

APP1 – Post launch analysis of detergent pouch

APP2 – Detergent pouch systems

End-user partner: Translator partner:





APP1 Business Case



The challenge is the fast analysis of large datasets to assess in-market initiative success. Key Performance Indicators KPI's include product pricing, product size/number of jobs, retailer, numerical distribution, i.e., the presence of product on the shelf, product and package attributes.

The sought benefit is to rapidly react to the change of market reality, competitive initiatives, economic drivers and distribution, to offer the best possible product line-up to consumers.

1) Good understanding of the business case

2) Good understanding of the industrial case

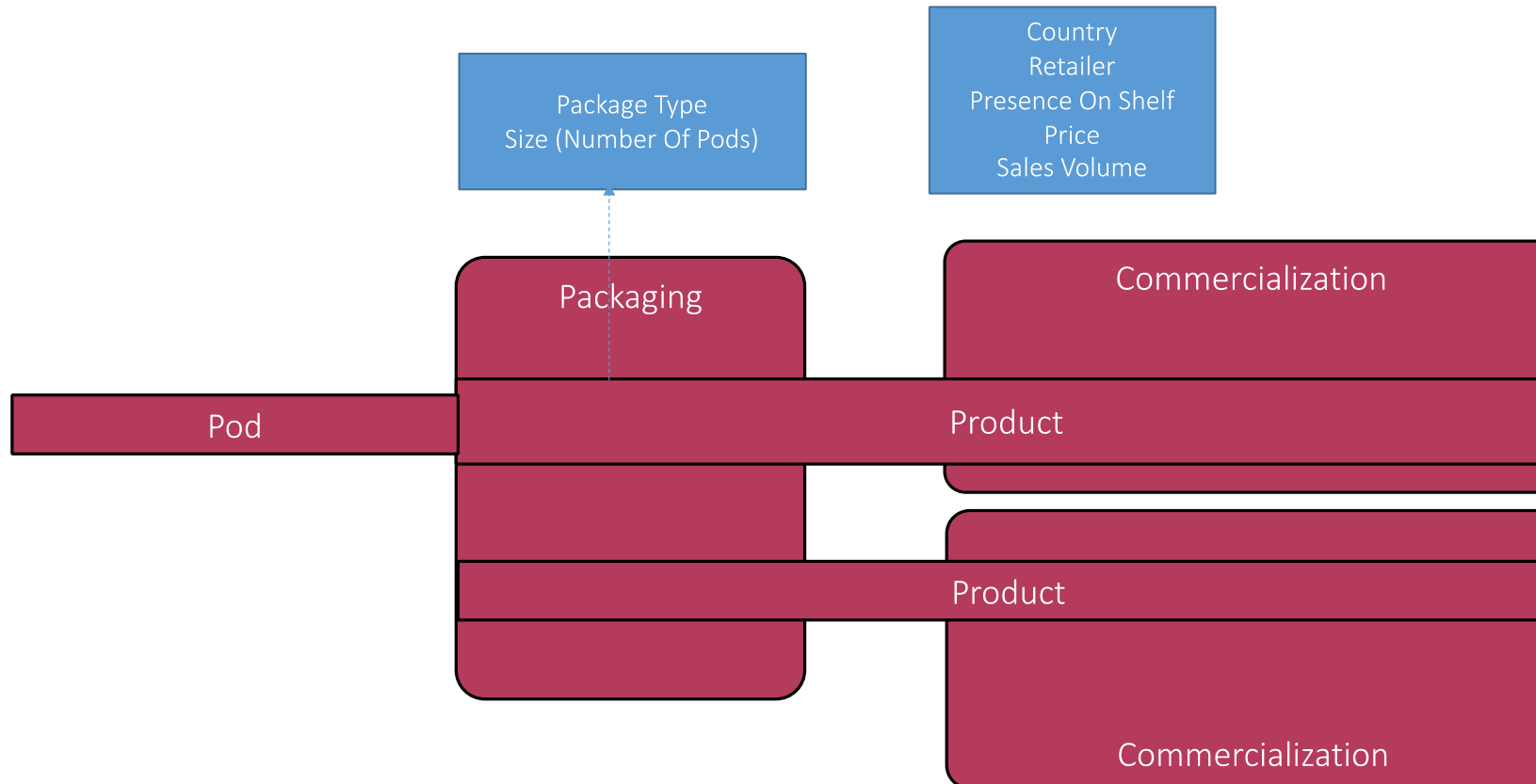
3) Analysis of the experimental (and modelling) data available within the client

