



# Synerise

The world's most advanced  
behavioral AI infrastructure

# About Synerise

What we do?

“**Synerise platform** is able to **track every event, across every channel**: whether it's mobile, it's web, physical presence. All of that is signal that's being **continuously collected, processed**, and then in turn **AI is being applied, workflows are being applied to drive the experience**”

## Satya Nadella

CEO of Microsoft



Video

[See Satya Nadella talking about Synerise](#) (<00:30)



Video

[See Synerise Explainer](#) (<02:00)



Video

[See Synerise AI Vision](#) (42:00)



# We have built composable platform

Developer & business centric experience in one place

“Synerise platform is able to **track every event, across every channel**: whether it's mobile, it's web, physical presence. All of that is signal that's being **continuously collected, processed**, and then in turn **AI is being applied, workflows are being applied** to **drive the experience**”

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Video

[See Synerise AI Vision](#) (42:00)

digital wallet & loyalty

offline & online CDP

unifying all behavioral data

segmentation / insights

product / UX analytics

360 customer degree

AI promotion engine

AI recommendations

BNP PARIBAS

AI scoring & predictions

marketing automation

lead nurturing

NPS tracking

content personalization

CROCS

1-1 communication

customer journey

# What do we offer?

Key products



## [Synerise.com](https://synerise.com)

Self-service, all-in-one platform for building exceptional personalized experiences driven by a [proprietary database engine](#).

Key audience:

**Business / Marketing / Tech**



## [BaseModel.ai](https://basemodel.ai)

Revolutionary SOTA private foundation model for behavioral & transactional data – AI core for Synerise platform.

Key audience:

**Data scientists, data analysts,  
data engineers**

## Cleora

## [Cleora.ai](https://cleora.ai)

Open Source general-purpose model for efficient, scalable learning of stable and inductive entity embeddings.

Key audience:

