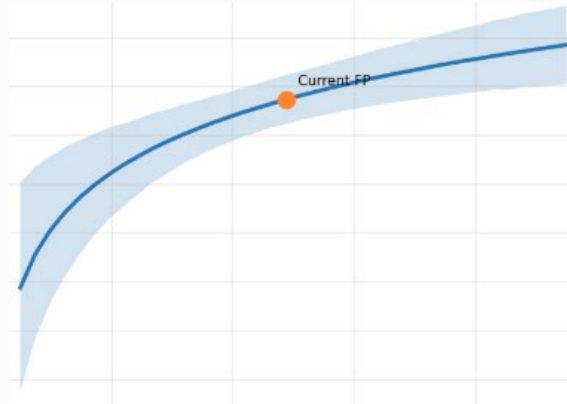
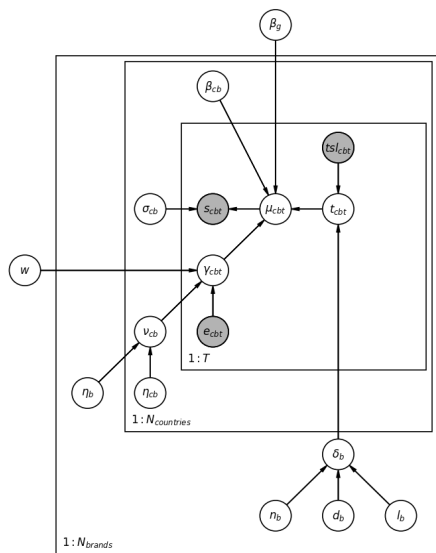
## Tactical Field Force

Estimation of impact of face-to-face interactions with medical professionals on prescription levels and sales, to assess saturation levels and potential opportunities

# Resource allocation

## Response Modelling

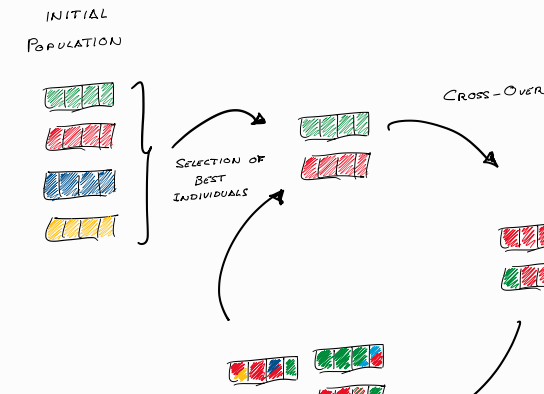
- Bayesian modeling to estimate the **relationship between investment and sales**
- Generate the **response curve or surface**



## Curves Optimization

- **Genetic Algorithm**
- Find the **best possible budget allocations** for each scenario
- Maximizes a penalized version of the **Net Present Value**

