

Trends Scouting with AWS for Retail and eCommerce



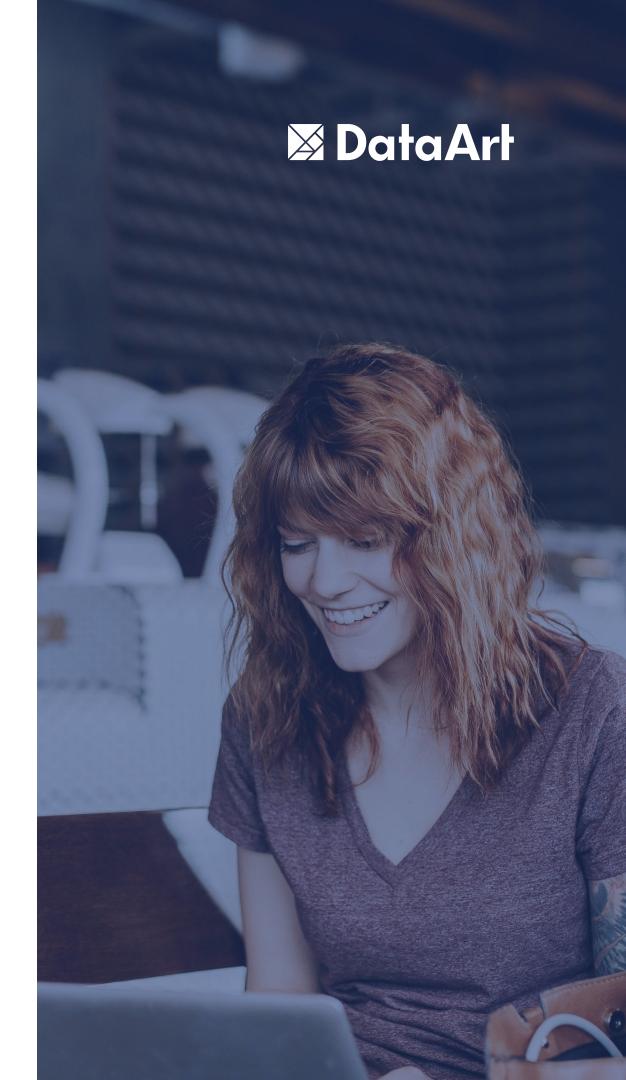
Use Cases in Retail

Challenge

- What is Gen Z looking for?
- What will women wear next summer?
- What should we order to maximize revenue?
- How should you align your marketing strategy with market realities?

Any many more questions can be answered with trends scouting software.

Understanding your customers — their wishes, desires, and needs — has always been a challenge for retailers worldwide. They spend a lot of time and money to gain this insight. But what if you could significantly simplify and improve this process? What if you could get datadriven insights right at your fingertips? What if you knew what inspires your target personas and could see what they like, search for, and dislike in just a few actions? With the right technology, this is much closer than you might imagine.



Use Cases in Retail, eCommerce and CPG





Understand Upcoming Market Trends



Catch Signals for Marketing Campaign and Promotions



Forecast Sales and Economic Effects



Understand public opinion about your brand/company/ product



Monitor Trends Changes in Time



Ensure Stock Availability



Analyze Competitors
Offerings



Much more



Target Customers



Retail businesses, eCommerce and CPG companies of various scales (digital natives, mid-sized companies, and enterprises) and locations (EMEA and the USA) that actively contribute to understanding market demands and customer expectations.



Retail Chains

- Fast Fashion Retailers
- Department Stores
- Home Improvements Stores
- Other Specialty Stores



CPG Companies

- Food Processing
- Apparel & Fashion
- Household Goods
- Other FMCG Producers



Ecommerce

- Marketplaces
- Ecommerce Stores

Target Personas and Gains



Buyers

Access to real-time insights allows buyers to curate collections that resonate with consumers, enhancing product selection and sales potential.

Procurement Managers

Gain a clear understanding of market demand and trending items, enabling more strategic purchasing decisions and cost savings.

General Managers

Stay informed about industry trends to make data-driven decisions that align with overall business strategy and ensure competitive advantage.

Trends Analysts

Utilize advanced analytics to identify emerging trends early, enhancing their ability to provide actionable insights for the organization.

Data Analysts

Leverage data visualization tools and analytics to interpret vast datasets, transforming complex information into clear, strategic recommendations.

Brand/Product Managers

Align brand strategy with consumer preferences and trends, understand what people are saying about your brand, company, and products, foster brand loyalty, and ensure that marketing efforts resonate effectively

Marketing Strategists

Craft targeted campaigns based on deep insights into consumer behavior and market trends, leading to improved engagement and conversion rates.

Solution Overview

Trends Scouting. Accelerator by DataArt



DataArt created a trend scouting accelerator tailored for Retail and eCommerce, gathering data from diverse sources to reveal market trends and customer needs. Fully customizable, it starts with basic features and scales to suit any retail business size.



Supported Data Sources

- Instagram API
- X API
- Google ADs API
- TikTok

The list of APIs provided here is fully covered as built-in features of the accelerator and can easily be expanded with other data sources if needed



Al Engines

- Claude
- Stable diffusion
- Bedrock

Al helps identify and create custom Al-generated trend buckets for any business based on signals found in the provided data sources



Infrastructure

- AWS-native
- In-region redundancy & scalability
- Inter-region DR



Built-in Accelerator Features



Trend Detection & Analysis

- Choose and analyze the data sources that have the best fit for the required business domain, making it possible to achieve the set business objectives
- Transform raw signals into bucketized insights using AI.
 This process involves not just identifying signals but also categorizing them into meaningful buckets, allowing to leverage AI for effective analysis and decision-making
- Visualize insights from Al-driven trend scouting (line graphs for temporal analysis, heat maps for geographic interest, and infographics for a compelling narrative, effectively conveying emerging patterns and consumer behavior)
- Prioritizing trends based on signal strength and value, evaluating its relevance, market impact, consumer interest, and the consistency of data signals. Ranking trends accordingly to focus on those with the highest potential for business growth and innovation.