4) Translation to (preferably more than one) workflow(s)

5) Propose to the client modelling executor(s) and strategy for model validation

6) Translation of the modelling results to information that is understandable and usable by the client

APP1 Industrial Case



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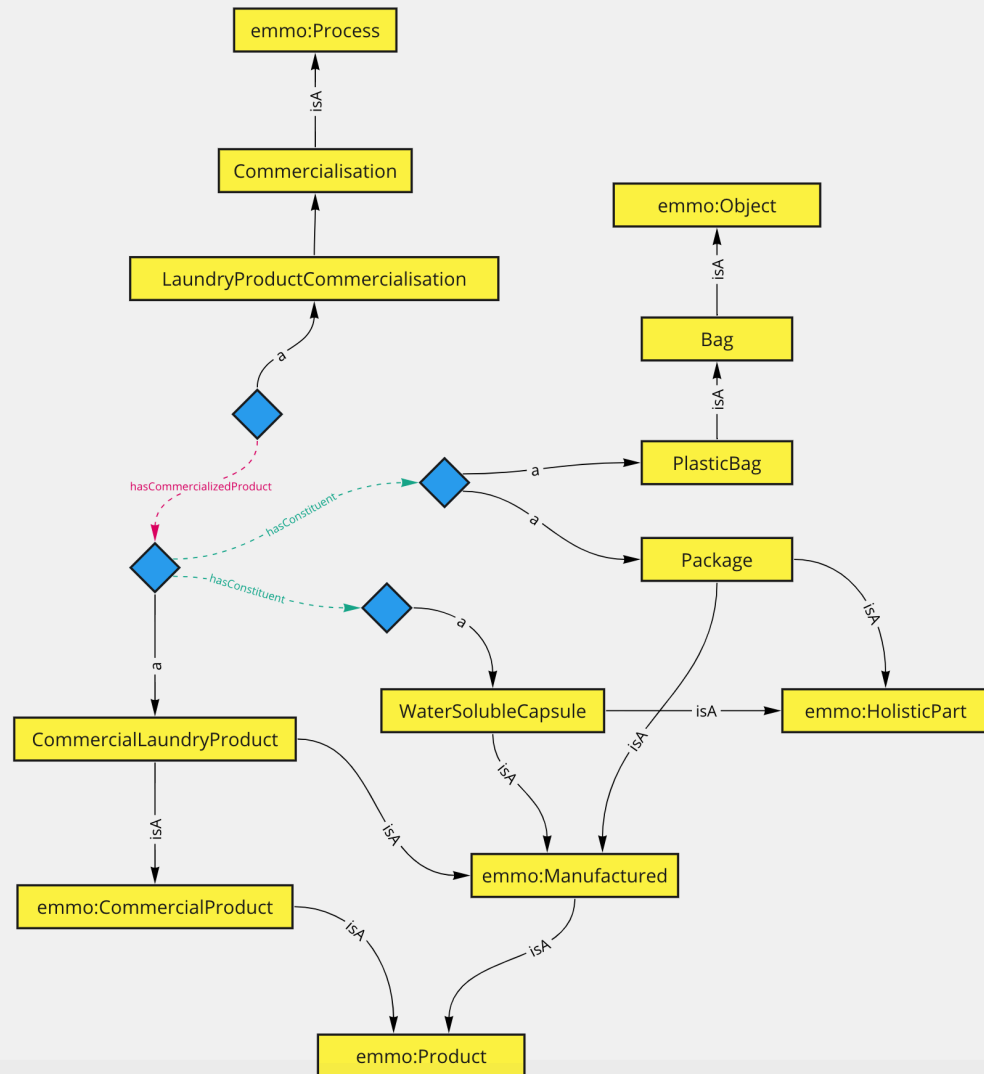
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APP1 EMMO Compliant Application Ontology