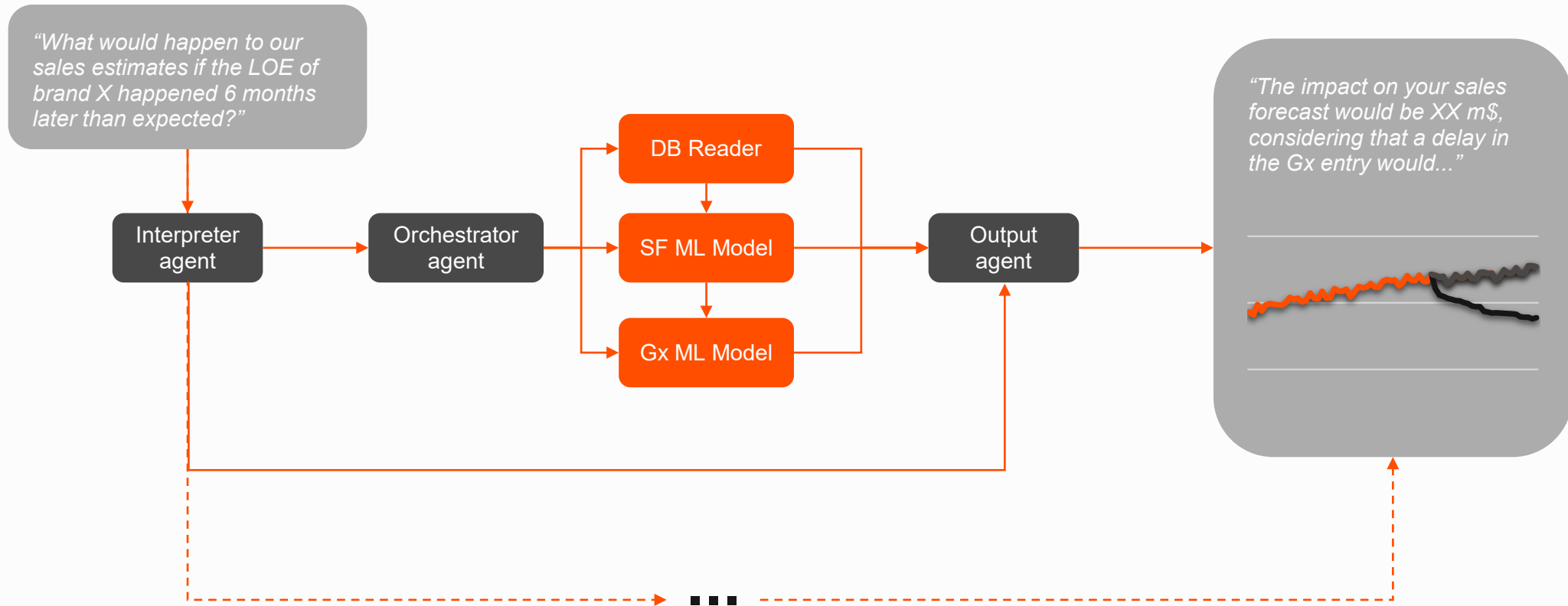
$$piNPV = \sum_{t=0}^T \frac{Impactable\ Sales_t}{(1+r)^t} \cdot (1 - SPC) - Expenses$$



# Our AI portfolio has generated value across multiple business units within Finance and beyond



# Towards the democratization of AI access & generation: an Agentic trip



# Key Success Factors



# Key success factors

## Digital, AI and Data Science are a core component of Novartis' strategy

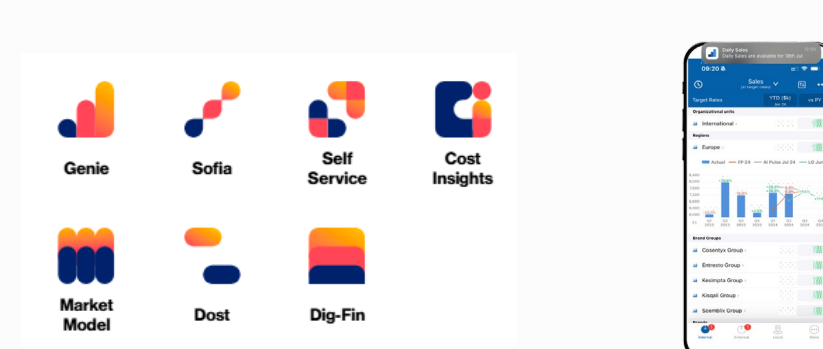
Embrace this technology to become a data-driven company.

Focus on core therapeutical areas, technology platforms and priority markets.

## We have built AI & Data Science capabilities in-house: the Barcelona Digital Finance Hub

Data science, data engineering, ML engineering, ML Ops, business translation, project management...