Trend Radar Dashboard

A visual display of emerging trends, showing movement (e.g., growing, peaking, or declining) in popularity over time

Sentiment Analysis

Insights into how users feel about trending items (positive, neutral, or negative sentiment) to understand which trends have long-term potential.

Trend Momentum Scoring

Rank trends based on velocity and volume, indicating if a trend is likely to be fleeting or has sustainable growth.

Trend Categorization

Break down trends by categories like colors, materials, type of product, patterns, and influencers driving the trend etc.

Advanced Features



Seasonal Forecasting

- Seasonal Heatmap
 Visualize when specific trends
 are predicted to peak over the
 next few seasons (e.g., Q1, Q2).
- Historical Trend Data
 Show how similar trends
 performed in previous years to
 validate predictions.
- Buyer Personas & Style Match
 Map emerging trends to target
 buyer personas for a more
 precise style fit
 (e.g., Gen Z casuals vs. luxury
 millennial).

Product Fit and Recommendation Engine

- Assortment Recommendations
 Suggest which trend-related items
 to prioritize, expand, or phase out.
- Product Matching
 Use AI to find product matches in your inventory that align with detected trends, aiding quick decision-making for buys.
- Style Adaptation Suggestions
 Recommendations on how to
 modify styles (e.g., a trending puff
 sleeve with a twist for your specific
 audience).

Competitorand Market Insights

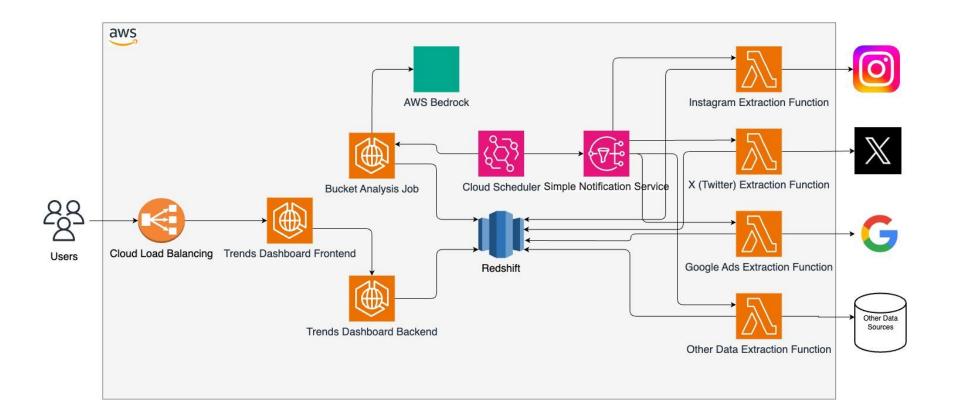
- Competitor Trend Analysis
 Display which trends
 competitors are adopting and how quickly they're reacting.
- Geographical &
 Demographic Segmentation
 Break down trends by
 geography and demographics
 (e.g., which trends are
 popular in Germany vs. North
 America).



Solution Architecture



- RedShift as a petabyte-scalable data warehouse to store historical data extracted from data sources for further analysis as well as historical sales data
- Data from data sources is extracted Daily, by schedule, using serverless Lambdas for optimal costs and performance
- AWS Bedrock service is leveraged for access to GenAI models and support ML models training and inference
- ECS hosts containerized services for data analysis and the buyer's dashboard application





Architecture Highlights



The following key factors are taken into consideration for the proposed solution:



Reliability and Resilience

The scalable architecture handles increases in workload, data processing or users.

The solution leverages AWS services to achieve scalability. Lambdas are used for ETL as scalable and resilient compute by their design. Redshift is a petabyte-scalable data warehouse.

ECS as a container orchestration tool is resilient and allows to auto-scale the services.



Operational Excellence

The infrastructure is fully managed with code by leveraging IaC approach. All application changes are automated with code to be deployed and rollback on demand. CI/CD pipelines will be used for build and deploy automation.



Observability & Audit

The solution is fully observable, including logs for the infrastructure, application logic and data management by using Cloud Watch AWS service. The logs will be stored for a period of time in a long-term storage to be available for audit.

Architecture Highlights



The following key factors are taken into consideration for the proposed solution:



Security

The applications are hosted in private networks and accessible only with proper identity. All data at rest and in transfer is encrypted by using built-in abilities of leveraged AWS services. Least priviliges principles will be used to provide permissions to users.



Optimal Costs

The solution leverages pay-as-you-go principle of services and allows not to pay for idle resources (Lambdas, RedShift, ECS) and generate cloud costs only when they are needed.



Optimal Performance

RedShift is highly-performant analytical storage that will handle the needs of trend analysis task. ECS tasks scale for only necessary amount of resources and down-scale when the resources are not need, even down to zero scale.

Approach and Delivery

Unlocking Business Value: Potential Vision



Competitors offerings analysis and monitoring

Value

Activities

Global signals from selected data sources

Feasibility study: significant market signals requiring manual review.