**Data scientists**

# Leaders in Behavioral Modelling Science

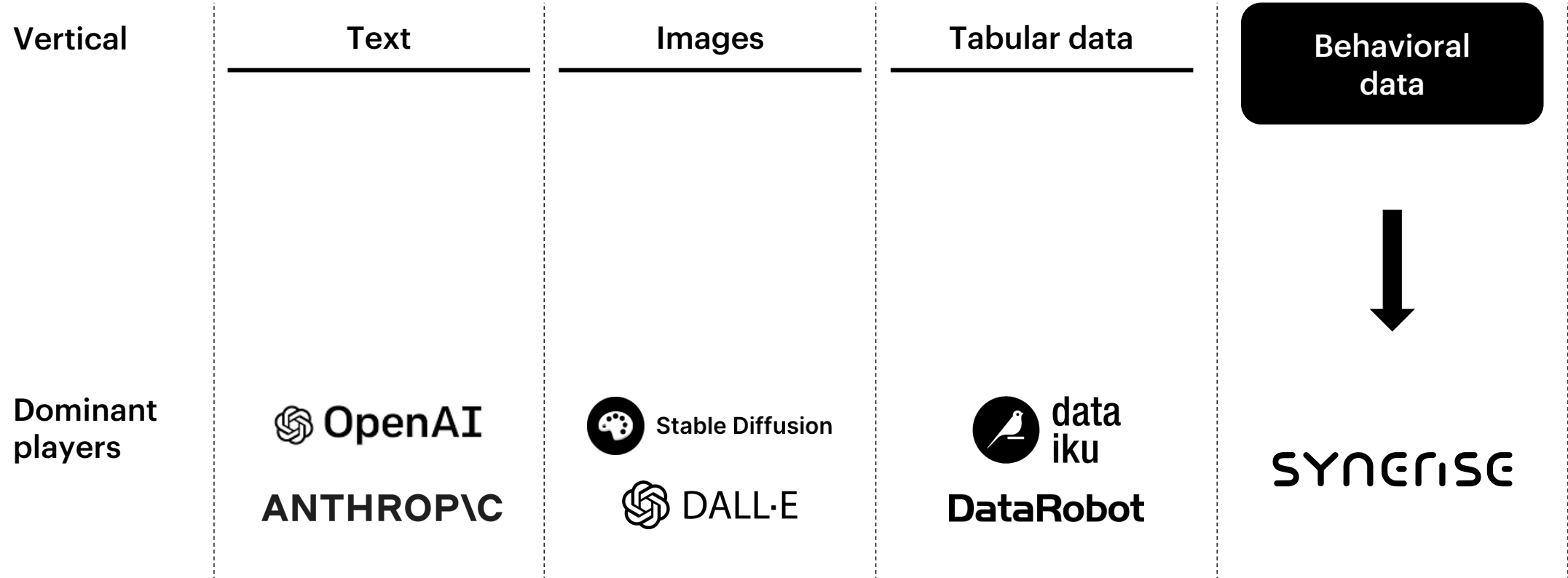
Science driven company

**Our tools are  
reaching end  
customers  
in over 150  
countries every  
millisecond**



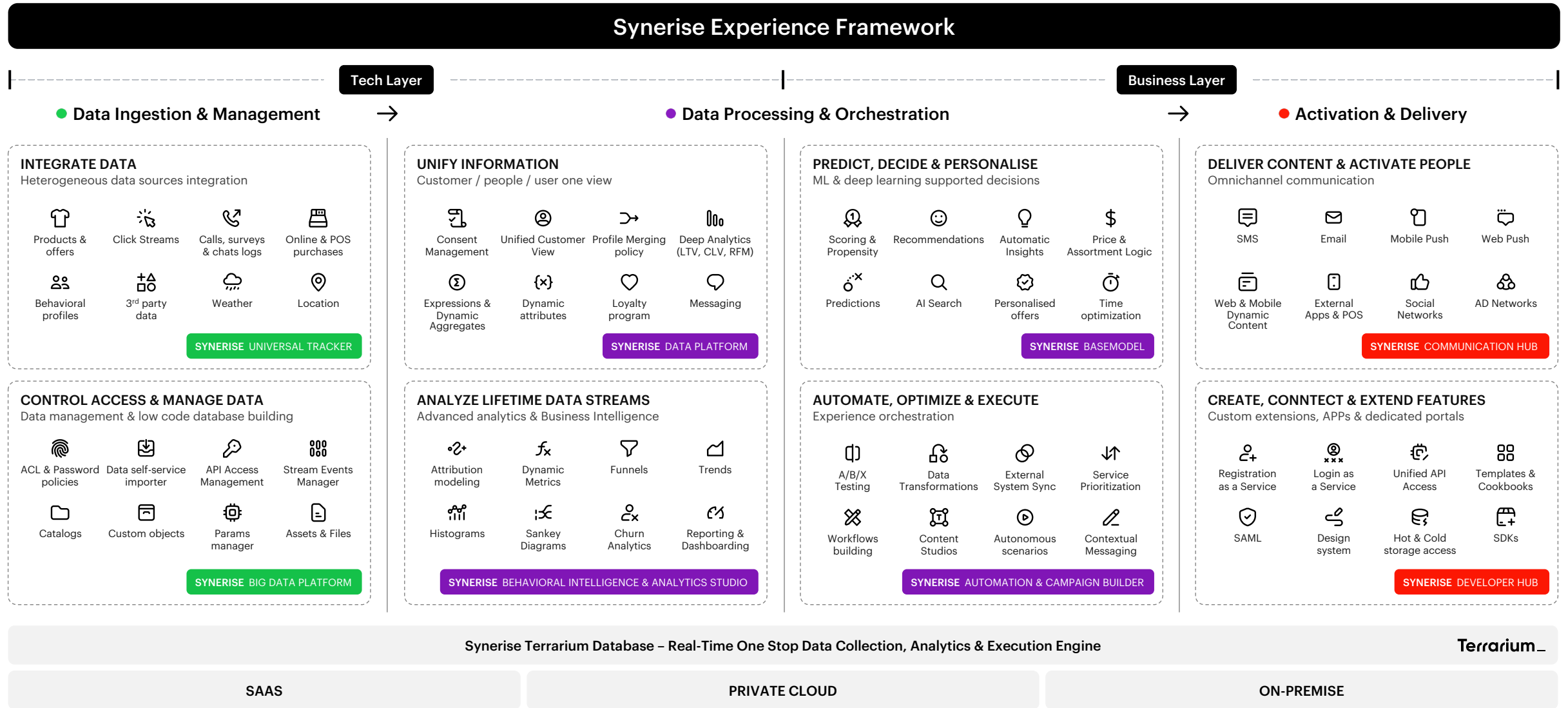
'Dailymotion applies Synerise [BaseModel] to personalize video recommendations in native applications. [BaseModel] outperforms all other models driving increased customer relevance, ad revenues and ROI.'

# Our goal: dominate the behavioral AI vertical



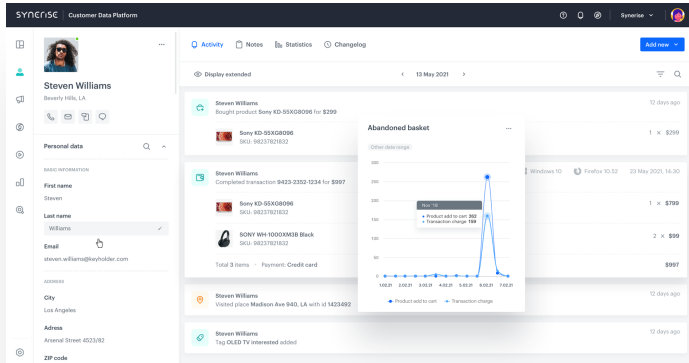
**GenAI fails to deliver results and ROI as expected**