n.a. = not applicable (nonsense)
 n.r. = not relevant (makes sense but useless)
 o.s. = out of scope (makes sense at could be important but not under this scope)

Commercialization

WaterSolubleCapsule

CommercialLaundryProduct

Package

Commercialization Properties

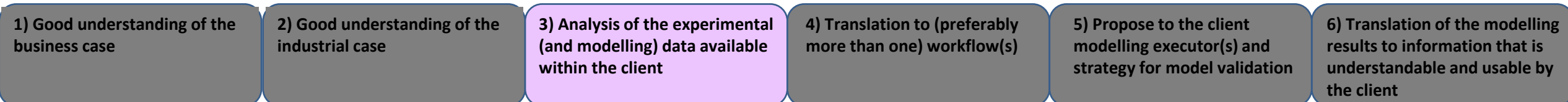
Property Names	Property Description (semantics)	Data Description (symbolic)		
		Data Type	Data Range	Units
Country Identifier	Name of the country of Commercialization	String	Enumeration of countries	n.a.
Retailer Identifier	Name or code of the retailer	String	Enumeration of retailers	n.a.
Product Price	Price of the package as defined by the retailer.	Real Scalar	[0,Inf[Currency
Presence on Shelf	The % of shops handling the product according to retailer policy.	Real Scalar	[0,100]	%
Sales Volume	Units sold per week	Real Scalar	[0,Inf[hundreds of units per week
Components Performance	Product performance from multi-dimensions to evaluate product features for capsules	Integer Vector of 9 elements	[0,100]	n.a.
Perfume Boost Technology	Specific perfume existing	Boolean	{true,false}	n.a.
Perfume Type	Perfume name to apply to capsules	String	Enumeration according to PGBS nomenclature	n.a.
Perfume Level	Amount of perfume in a capsule.	Real Scalar	[0,1]	% w / w
Dissolution Time	Time for complete dissolution of the capsule.	Real Scalar	[0,Inf[min
Product Size	Number of pods contained by the shelf product.	Integer Scalar	[0,Inf[n.a.
PackageType	Package type.	String	{box, bag}	n.a.

APP 1 Data and Metadata Curation



DATA SOURCE & CURATION

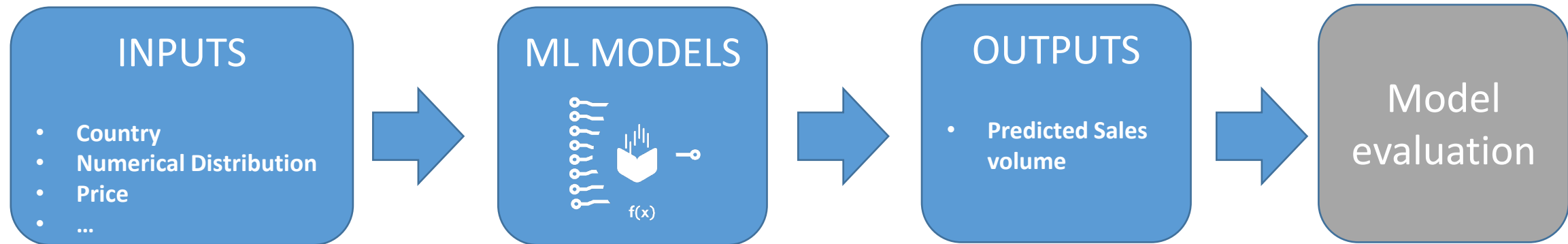
- In-market data are purchased by PGBS through external vendors
- The data are stored within PGBS database and regularly updated
- Data are verified by the vendor and at the time of uploading to PGBS database



APP 1 Models



- Data are regressed with a machine learning model to predict the sales volume as a function of numerical distribution and price for 3 European countries (Germany, France and UK) and for each product in the market.