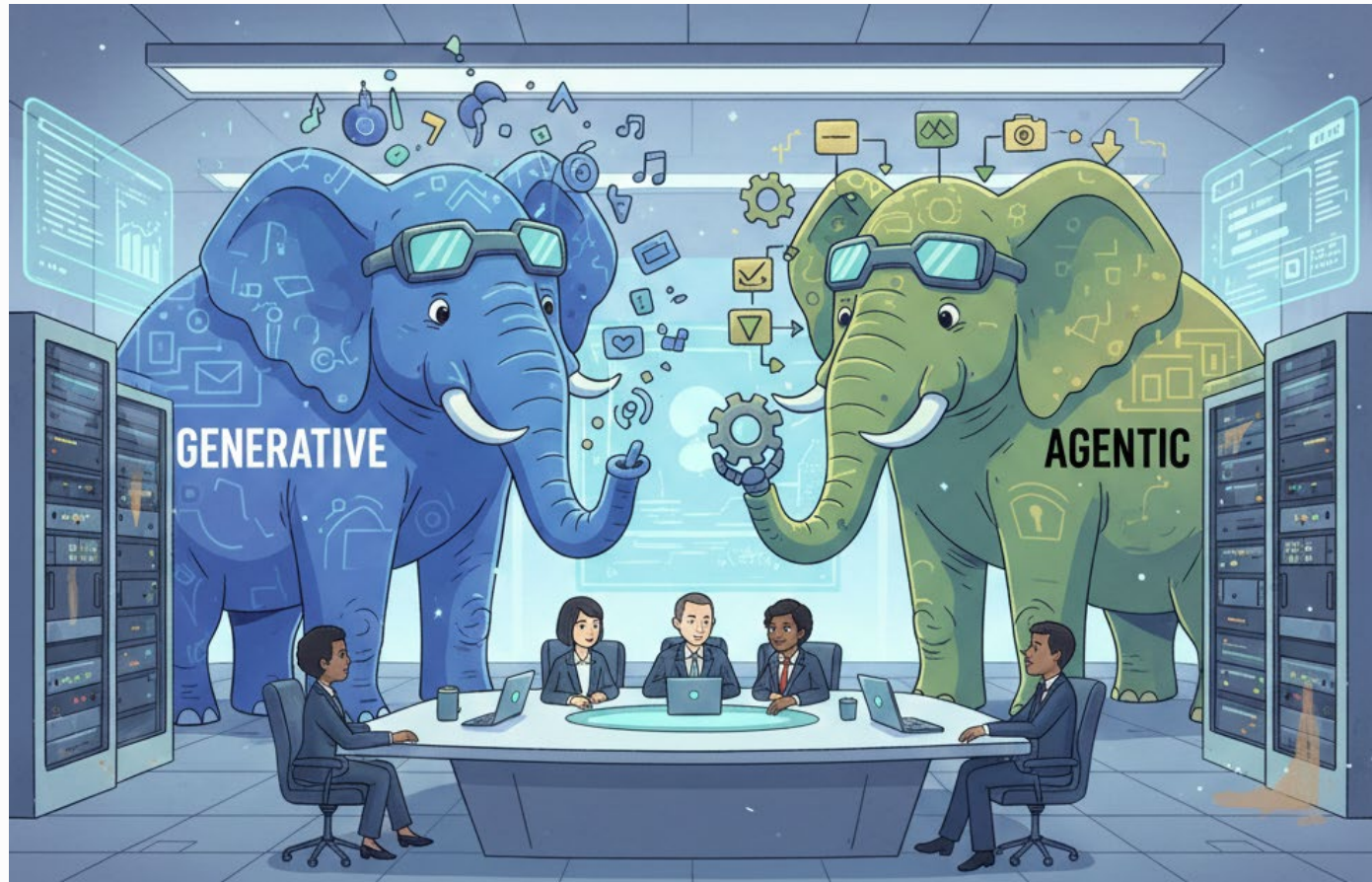
## Digital Finance tools have transformed and standardized the way data is consumed



## We are upskilling the organization to prepare for the future way of working...

... and yet we need to continue **reinventing** ourselves and the organization in this (agentic?) journey

# The big and (relatively) new elephants in the room: Generative and Agentic AI



# Thank you

[marc.grabalosa\\_gandara@novartis.com](mailto:marc.grabalosa_gandara@novartis.com)

# Q&A



# Thank you

[marc.grabalosa\\_gandara@novartis.com](mailto:marc.grabalosa_gandara@novartis.com)

# Disclaimer

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# BackUp

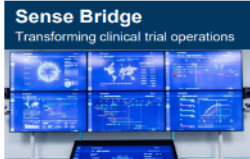
# Digital, AI and Data Science are a core component of Novartis' strategy