# The end-to-end experience & continuous intelligence framework

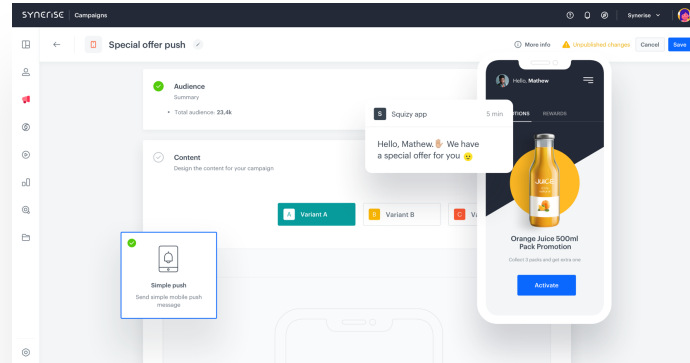


# Platform out-of-the-box components

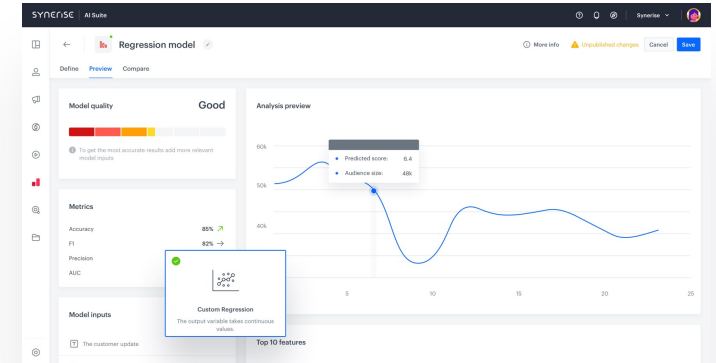
## Core modules



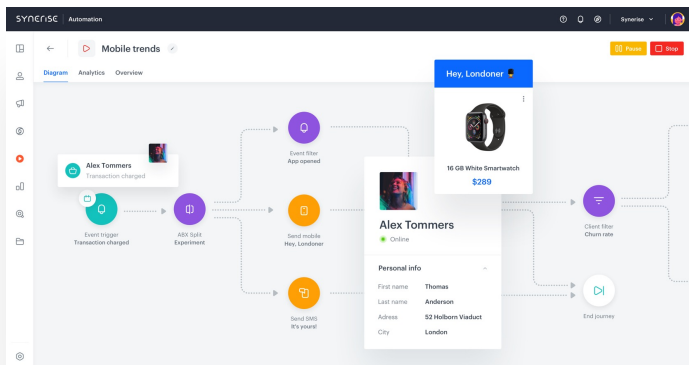
Behavioral Data Platform



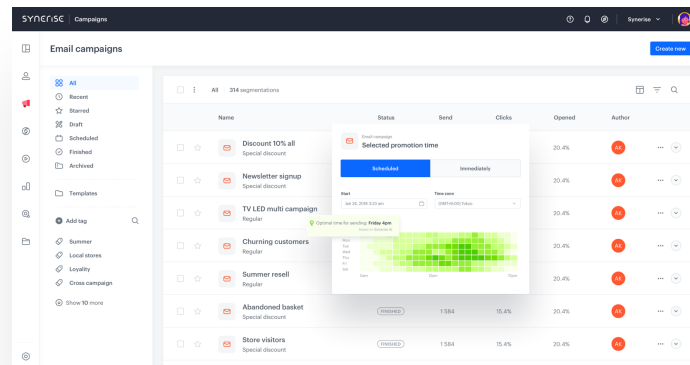
Engagement Center



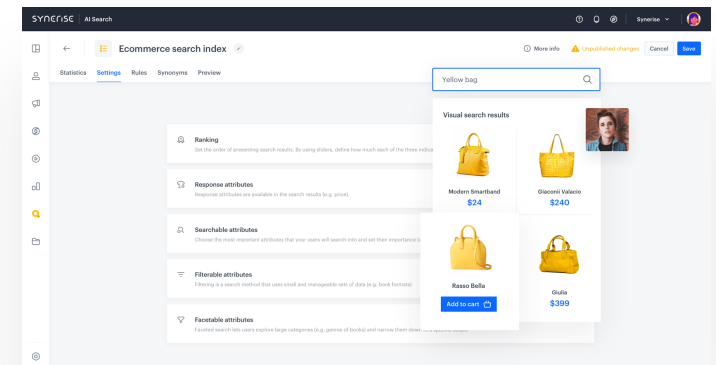
Analytics Hub



Automation Studio



MarTech Stack



Personalization Engine



# Key figures

## Business

**400+**

Production Workspaces  
(instances)

**43**

Countries  
(>150 with Cleora.ai)

**>100**

Clients

**6**

Continents

**50+**

Active Partners worldwide  
(e.g., EY, Accenture)