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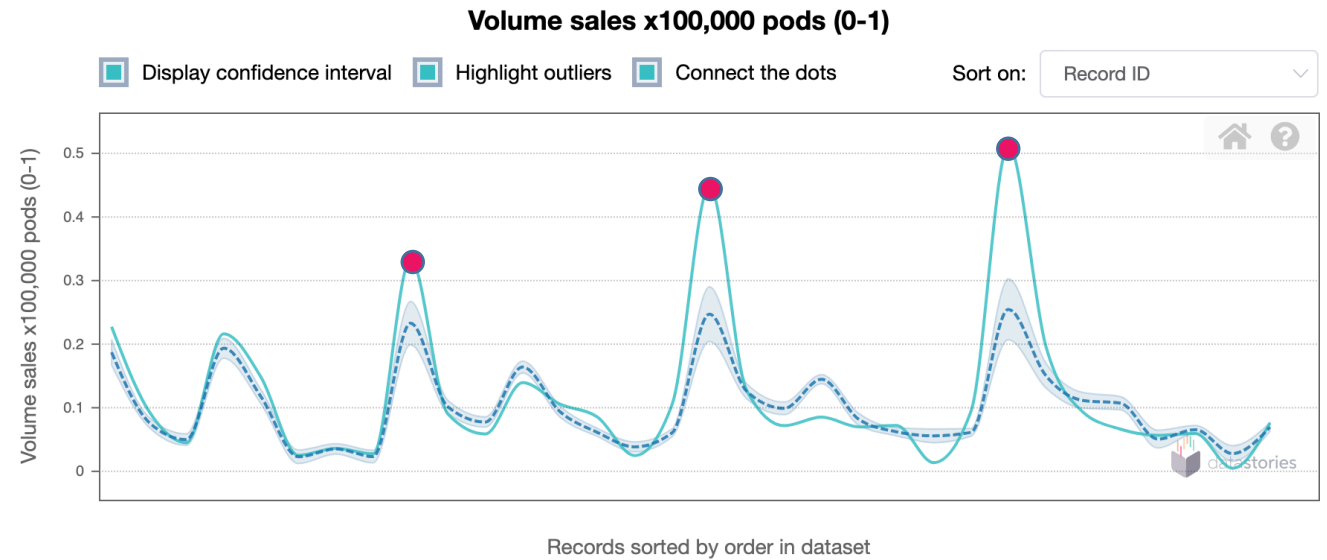
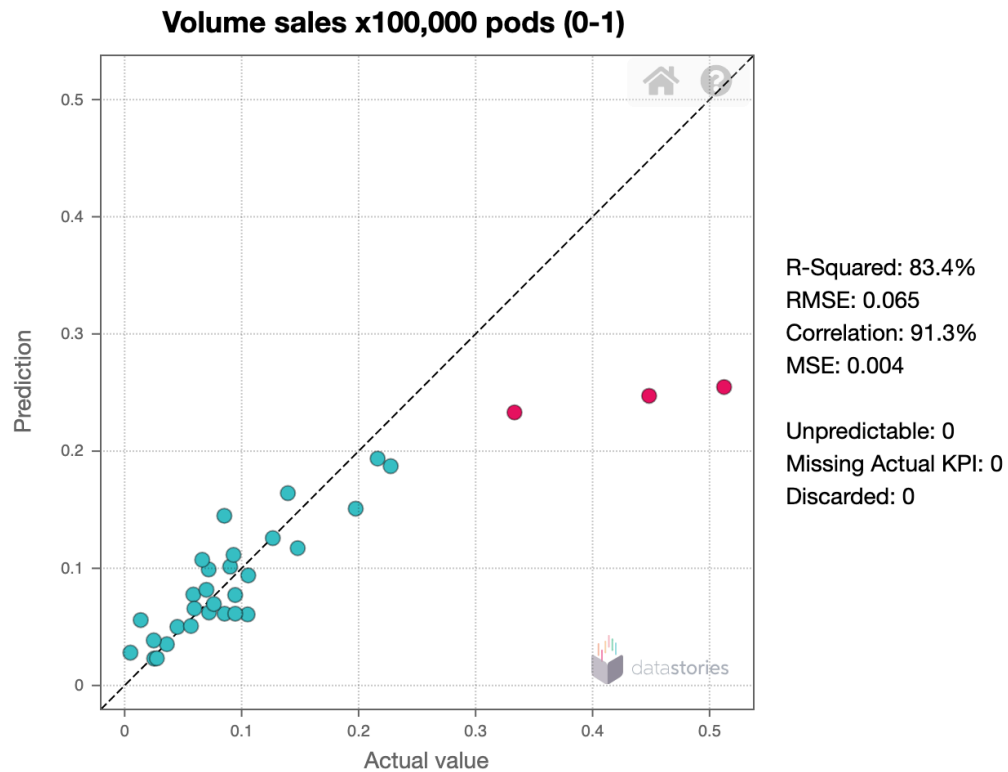
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Model Validation