Our focus areas	Our priorities
<p><b>Core therapeutic areas:</b> Cardiovascular, renal and metabolic; immunology; neuroscience; oncology</p>	<p><b>Accelerate growth</b> Deliver high-value medicines</p>
<p><b>Technology platforms:</b> Chemistry; biotherapeutics; radioligand therapy; xRNA therapy; gene and cell therapy</p>	<p><b>Deliver returns</b> Embed operational excellence</p>
<p><b>Priority markets:</b> US; Germany; China; Japan</p>	<p><b>Strengthen foundations</b></p> <ul style="list-style-type: none"> <li>Unleash the power of our people</li> <li>Scale data science and technology</li> <li>Build trust with society</li> </ul>

2019

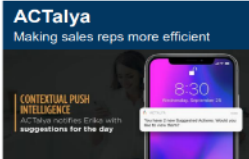
## Building data science and digital capabilities

**Sense Bridge**  
Transforming clinical trial operations




- Tracks, analyzes and predicts the status of 500+ active trials in 70+ countries involving 80k+ patients in real time
- Other modules enable selection of best trial sites, enrollment tracking, predicting trial risks, drug supply calculations, etc.

**ACTalya**  
Making sales reps more efficient



- Combines campaign and sales reps with each other
- Piloted in 2 countries; etc.

**AI-driven Finance**  
Improving finance operations



2024

## ... and we continue to scale the power of data science and AI across R&D

Target ID	Chemistry	Preclinical	Trial design	Study start-up	Trial execution and analysis
1 Target Discovery Engine <i>Deeper disease understanding</i>	2 Small molecule GenChem & optimization 3 Biologics Optimization <i>AI-powered drug design</i>		5 Protocol design 6 Clinical Document Generation 9 Intelligent Decision System (IDS) <i>AI-powered trial transformation</i>	8 Predictive site selection Patient Finding	7 ClinOps Next-Gen-Action
4 Predictive safety					

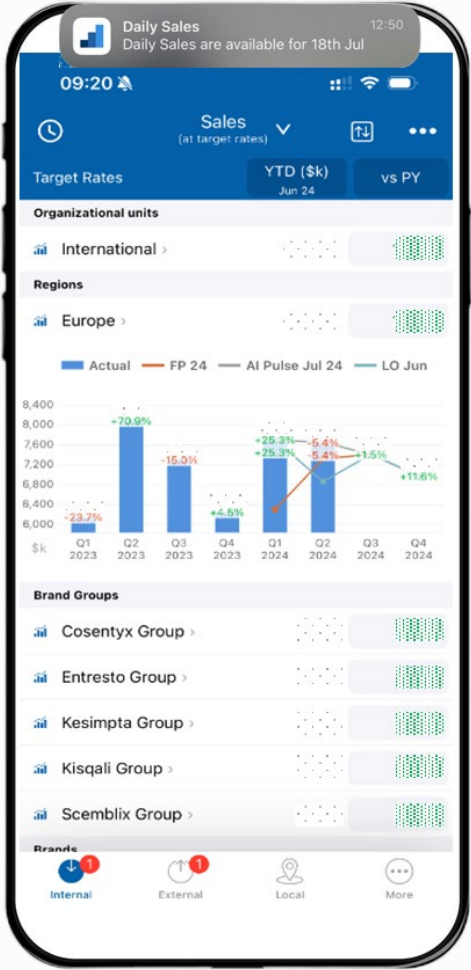
**Select partners:** Palantir, Microsoft, Generate:Biomedicines, Isomorphic Labs, DECIPHER, Schrödinger<sup>1</sup>, yseop

1. Novartis has signed a research collaboration and license agreement with Schrödinger. This transaction is subject to customary closing conditions, including regulatory clearance.