**62%**

Customers are served by  
Partners

**21%**

Customers are fully self-  
serviced

**>2k**

Active operators on the  
Synerise platform

**512**

Service requests raised and  
resolved last month

**60k**

Active users of the  
Knowledge Hub

## Tech (~)

**31B**

Events collected  
per month

**>90B**

Queries to the Terrarium DB  
per month

**3.8B**

AI recommendations,  
searches, and predictions  
per month

**1.85B**

Page visit events collected  
per month

**1.5B**

Mobile view events  
collected per month

**>84TB**

Data sent via API per month

**>1B**

Unique dynamic content  
generated per month

**>360K**

Queries to the Terrarium DB  
per second at peak

**28K**

API calls per second  
at peak

**30B**

AI decisions per second  
at peak

**150B EUR**

GMW processed  
annually

**1.35B**

Hyper-personalized  
messages sent per month  
(mail, push, sms, whatsapp)

**12B**

Decisions in workflows  
per month

**21B**

API calls  
per month

**6B**

Behavioral profiles  
scanned daily

# We built a mission-critical platform based on three pillars

Delivering excellent ROI with less than 3 months payback thanks to scientifically proven solutions

Ability To Absorb & Process  
Heterogeneous Information

**How fast and at what scale  
can you do it?**



## Terrarium Proprietary Database Engine

Column & row-oriented real-time  
behavioural database engine built  
from scratch for heterogeneous multi-  
modal data Ingestion

Ability to Analyse, Understand,  
Infer & Make Decisions

**How deeply, precisely and effectively  
can you analyze information to get  
insights and make decisions?**



## Basemodel.ai Behavioral Modeling & Analytics

Generalized behavioral modeling suite  
with feature store

Ability to Act, Experiment  
& Learn in Real Time

**How do you use information to act,  
learn and optimize your behaviour?**



## Self-Service Workflow Automation & ML Execution

Self-service, low code & automation  
platform with reusable components  
for developers, clients & partners

**Terrarium\_**

**API-first platform  
open for extensions  
with Design UI System**

# We built an industry agnostic & multi-feature platform

Controlling data processing, and utilizing pragmatic AI execution scenarios in one place give the best results

*Synerise covers most of the features of multiple technologies and delivers better results by connecting features already weakly associated and available in hundreds of separated tools.*

## The client's potential tech stack to be partially or fully replaced by or co-exists with Synerise

### Data Collection Database

memSQL 

SAP HANA

ClickHouse

### Customer Data Platform

Segment 

mparticle 

lytics 

### Product Analytics

mixpanel 

Amplitude 

pendo 

### Recommendations

monetate 

BOXEVER 

coveo 

### Marketing Automation

mailchimp 

salesforce 

eloqua 

### Personalization

dynamic yield 

Insider 

braze 

### BI & Analytics

qualtrics 

Google Analytics 

sas 

### Loyalty

Talon.One 

Adobe 

SAP 

### Search

algolia 

SearchNode 

bloomreach 

### Customer Experience

Adobe 

salesforce 

IBM 

### Attribution Modeling

wopra 

Adobe Analytics 

funnel 

### AI & ML

salesforce einstein 

DataRobot 

dataiku 

and hundreds more...

SYNERISE

# One platform = thousands of use cases

All in one self-service platform for building exceptional experiences

# HUB

## See additional selected use cases on Synerise Hub



[Synerise Hub](#)  
Use Cases List



### Dynamic content campaign with personalized recommendations

Create dynamic content with personalized recommendation using drag & drop builder and predefined HTML block

SYNERISE

●●● MEDIUM



### Predict the timing of repeat purchases

Create a workflow to use analytics and predict the time of a customer's next recurring purchase. Send them an email at the best time

SYNERISE

●●● ADVANCED



### Search engine for a brand with multiple languages and currencies

Use Synerise AI Search in multiple languages and currencies

SYNERISE

●●● ADVANCED



### Predict propensity to buy items with an attribute

Define an attribute and calculate the probability of selling items with that attribute