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APP1 Interface

APP1: Post-Launch Analysis

Model training Model evaluation

Select a GTIN

None

Or define a scenario:

Country

FRANCE

Brand

ARIEL

Number of jobs



Reference period

2021/01/10 – 2022/05/29

Train model

Model training Model evaluation

Model	Creation date	Status	Quality
Scenario Country: FRANCE Brand: ARIEL Jobs: 22-29 fro...	2023-03-07 02:11:15	done	82%
GTIN-8006540180327 from 2021-01-10 to 2022-05-29	2023-03-07 01:37:54	done	65%
GTIN-8001841568805 from 2021-01-10 to 2022-05-29	2023-03-07 00:15:40	done	93%
GTIN-8001841568805 from 2021-01-10 to 2022-05-29	2023-03-07 00:17:30	done	93%
GTIN-8001841568805 from 2021-01-10 to 2022-05-29	2023-03-07 00:14:36	done	93%
GTIN-8006540082362 from 2021-01-10 to 2022-05-29	2023-03-07 01:14:31	done	62%
GTIN-8001841568805 from 2021-01-10 to 2022-05-29	2023-03-07 00:16:42	done	93%

Model

Created on

Quality

GTIN-8001841568805 from 2021-01-10 to 2022-05-29

2023-03-07 00:15:40

93%

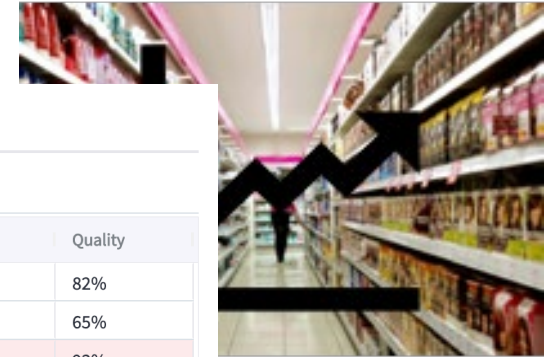
Numerical distribution (training range: 0.14-0.70)



Price (training range: 0.52-0.65)