 Add Additional Data Sources

- Trends identification (validated on historical sales data)
- Enhanced AI model

Identification of granular, prioritized trends for stakeholder input

- Al model (s) for sales/revenue growth
- Al for trends classification
- Economic forecasting models development
- Recommendations to boost sales/revenue
- Insights on situational vs. long-term trends
- Future impact analysis using historical data

Understand competitors' offerings to gain an edge and address market gaps.

Ready to use accelerator

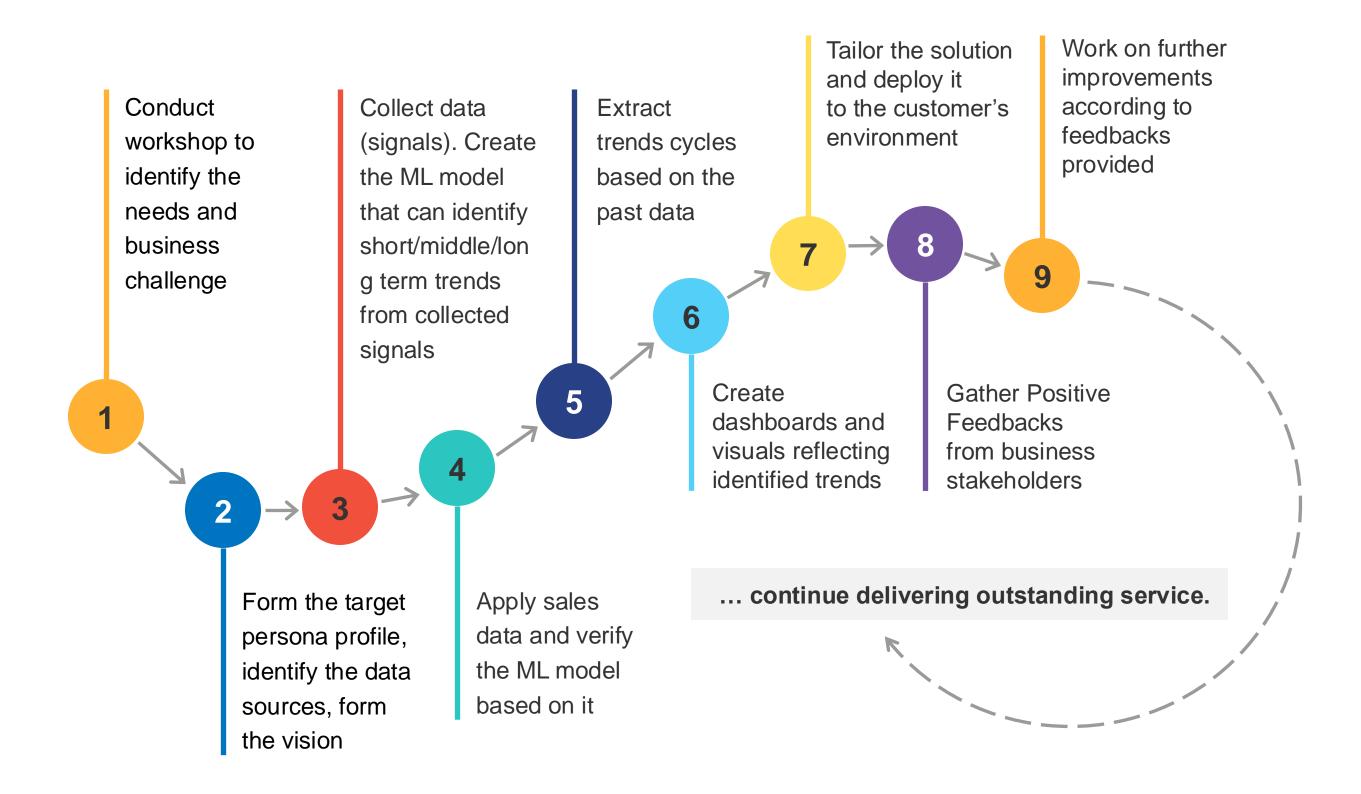
Iteration 1

Iteration 2

Iteration N

How We Approach





Approach Summary



Signals identification

- What Internet users are thinking (not even talking!) about?
- What do they search for?
- What are they inspired by?

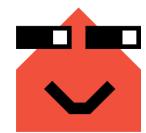
Trends identification from signals

- What signals will last?
- Validation on the sales data (P&C or external)

Trends classification

- Long term vs situational
- Pursuing other opportunities (if needed)

- 1. We start with collecting data from multiple sources (signals)
- 2. Creating the ML model that can identify short/middle/long term trends from collected signals
- 3. Apply sales data and verify the ML model based on it
- 4. Identification of the trends cycles based on the past data





Business Value



1

Faster Time-to-Market

Collaborative sessions with stakeholders to align on goals, gather initial insights, and establish a shared understanding of key success criteria, data sources, metrics, etc.

2

Streamlined Validation To Production

Conduct in-depth research to identify valuable data sources aligned with business objectives, perform a gap analysis to reveal challenges and growth opportunities, and create a project roadmap.

3

Fast GenAl Use Cases Validation

We tailor the trend scouting solution using accelerator insights and deploy it to the customer's cloud. With pre-built templates, data tools, and visualizations, this phase allows rapid assessment of use case viability for stakeholders.

4

MVP-ready Solution

Streamlined development and deployment of the generative AI solution prioritize key features, continuous improvement, and user feedback, resulting in a robust MVP that aligns with user needs and business goals.