SYNERISE

●●● INTRO

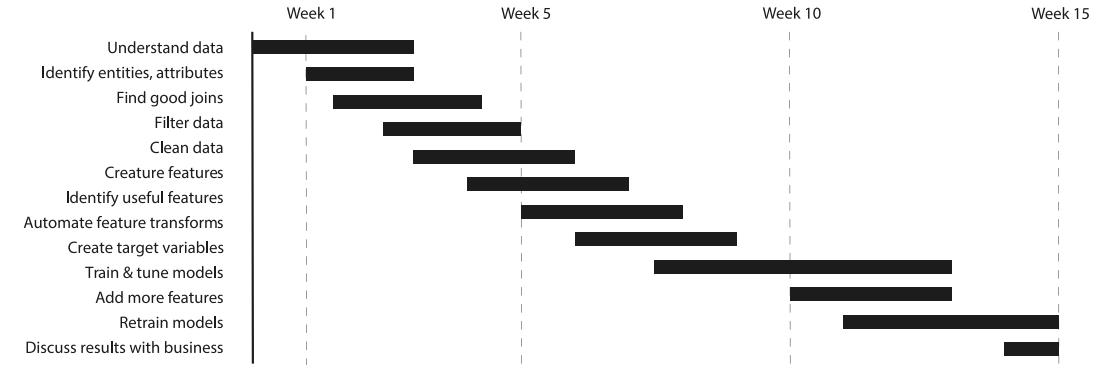
**We are a science-driven  
company**

# BaseModel is groundbreaking AI product



- On October 10th, 2023 Synerise launched BaseModel.ai, a foundational behavioral model for enterprise customers, who want to keep their data in-house
- BaseModel.ai taps into the emerging market of private foundational models for enterprises, which allow quick adaptation to specific company needs and rapid training
- BaseModel.ai is beating competition by speed of training (+100%), precision of predictions (+17%) and minimum amount of data required for statistically relevant outcomes (-70%).

## Current standard approach



## BaseModel



## Time required for graph processing for various datasets

Number of nodes in the graph

	22k	1.1 mln	5 mln	40 mln
<b>Base Model</b>	00:00:43	00:12:07	01:35:40	25:34:18
Facebook's Pytorch BigGraph	00:04.33	00:54:35	10:38:03	Insufficient RAM
Deepwalk	00:36:51	28:33:52	Timeout	Timeout

## Examples of fitting time of various data sets by BaseModel

Datasource	Timespan	Number of rows	Fitting time
Events 1	1 year	> 3 billion	100 minutes
Events 2	1 year	~ 630 million	50 minutes
Client Attributes	-	10 million	20 seconds

# The best field-tested, applied predictive AI and behavioral data science for world-class retailers

## BaseModel vs Deep Mind’s TIGER for sequential recommendations (June 2024)



Methods	Sports and Outdoors				Beauty				Toys and Games			
	Recall @5	NDCG @5	Recall @10	NDCG @10	Recall @5	NDCG @5	Recall @10	NDCG @10	Recall @5	NDCG @5	Recall @10	NDCG @10
P5	0.0061	0.0041	0.0095	0.0052	0.0163	0.0107	0.0254	0.0136	0.0070	0.0050	0.0121	0.0066
Caser	0.0116	0.0072	0.0194	0.0097	0.0205	0.0131	0.0347	0.0176	0.0166	0.0107	0.0270	0.0141
HGN	0.0189	0.0120	0.0313	0.0159	0.0325	0.0206	0.0512	0.0266	0.0321	0.0221	0.0497	0.0277
GRU4Rec	0.0129	0.0086	0.0204	0.0110	0.0164	0.0099	0.0283	0.0137	0.0097	0.0059	0.0176	0.0084
BERT4Rec	0.0115	0.0075	0.0191	0.0099	0.0203	0.0124	0.0347	0.0170	0.0116	0.0071	0.0203	0.0099
FDSA	0.0182	0.0122	0.0288	0.0156	0.0267	0.0163	0.0407	0.0208	0.0228	0.0140	0.0381	0.0189
SASRec	0.0233	0.0154	0.0350	0.0192	0.0387	0.0249	0.0605	0.0318	0.0463	0.0306	0.0675	0.0374
S <sup>3</sup> -Rec	0.0251	0.0161	0.0385	0.0204	0.0387	0.0244	0.0647	0.0327	0.0443	0.0294	0.0700	0.0376
TIGER (DeepMind)	0.0264	0.0181	0.0400	0.0225	0.0454	0.0321	0.0648	0.0384	0.0521	0.0371	0.0712	0.0432
BaseModel (Synerise)	<b>0.0456</b>	<b>0.0316</b>	<b>0.0651</b>	<b>0.0379</b>	<b>0.0772</b>	<b>0.0544</b>	<b>0.1106</b>	<b>0.0652</b>	<b>0.0790</b>	<b>0.0554</b>	<b>0.1107</b>	<b>0.0656</b>
	+72.73%	+74.59%	+62.75%	+68.44%	+70.04%	+69.47%	+70.68%	+69.719%	+51.63%	+49.33%	+55.48%	+51.85%