Evaluate



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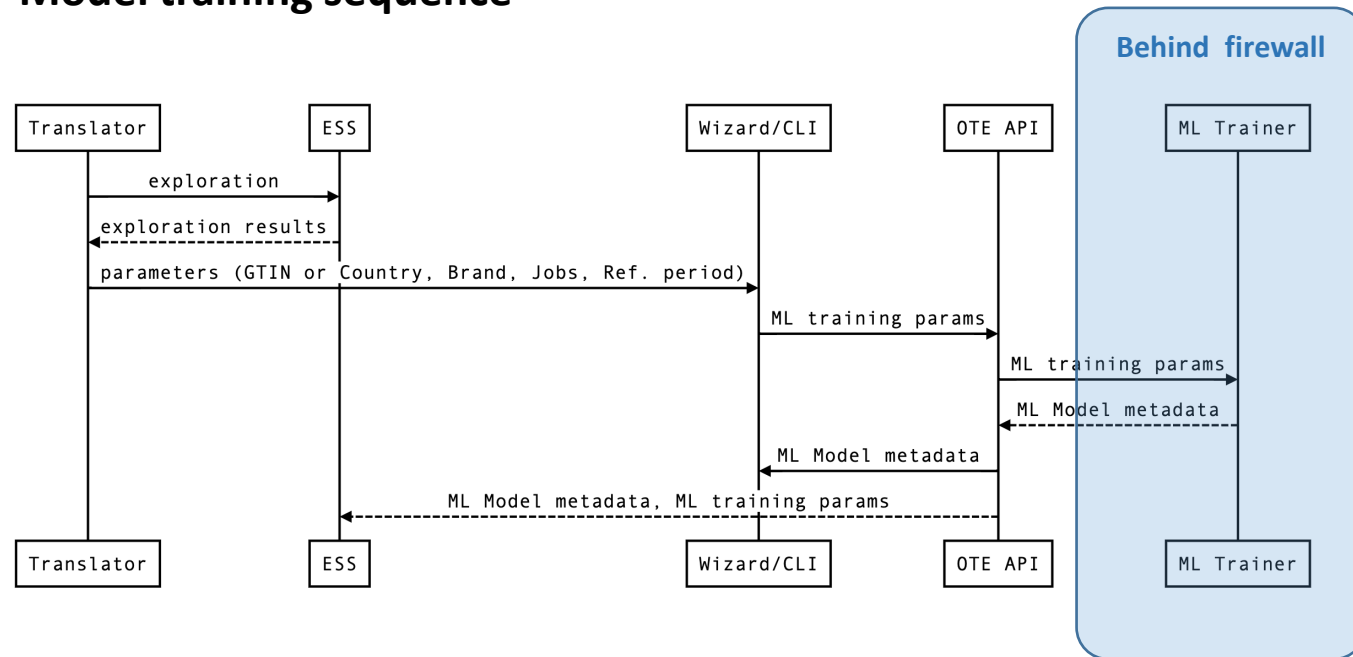
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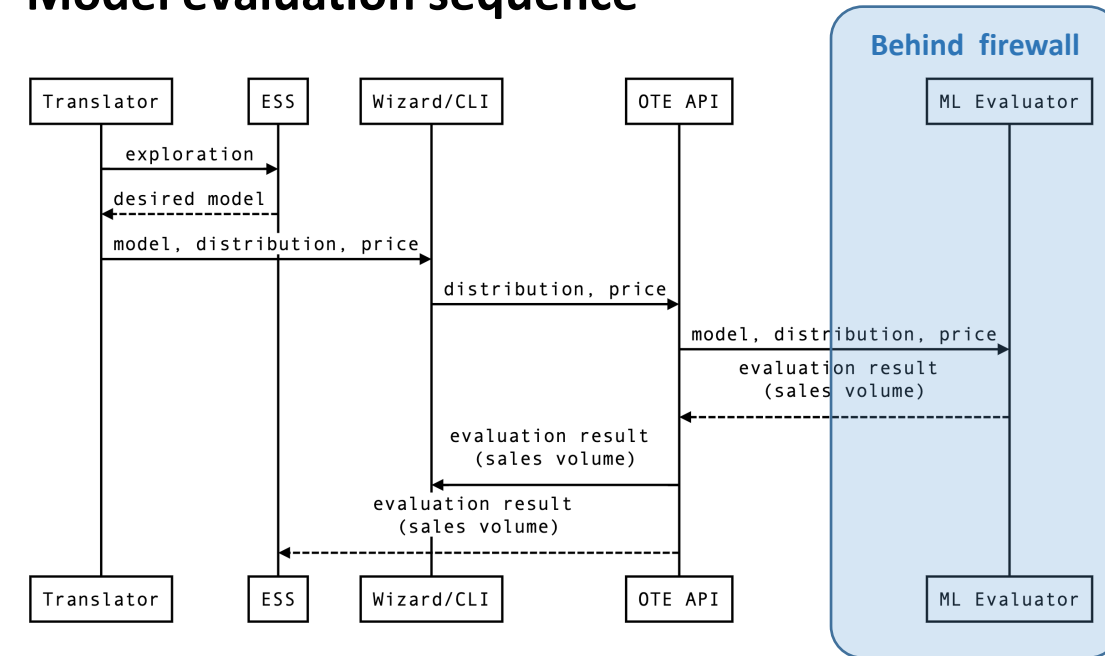
Technical Workflow