Workflow

Wokshop

√ 1 day

Discovery Phase (optional)

√ 1 week

POC

√ 5 Weeks

MVP

√ From 8 weeks

Deliverables





Solution deployed to the client's infrastructure with the code and associated technical documentation according to the Scope defined



Detailed project roadmap for implementation with risks assessment, including schedule of the features and refined budget for the further implementation



UI/UX clickable prototype



Technical specification:

- · High level solution architecture;
- System components overview;
- Data flow description



Software requirements document with Methodology and Methodology Prospects (JIRA based as example)

Assumptions and Dependencies



- Availability of the project stakeholders from the client's team during the Concept phase (2–3 hours per day) for requirements elicitation and to review project assets
- Availability of technical personnel and data documentation for data schema definition
- Client is responsible for the license and access provisioning for API's required (e.g., Twitter API, Google Keywords API, etc).
- The client should approve the data sources required for development by the end of the third week of the engagement. Delays in decision making may result in the timelines shift.

- Regular feedback loops from sales and insights data will help in continuously improving the trend identification models
- ▼ Client shall be responsible for all and any legal formalities enabling to use Twitter (X), Instagram (Meta) data, Google Keywords data and APIs. DataArt bears no responsibility for obtaining any required consents and permissions.
- The DataArt team will be granted access to the client's data in order to train the model
- The DataArt team will have access to AWS services on behalf of the client

Pricing and Timeline



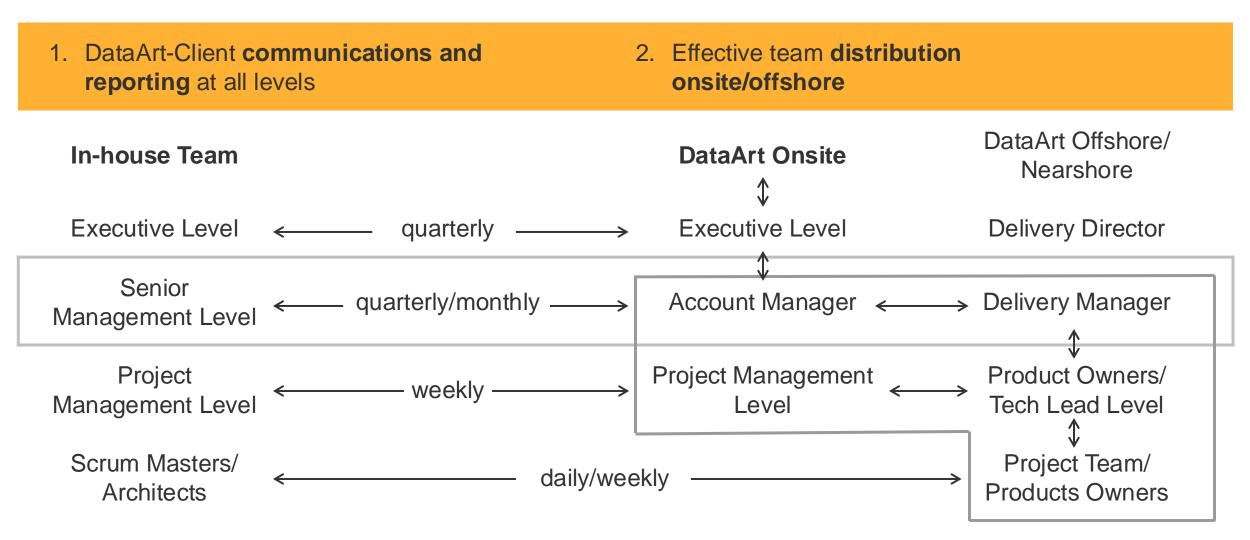
#	Phase	Scope of work	Duration	Preliminary Budget
1	Workshop	Business need clarification	1 day	DataArt investment
2	Discovery phase (optional)	Shaping the future solution (design, data sources definition, etc.)	1 week	USD 15 000
3	PoC	Adjusting accelerator to the client's needs and deployment to the client's infrastructure	Up to 5 weeks	AWS Funding may apply
4	MVP	Development of the new features and adding data sources	From 8 weeks	USD 180 000 — USD 220 000

Important considerations

- 1. Any cloud infrastructure costs, third party licenses (e.g., Twitter costs), additional data sources purchases are not included.
- 2. Price ranges are provided based on the unknown questions (e.g. design complexity, data sources, availability of the data, exact design requirements, etc.)
- 3. AWS Funding is subject to approval by the AWS and can't be guaranteed.
- 4. All costs can be clarified after initial workshops.

Account Governance and Delivery Model





- 3. DataArt-Client delivery & resource management:
- Process benchmarked and standardized
- Pro-active resource planning

- 4. DataArt team intercommunication:
- Domain knowledge exchange & best practice exchange

Development Process



DataArt implements many standard agile practices and at times modifies them to fit into the distributed onsite/offsite model. Some examples are described in the following paragraphs.



Onsite Engagement Manager

This differs slightly from the standard "onsite customer" agile practice. In an outsourcing setup, it's not usual to have a customer representative located offshore. Hence the solution is to bring a project manager to the customer side, which allows managing requirements, collecting feedback, etc. in a more efficient way. It also makes the development process more transparent for the customer. In some cases, some development resources are also moved to the customer side, which is usually needed at the start of the project and before major releases.



Tools

There are many agile planning tools on the market. DataArt has used many of them and currently considers JIRA and Confluence to be one of the most mature systems.