## BaseModel vs Meta’s HSTU for sequential recommendations (July 2024)



	Method	HR@10	HR@50	HR@200	NDCG@10	NDCG@200
ML-1M	SASRec (2023)	.2853	.5474	.7528	.1603	.2498
	HSTU	.3097 (+8.6%)	.5754 (+5.1%)	.7716 (+2.5%)	.1720 (+7.3%)	.2606 (+4.3%)
	HSTU-large	.3294 (+15.5%)	.5935 (+8.4%)	.7839 (+4.1%)	.1893 (+18.1%)	.2771 (+10.9%)
	<b>BaseModel</b>	<b>.3404 (+19.3%)</b>	<b>.6000 (+9.6%)</b>	<b>.7972 (+5.9%)</b>	<b>.1998 (+24.6%)</b>	<b>.2874 (+15.1%)</b>
ML-20M	SASRec (2023)	.2906	.5499	.7655	.1621	.2521
	HSTU	.3252 (+11.9%)	.5885 (+7.0%)	.7943 (+3.8%)	.1878 (+15.9%)	.2774 (+10.0%)
	HSTU-large	.3567 (+22.8%)	<b>.6149 (+11.8%)</b>	<b>.8076 (+5.5%)</b>	.2106 (+30.0%)	.2971 (+17.9%)
	<b>BaseModel</b>	<b>.3641 (+25.3%)</b>	.6102 (+11.0%)	.8017 (+4.7%)	<b>.2239 (+38.1%)</b>	<b>.3076 (+22.1%)</b>
Books	SASRec (2023)	.0292	.0729	.1400	.0156	.0350
	HSTU	.0404 (+38.4%)	.0943 (+29.5%)	.1710 (+22.1%)	.0219 (+40.6%)	.0450 (+28.6%)
	HSTU-large	.0469 (+60.6%)	.1066 (+46.2%)	.1876 (+33.9%)	.0257 (+65.8%)	.0508 (+45.1%)
	<b>BaseModel</b>	<b>.0952 (+226.0%)</b>	<b>.1565 (+114.7%)</b>	<b>.2177 (+55.5%)</b>	<b>.0612 (+292.4%)</b>	<b>.08394 (+139.8%)</b>

## Our credentials: One of the world's top AI companies

### Rakuten

Rakuten Data Challenge

1<sup>st</sup> place



Twitter RecSys AI Challenge

2<sup>nd</sup> place

### KDD

KDD Cup

3<sup>rd</sup> place

### Booking.com

Booking.com AI Challenge







2<sup>nd</sup> place

And defeated inter alia:



# Why Synerise is best positioned to be #1?

Because we are already among world's best AI teams working with a fraction of their budgets

Organizer	Competition name	Description of the challenge	1 <sup>st</sup> Prize	2 <sup>nd</sup> Prize	3 <sup>rd</sup> Prize
<b>KDD2021</b>	ACM KDD Cup Stanford OGB-LSC	Predict the subject of scientific publications on the basis of edges contained in the heterogeneous graph of papers, citations, authors and scientific institutions.			<b>SYNERISE</b>
<b>Booking.com</b>	ACM WSDM Booking.com Data Challenge	Provide the best suggestion for the next trip most likely to be bought by a booking.com customer based on millions of real, anonymized bookings of existing clients		<b>SYNERISE</b>	Team Dasou
	ACM RecSys Twitter Challenge	Based on 1 billion historical tweets predict 4 possible actions (likes, retweet, comment, retweet with comment) of the next tweet provided in a random language		<b>SYNERISE</b>	<b>layer6</b>
<b>Rakuten</b>	SIGIR eCom Rakuten Challenge	Identify the images of a huge data base of products without being given pairing of descriptions and images	<b>SYNERISE</b>	Undisclosed	



# We are solving AI scientific problems worldwide

Our tech & science achievements are shaping the platform we created

**“Winners of the OGB-LSC graph machine learning challenge have just been announced [...] Congratulations to the winning teams from @BaiduResearch, @DeepMind, @Synerise...”**

Jure Leskovec  @jure

Professor of #computerscience @Stanford, Chief Scientist @Pinterest



**“One of the hottest AI research fields”**

OGB-LSC challenge mentioned as an AI benchmark in prominent **State of the AI** report:

[www.stateof.ai](http://www.stateof.ai)

# BaseModel.ai A/B Test vs leading Retail Data Science company 1

Task	Data	Results
<p><b>New customer acquisition for all brands</b></p> <p>(targeting customers for next 4 weeks)</p>	<ul style="list-style-type: none"> <li>• <b>500k</b> loyalty customers</li> <li>• <b>200M</b> transactions</li> <li>• <b>5k</b> product IDs</li> </ul>	<ul style="list-style-type: none"> <li>• <b>125%</b> monetary spend improvement in the 1st slot of promotions</li> <li>• <b>75%</b> buy rate improvement in the 1st slot of promotions</li> <li>• Cumulative buy rate improvement of <b>+28%</b> across top 25 promotion slots</li> <li>• Cumulative spend improvement of <b>+44.5%</b> across top 25 promotion slots</li> <li>• Cumulative gain improvement of <b>+47%</b> for the 20th percentile of customers ranked according to predictions</li> </ul>



Full training and inference time for all customer-brand pairs: **1.5h (4x Nvidia A100)**



The test was conducted in **2024**

# BaseModel.ai A/B Test vs leading Retail Data Science company 2

Task	Data	Results
<p><b>New customer acquisition for emerging brands</b></p> <p>(targeting customers for next 2 weeks)</p>	<ul style="list-style-type: none"><li>• <b>18M</b> loyalty customers</li><li>• <b>8Bn</b> transactions</li><li>• <b>600k</b> product IDs</li></ul>	<p>Customer penetration improvement of <b>+44%</b> on average. Between <b>+12%</b> and <b>+104%</b> depending on product brand</p>



Full training and inference time for all customer-brand pairs: **4.5h (8x Nvidia A100)**



The test was conducted in **2024**

# Concept used by leaders

AI/Big Data frameworks

"We are currently using [Synerise] EMDE<sup>1</sup> for generating candidates to facilitate downstream recommendation systems.