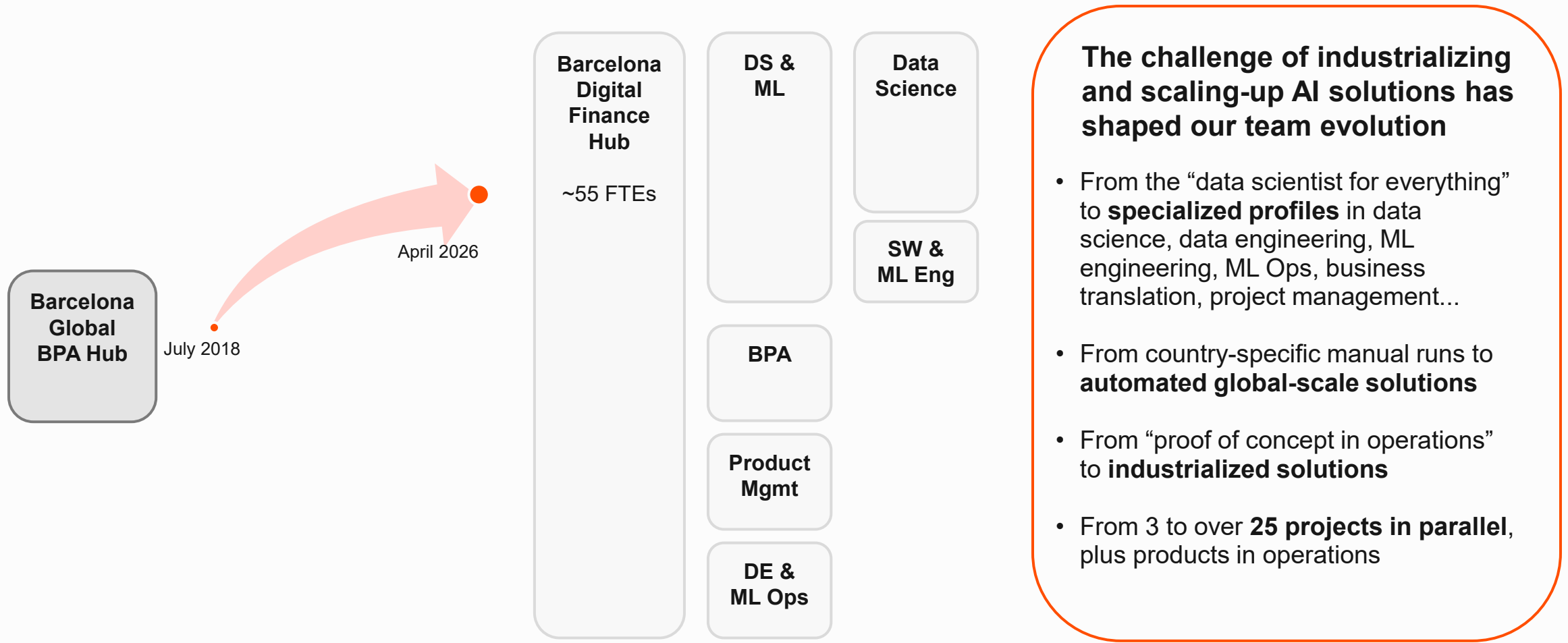
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# Digital Finance tools have transformed and standardized the way data is consumed



# We have built AI & Data Science capabilities in-house: the Barcelona Digital Finance Hub



## The challenge of industrializing and scaling-up AI solutions has shaped our team evolution

- From the “data scientist for everything” to **specialized profiles** in data science, data engineering, ML engineering, ML Ops, business translation, project management...
- From country-specific manual runs to **automated global-scale solutions**
- From “proof of concept in operations” to **industrialized solutions**
- From 3 to over **25 projects in parallel**, plus products in operations

# We are upskilling the organization to prepare for the future way of working...

## BPA capabilities today

- Financial know-how
  - Analytical skills
  - Accounting know-how
  - Communication of financial concepts & results
  - Project management skills
  - System know-how
  - Process expertise
- } Concentrated in central hubs

## Additional capabilities tomorrow

- Business acumen
- Ability to execute on “data to insights, insights to actions”
- Strategic / agile / operations mindset
- Leadership & consulting skills (influencing)
- Project management skills
- Digital savviness
- Product management skills



**Upskilling the organization through 1-week intensive Digital & Data Science courses**