Development Process



DataArt implements many standard agile practices and at times modifies them to fit into the distributed onsite/offsite model. Some examples are described in the following paragraphs.



Daily Status Meeting

A stand-up meeting (or simply stand-up) is a daily team meeting held to provide a status update to all those involved in the day-to-day business of the project. This semi-real-time status update allows participants to know about potential challenges as well as coordinate efforts to resolve difficult and time-consuming issues.



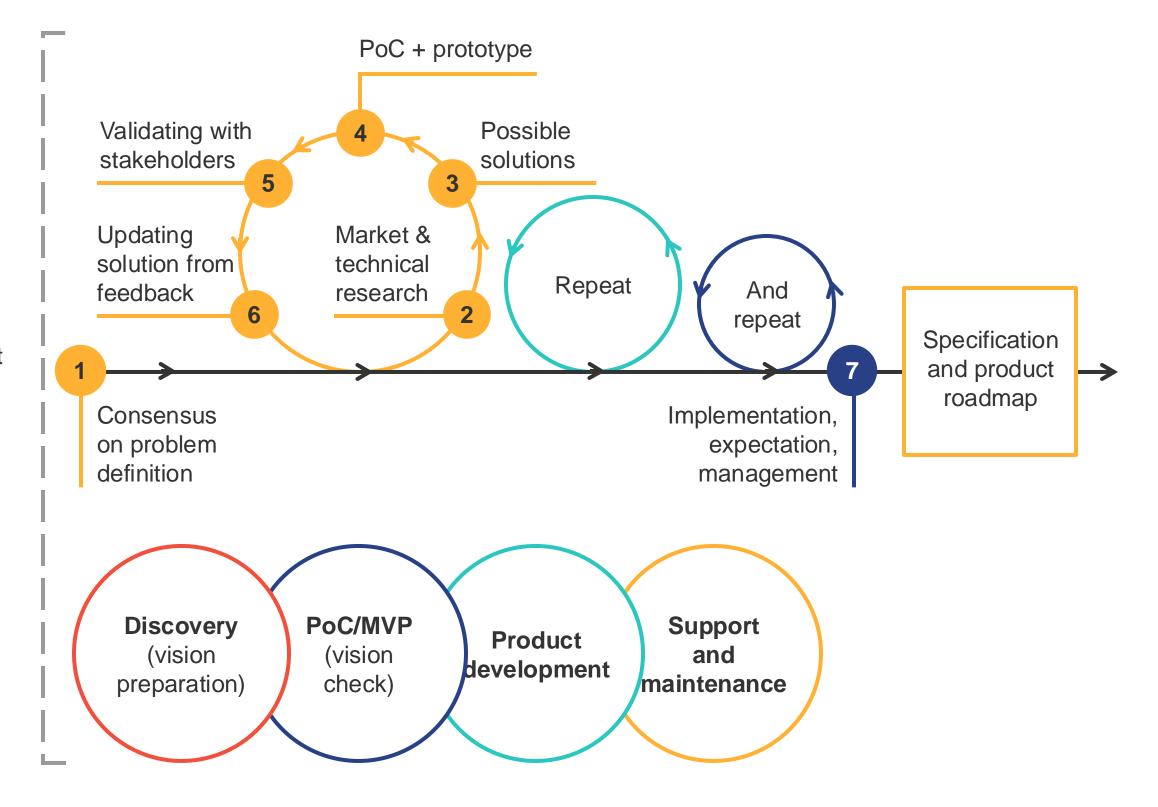
Continuous Integration

DataArt project audit's rules enforce mandatory continuous integration. As a rule, in projects with an offshore team working offline, two integration processes are needed: one on the customer's side and one on DataArt's.

Approach to Implementation



Iterative development and delivery process



Why DataArt?

DataArt in Numbers



5700+

4500+

Consultants and engineers

Successfully completed projects

Key Industries

- Retail & Distribution
- Healthcare & Life Sciences
- Travel, Transportation & Hospitality
- Finance

Global Locations

Media & Entertainment



Latvia

30+

95%

Return Client

87%

Staff Retention

26

Years in Operation

AWS Partnership Highlights









AWS Advanced
Consulting Partner



250+ AWS certifications

Key achievements

- Migration Competency
- Travel & Hospitality
 Competency
- Well-Architected Partner Program
- Retail Services Competency
- Healthcare Competency
- Finance Service
 Competency
- DevOps Competency

Key 2024 objectives

- We are switching to the Premier Partner Tier in the early 2025
- Building out a dedicated AWS sales force
- GenAl Competency
- Machine Learning
 Competency
- Media Competency



- Retail Services Competency
- Migration Services Competency
- DevOps Competency
- GenAl Services Competency
- Finance Services Competency
- T&H Services Competency
- Healthcare Services Competency
- AWS Lambda Delivery
- Amazon RDS Delivery
- Amazon DynamoDB Delivery
- Amazon API Gateway Delivery
- AWS CloudFormation Delivery

DataArt Retail and Distribution Practice



14+

30+

Years in Retail

Alliances

50+

95%

Active Clients
Globally

Recurring Clients

700+

1,000+

Successful Projects

Retail Consultants & Engineers

Engineering Services

- Custom Development
- Integrations
- Modernization
- Data and Analytics
- AI/ML
- UI / UX
- Blockchain
- Mobile
- Development

Comprehensive Experience

- End-to-End Ecommerce
- Omni-channel Experience
- Customer Engagement
- Personalization / Recommendation
- Supply Chain Visibility
- Logistics / Delivery
- Inventory Management
- Warehouse Management