**It generates recommendations using density-based rich customer representation.** It allows us to trace **customer lookalikes** ('People Like You') to find similar users with similar cuisine/taste preferences as well as price affinity. We used [Synerise] Cleora for customer-restaurants graph data [...] And to our delight, the embedding generation was superfast (i.e <5 minutes). For context, do remember that GraphSAGE took ~20hours for the same data in the NCR region. **Cleora + EMDE gives us a generalised framework for recommendations** [...] We are exploring ways to use it in other applications such as search ranking, dish recommendations, etc. "

**zomato**

Data Science Team

[Read more](#)



**Zomato** is an multinational restaurant aggregator and food delivery company founded 2008 owned inter alia by Uber and AliPay. Zomato provides information, menus and user-reviews of restaurants as well as food delivery options from partner restaurants in select cities. The service is available in 24 countries and in more than 10,000 cities. In financial year 2021, the average monthly active users for Zomato were 32.1 million users.

[1] EMDE & Cleora are unique algorithms created from scratch by the Monad team and forming part of Monad project.

# Our science achievements are shaping the platform we created

We believe in brave vision of computer science, which is always based on meritocracy

## TWITTER

RecSys  
Data  
Challenge

Synerise at RecSys 2021: Twitter user engagement prediction with a fast neural model

[→ read more](#)

## SIGIR

Rakuten  
Data  
Challenge

Synerise at SIGIR Rakuten Data Challenge 2020: Efficient Manifold Density Estimator for Cross-Modal Retrieval

[→ read more](#)

## MULTI MODAL

Embedding

Multi-modal Embedding Fusion-based Recommender

[→ read more](#)

## IEMR

Multimodal  
Recommender

“I know why you like this movie” Interpretable Efficient Multimodal Recommender

[→ read more](#)

## EMDE

Manifold  
Density  
Estimator

An efficient manifold density estimator for all recommendation systems

[→ read more](#)

## CLEORA

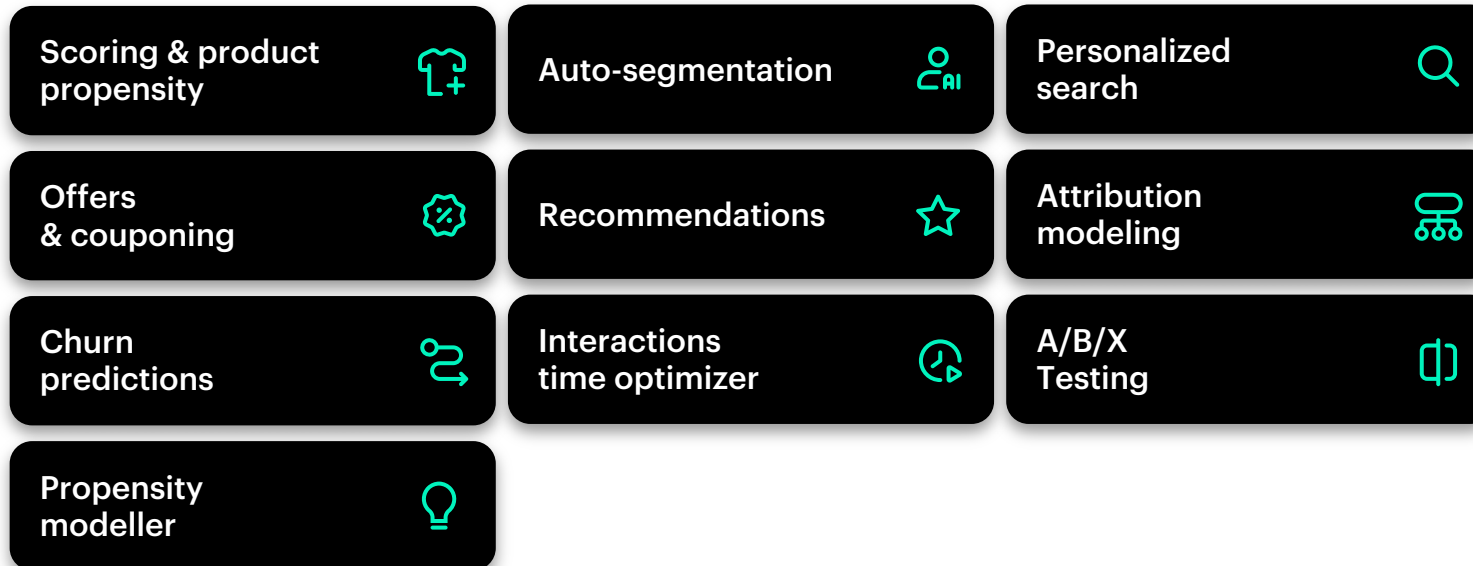
Graph  
Embedding  
Scheme

Cleora: A Simple, Strong and Scalable Graph Embedding Scheme

[→ read more](#)