Model training sequence



Model evaluation sequence



ESS: Exploratory Search System



✕ Model Training Scenario Country: FRANCE Brand: ARIEL Jobs: 22-29 from 2021-01-10 to 2022-05-29



ALL

PRODUCT

MODEL TRAINING

MODEL EVALUATION

18 results (19 milliseconds)

Model Training Scenario Country: FRANCE Brand: ARIEL Jobs: 22-29 from 2021-01-10 to 2022-05-29

ModelTraining

No description

Model Training GTIN-8006540180327 from 2021-01-10 to 2022-05-29

ModelTraining

No description

Training Result Scenario Country: FRANCE Brand: ARIEL Jobs: 22-29 from 2021-01-10 to 2022-05-29

TrainingResults

No description

Training Result GTIN-8006540180327 from 2021-01-10 to 2022-05-29

TrainingResults

No description

Model Training Scenario Country: FRANCE Brand: ARIEL Jobs: 22-29 from 2021-01-10 to 2022-05-29

ModelTraining

No description

From: 2021-01-10

Jobs_from: 2.2E1

Country: FRANCE

To: 2022-05-29

Jobs_to: 2.9E1

Training_type: SCENARIO

Brand: ARIEL

Results: GTIN-8006540182727

Related Entities ⓘ



APP2 Business Case



The objective is the development of a more integrated, digital work process for the design of laundry Detergent Pouch Systems aiming at a 5X faster product development cycle