DataArt Retail and Distribution Practice





20+

AWS Bases

clients

20+

MAP projects applied

15+

Promt100 projects

Selected Clients















Selected Technical Partners



commercetools











salesforce



ORACLE







Retail Offerings. Business Use Case Offering



Plan

- Product Lifecycle
- Demand Prediction
- Trends Scouting
- Market Research
- Sentimental analysis
- Data Visualization

Supply

- Inventory Optimization
- Route Optimization
- Logistics Optimization
- Transport Management
- Last mile Delivery
- Supply Chain Optimization& Transparency

Produce

- Predictive Maintenance
- Energy Consumption
- Prediction
- Raw Materials Quality
- Analysis
- Security Control
- Production Quality Control

Retail Offerings. Business Use Case Offering



Operate

- Warehouse Management
- Shelf Space / Assortment
- ESG Compliance
- Supplier Collaboration

Market

- Hyper Personalization
- Consumer Insights
- Customer Journey
- Loyalty Solutions
- Customer 360
- Recommendation Systems
- UI/UX

Sell

- E-Commerce
- Omnichannel Integration
- CRM
- Trade Promotion
- Virtual Try-On
- Sales Forecasting
- Return Management

Retail Offerings. Foundation Offerings



Data

- Cloud Platform
- Data Strategy
- Data Quality
- Analytics
- Ingestion
- Data Platform

AI/ML — Data Science

- Generative AI
- Computer Vision
- NLP
- Recommendation
- Optimization

Migration

- Cloud migration
- Re-platforming
- Rationalization
- UI/UX
- E-commerce

Digital

- UI/UX
- E-commerce Platform
- AR/VR
- Smart Devices



Our Success Stories Across Value Chain





Warehouse Robotization

- 10% enhanced reliability
- Increased Operational Efficiency
- Automated Warehouse Operations

DECATHLON

Demand forecasting

- 93% forecast accuracy
- Optimized logistics costs
- Fast hypothesis testing



Product returns platform

- Boosted brand awareness
- Paperless returns in seconds
- Fully customizable solution



Order fulfilment platform

- Significant increase in sales
- Increased customer loyalty
- Boosted brand awareness

Value Chain: Plan Supply Produce Operate Market Sell

Our Success Stories Across Value Chain





ML invoice classification

- Analyzes and exploits the information contained in electronic invoices
- Intelligent classifying system
- Self-learning system



App Modernization

- Significant Improve in Website and Mobile App performance
- 130% Increase in website and mobile app Engagement
- 80% Decrease in Call Centre Tickets



Loyalty Application

- +\$1.8M
 Redeemed GMV
 within 12 months
- 70000+
 Successful
 Transactions
- Consolidation of 6 loyalty Programs in one Application



Transport management system

- Last-mile delivery services supportAl order calculation
- Route optimization
- Delivery Personnel Tracking System

Value Chain: Plan Supply Produce Operate Market Sell





Cutting-Edge Industry Expertise and R&D

- Dedicated industry practices and domain-focused Labs accelerate innovation and delivery at a global scale
- Platform
 partnerships,
 reusable
 frameworks, and
 tried-and-true best
 practices drive more
 future-proof
 technology solutions

World-Class Experts, Extraordinary Results

- Strengthen your team and get results faster with top technologists from 30+ global locations
- 0.8% of applicants hired; 16% of interviewees receive offers
- 130,000+ CVs monitored
- 4.6 Glassdoor rating;
 96% recommend
 DataArt to a friend

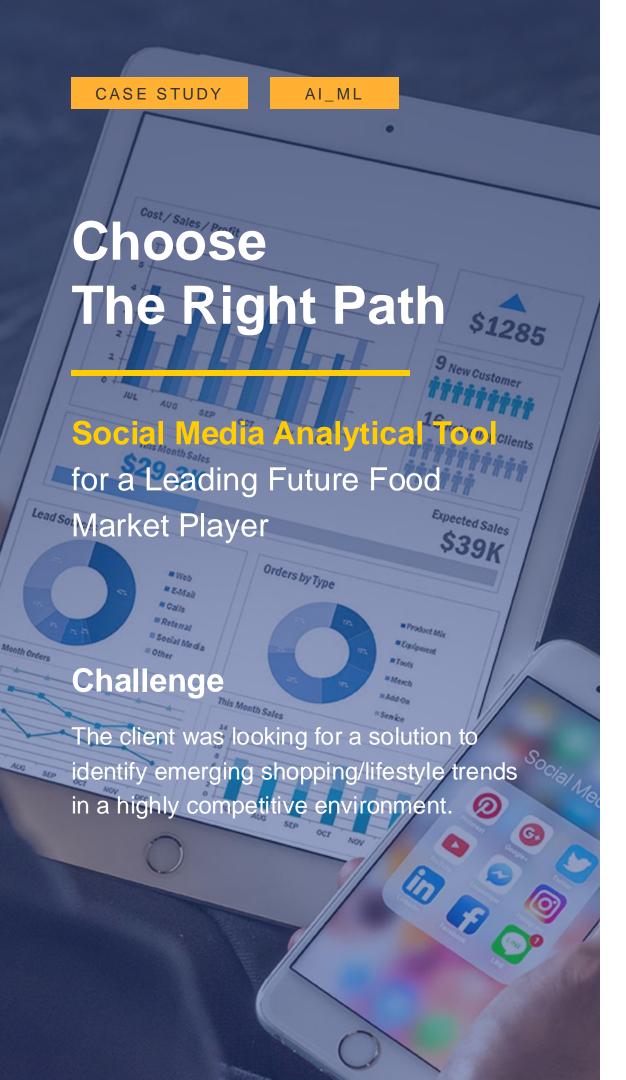
Unique Culture of Customer Service

- We know how to implement and develop
- Flexible
 engagement
 models and
 custom-tailored
 project teams
- People-first culture
 with deeply held
 human values of
 curiosity, empathy,
 trust, honesty, and
 intuition

Unwavering Focus on Business Outcomes

- We measure our success by your success, going the extra mile to produce lasting business value in every engagement
- Minimize risk of project failure with our Connect Framework and build the right solution to conquer your business goals

Selected Case Studies





Solution

Build a Sales Forecasting system with ML models.