# We are deploying ready-to-use AI products

Delivering tools with practical KPI tracking & measurement method - examples



# Case study: Żabka

The largest convenience store chain in Central and Eastern Europe with >10,000 stores

**>10k**

stores connected  
to Synerise

**>4B**

API requests  
per month

**>3.8B**

automated decisions  
made per month

**>2.5M**

daily  
customers

**\$3B**

revenue  
tracked

**>1B**

behavioral events  
tracked monthly

**>22.5M**

behavioral profiles  
in CDP

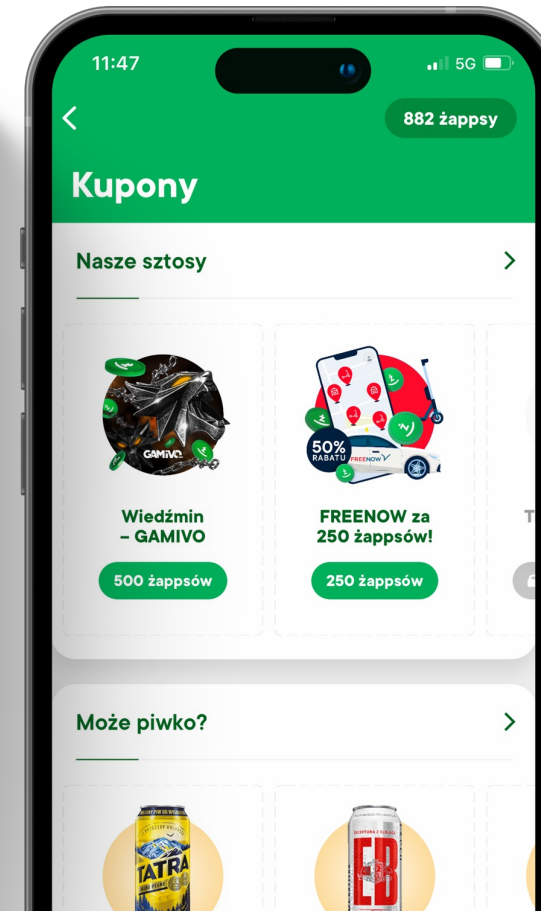
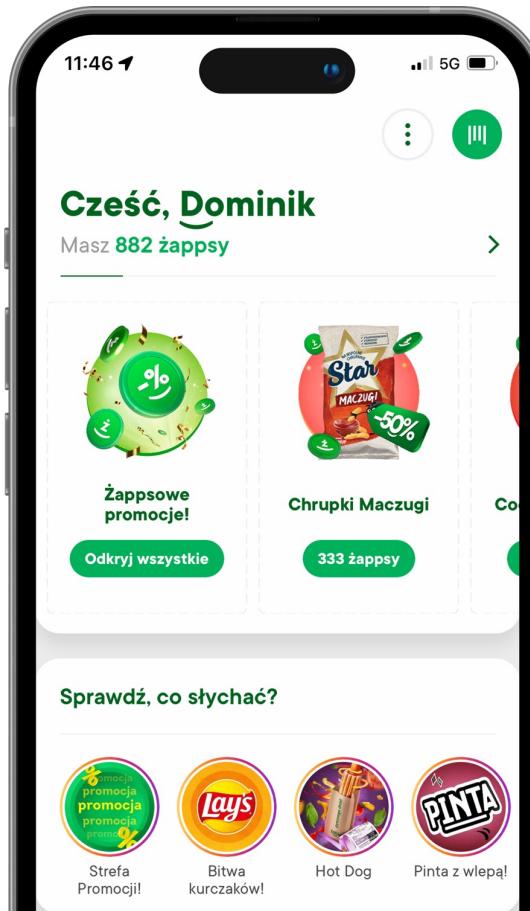
## Key Synerise Experience Tools Implemented:

- Digital wallet with flexible loyalty program
- Headless Experience API for mobile APP
- Authorization as a service (Auth)
- Marketing Automation & Customer Intelligence
- AI Predictions & Recommendations
- AI Personalisation
- AI Scoring
- AI Promotion Engine
- Real-Time Online & Offline Events Tracking
- Real-Time Decision Management
- Retail media analytics with real time reporting



Video

[See Zabka & Synerise NRF Showcase \(<02:00\)](#)



# Thank you!