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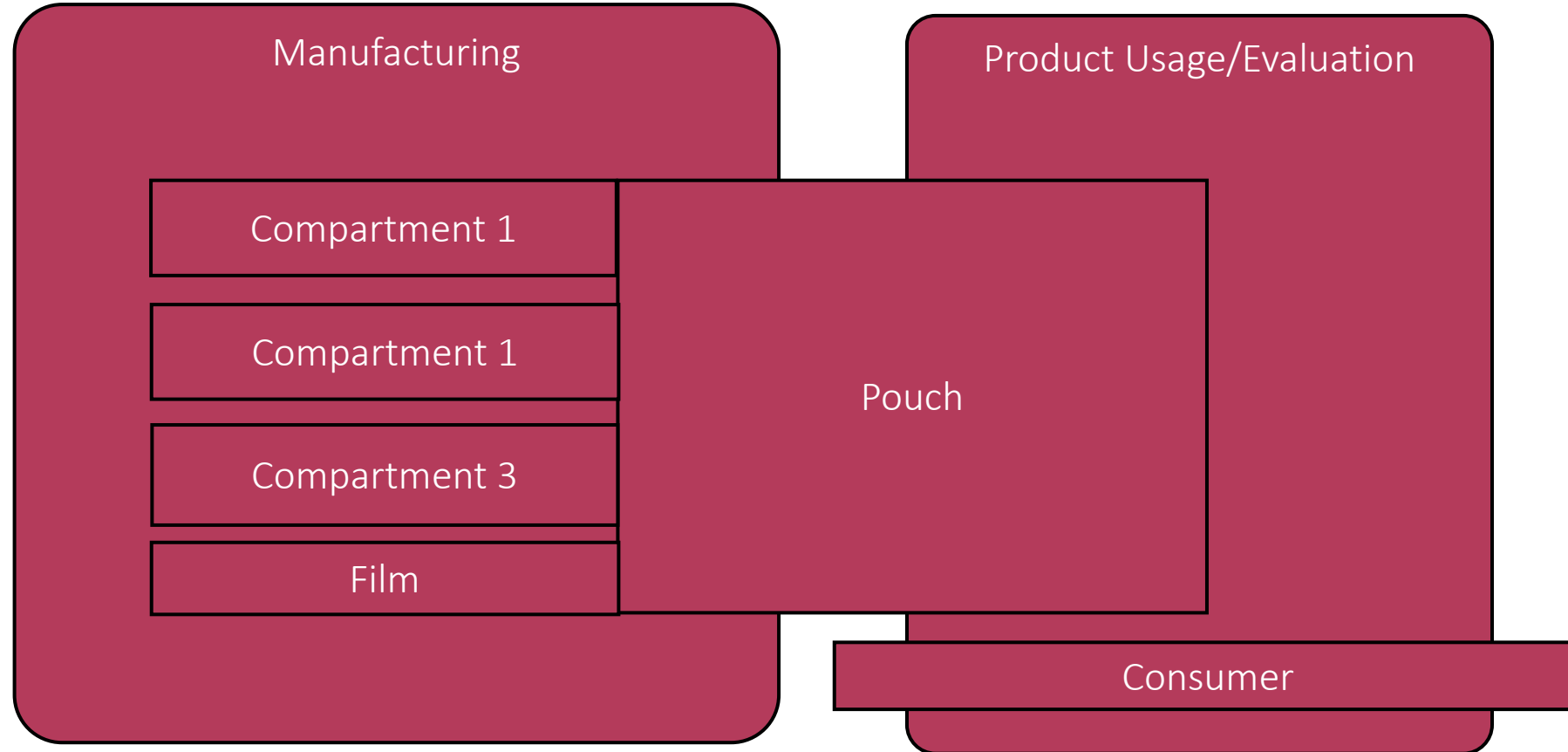
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APP2 Industrial Case

Simplified, non-confidential version



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APP 2 Data and Metadata Curation



DATA SOURCE & CURATION

- Formulas composition is stored in PGBS databases along with related experimental and/or predicted properties:
 - Performance
 - Shelf stability
 - Consumer and industrial safety
 - Sustainability
 - Cost
- Based on the product performance and package, the purchase like hood across selected European countries can be modelled using consumer models developed as part of this program

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APP 2 Models

DETERGENT POUCH SYSTEMS: Agile response to product, market and regulatory requirements / (PGBS and DATASTORIES)



Outputs

- Performance, sustainability, cost, stability, safety of each solution
- The output of the solution is processes through
 - A model computing the character of the perfume in each formulation in comparison to that of the reference product. Product with significant character change will be discarded
 - A model computing the like hood of purchasing vs the reference. Products with low purchasing likelihood will be discarded

Computed properties of each formulation:

- Performance
- Stability
- Sustainability
- Safety
- Cost



Filter solution matching success criteria

Perfume character prediction:

- Likeability vs reference



Filter solution with not character deviation

Consumer purchase intent prediction:

- Purchasing likelihood



Lead formula candidates

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Advantage Brought by OntoTrans

- Ontological description of the process
 - Enhances understanding of the industrial case
 - Simplifies its extension and reapplication to other cases
 - Easier management of the modelling process
 - Optimal solution for consumer centric models
- Application cases results: 5x acceleration of the overall work process.