Increase in sales

Improved customer loyalty

Decreased number of returns

- Implemented 6 different Time-Series Models
- DataArt won the competition with the client's own development team
- Better visibility of the future demand.
- Fast hypothesis testing and Implementation of best approaches
- Reduced stock size per store

CASE STUDY

DEMAND PREDICTION

CPG

TRENDS ANALYSIS

Guess the Taste

Demand Prediction
for the Multinational CPG
Company

Challenge

The client faced the challenge of accurately predicting and meeting consumer demands for potato chips amidst a rapidly evolving market landscape.



Solution

ML predictive analytics system which use diverse data sources (marketing reports, sales history, competitors analysis, news) to predict future trends on the food market and forecast sales





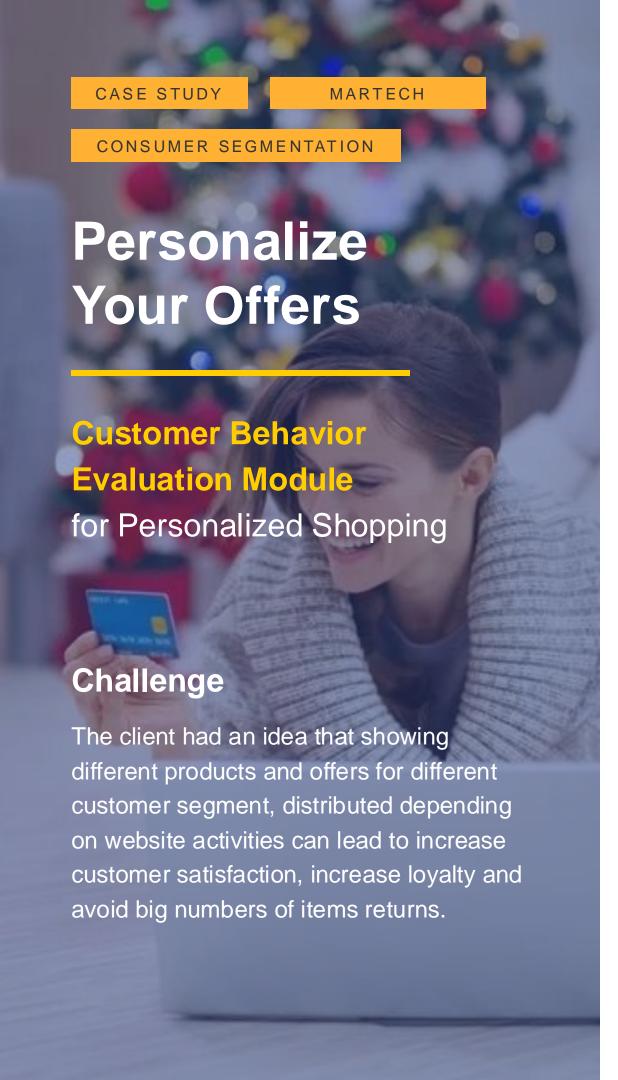


Improved assortment planning

Strengthen brand loyalty

Optimized market responsiveness

- The solution uncover insights into emerging flavor trends and consumer preferences, empowering to develop innovative and on-trend products that resonate with consumers
- The ML system provides accurate and reliable demand forecasts, enabling the client to optimize inventory levels, reduce stockouts, and improve supply chain efficiency.
- Optimized inventory management and reduced the risk of overstocking or understocking





Solution

The AI System which tracks customer online activities and based on that data customize the future shopping experience, offering personalized content and offers.





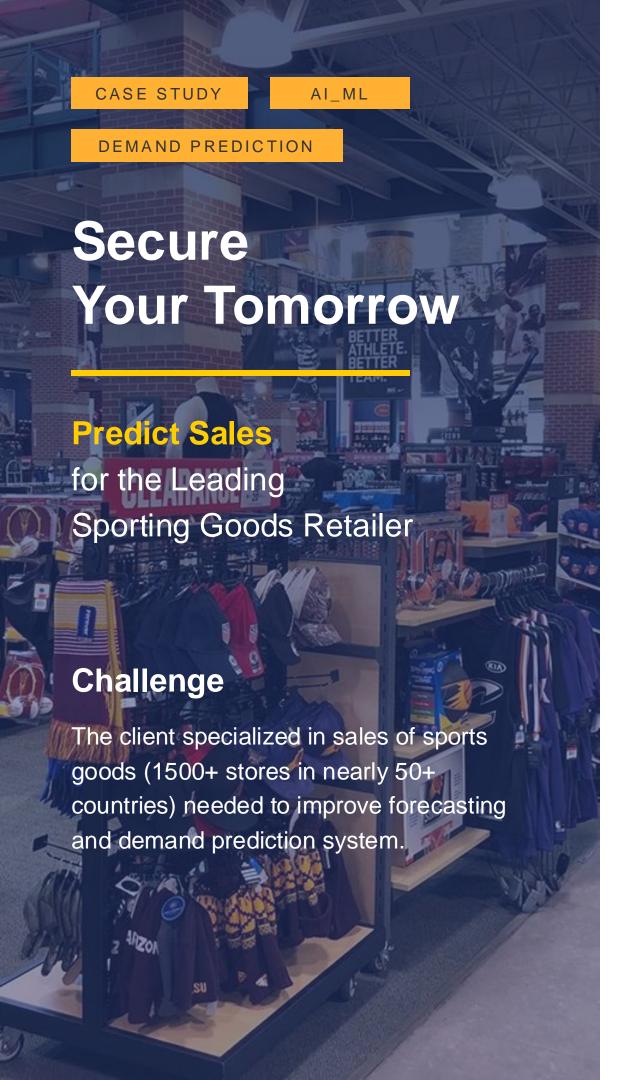


Increase in sales

Improved customer loyalty

Decreased number of returns

- The system tracks user activities online and uses ML algorithms and AI to identify the best offers and content for each customer.
 For example, if a customer selects a clothing item, the system automatically suggests a complete «Total Look», including footwear and accessories, matching color, price, and size.
- Using historical data (such as time spent on product details, items added to the cart but not purchased, or purchases triggered by discounts), the system tailors offers and adjusts site content to suit the customer's preferences.
- Personalized offers and content increase the likelihood of purchases while reducing returns.





Solution

Build a Sales Forecasting system with ML models.







85% to 93% forecast accuracy increase

Optimized logistics costs

Clear marketing planning

- Implemented 6 different Time-Series Models
- DataArt won the competition with the client's own development team
- Better visibility of the future demand.
- Fast hypothesis testing and Implementation of best approaches
- Reduced stock size per store

Gen Al: Use Cases





Shopping Experience

- Support Chat Bot
- Virtual Try On and Fit Prediction
- Style Product Pick
- Virtual Stylist
- Shopping Assistant in grocery
- Add-ons Recommendations
- Semantic Search
- Tailor Return Offers



Manufacturing

- Product/Content Catalog Discovery
- Customer Services Automation
- Predictive Maintenance
- Quality Control
- Ethical Product Sourcing
- New Product Concept/Claims
 Development



Personalization

- Customized Product Design
- Summarize Insights for Data-Driven Segments
- Hyper-personalization for Upsells



Content Management

- Marketing Content Generator
- Text Generator
- Product Image Capturing
- Managing Products Description
- Image Generation

Gen Al: Use Cases





Customer Support

- Phone Support Agent Assistant
- Product Reviews Summarizer
- Personalized Chatbots and Virtual Assistants
- Customer Sentiment Analysis
- Generative Knowledge Base
- L1 Helpdesk Support Automation



Supply Chain & Logistics

- Automated Contracts Processing
- Procurement GenAl Bot
- Document Search and Synthesis
- Regulatory Compliance Materials Automation
- Supply Chain Optimizer



Operations

- Email Processing
- Meeting Analyzer
- Code Productivity Booster
- Internal Knowledge Base Optimization
- Internal Document Processing



Sales and Marketing

- Grocery Bot
- Communication Bot
- Fashion Demand Forecast



Paul Clarke
Chief Technology Officer

We have found the technical competence, quality and commitment of DataArt's developers to be very high and DataArt's account management has been extremely professional and responsive.



Strategic Development Partnership

DataArt has been selected by Ocado Technology as a strategic technology partner since 2011. The company is powering the future of online retail through serial disruptive innovation, advanced artificial intelligence, robotics, big data, cloud, and IoT. It also develops the innovative software and hardware systems powering Ocado.com, and the unique 'Ocado Smart Platform' adopted by ambitious global retailers.

This relationship complements Ocado Technology's existing IT initiatives.

It enables them to innovate more rapidly across a number of technical fronts.

Ocado Technology commissioned DataArt's top class engineers to work with its in-house teams to help meet the growing demand for new features. DataArt has been developing and supporting the majority of its encompassing systems to enhance Ocado customers' experience.



Philipp Blome CEO

From a vendor placing an order to the package being delivered to the customer, the new end to end sales process solution is agile and easily accessible to all our customers.

Within the tight deadline of less than a year, integration of the Marketplace with all of the backend systems was successfully developed. Together with DataArt we have built a platform which ensures the flexibility and scalability needed to support our growth plans throughout Europe.



METRO Markets is a technology driven start-up of METRO AG

Strategic Development Partnership

METRO Market's platform project is an incredibly ambitious and important milestone. DataArt was selected in 2018 to meet the challenge. Our flexibility to tailor processes and team composition in a dynamically developing business environment was an asset. It enabled us to meet the tight time-to-market timeline, and support METRO Markets to in the building of its first digital marketplace.



Gary O'Connor CTO

I'd like to thank DataArt's team who've helped make the project a reality — the timeline was tight and the expectations high.



Doddle has become one of the most innovative companies in the logistics space, bringing consumer-focus, and in knowledge of retail technology.

DataArt has been selected in 2016 as a partner for its IT platform transformation. It's aimed to pivot from a Doddle-operated delivery location business model to a partner operated service model (concessions) with multiple locations.

In less than half a year, DataArt and Doddle have transformed the existing in house oriented IT platform to a full scale cloud based white-labelable SAAS model. Additionally, we've successfully onboarded the first concession with Morrisons retail supermarkets chain.

For more details, reach out to



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