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## Hello Data Council!

- > I'm a physicist, M. Sc. and Ph.D. in Physical Oceanography
- > 9+ years working with long time series and predictive modelling
- > Joined Mango 10 months ago as Lead Data Scientist



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- ightarrow Mango. Who are we?
- ightarrow Retail. A whole Universe of data
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#### KEY DATA 2017

Multinational company

<b>A</b>				<b>)</b>		1	<b>Q</b>	I	+
CUSTOMERS		FINANCE		SUPPLIERS		EMPLOYEES	MARKET	l	ENVIRONMENT
83 COUNTRIES WITH ONLINE STORES		2,193 MILLION EUROS OF TURNOVER		+136 MILLION UNITS MANUFACTURED	Hj H	80% FEMALE EMPLOYEES	2,190 STORES		100 STORES IN SPAIN WITH TEXTILE WASTE CONTAINERS
812,723 m <sup>2</sup> SELLING SPACE		77% of sales in foreign markets		1,256 FACTORIES USED		<b>15,970</b> Employees	110 COUNTRIES IN WHICH WE ARE PRESENT		<b>20,390</b> T CO, EQ. OFFSET
+6,600 MODELS DESIGNED EACH SEASON	A CONTRACTOR	15.5% of turnover in online sales	MIN	607 GARMENT AND ACCESSORIES SUPPLIERS		9.015 TRAINING HOURS IN HEALTH AND SAFETY	211 MEGASTORES		50% of sustainable cotton in 2022



# Advanced Analytics

#### Who are we? What do we do?

The aim of the AA unit is to give support to the company's decision making process, to help become a data driven organization and to improve company's results through ML



# Retail: a whole Universe of data



# Retail: a whole Universe of data

### Where should we **invest** effort and money?



It is important to put the focus on actions that really give you **value** and **confidence** from business

Use-case: price optimization



ACTIONABLE

All variable and costs of the production process were **available** 

MEASURABLE

FIND THE OPTIMAL PRICE TO MAXIMIZE PROFIT AFTER OUTLET FOR EACH PRODUCT

Which is the optimal discount?

```
A/B testing to measure the success
```

#### IMPACT

**Increased** the mean profitability during sale season



# Use-case: price optimization



Revenue

Considering all variable costs of the production process, including leftovers, find the optimal price for each product and country

### Support

Give support and tools to business to take informed decisions

#### Knowledge

Build knowledge and make impact for future Ai Actions

# Use-case: price optimization

## 1 Data **preparation** and insights



Understand the variable importance and select the right inputs

- ✓ Recent purchases
- ✓ Stocks
- ✓ Price elasticity
- ✓ Shops

# Use-case: price optimization

2 **Build** a machine learning algorithm (I+D)



A **Random Forest** model has been built and trained with the historical data to predict product sales for each week during the sale season.



# Use-case: price optimization

3 Price **optimization** considering the predicted sales and the corresponding margin

A vast matrix with all the possible price points for each week and product is built and a forecast sale prediction is given. The margin after outlet is calculated for each particular case and the optimal price value is obtained.

Combination PP	Week 1	Week 2	Week 3	Week 4	Week 5	Week ó	Week 7	Week 8
1	4.99	4.99	4.99	4.99	4.99	4.99	4.99	4.99
255	17.99	15.99	15.99	12.99	12.99	9.99	9.99	9.99
1241	25.99	25.99	19.99	17.99	15.99	12.99	12.99	12.99
2219	39.99	15.99	15.99	12.99	7.99	7.99	7.99	7.99

\* Data Example (NOT REAL DATA)

# Use-case: price optimization

Theoretical profit after outlet for each combination of price points



Combination PP	Week 1	Week 2	Week 3	Week 4
1	4.99	4.99	4.99	4.99
255	17.99	15.99	15.99	12.99
1241	25.99	25.99	19.99	17.99
2219	39.99	15.99	15.99	12.99

Reference	Family	Combi nation PP	margin	sales	leftover
41028827	SHORT	7	X€	А	0
41028827	SHORT	255	Highest!	A-10	10
41028827	SHORT	500	XXX€	A-25	25
41028827	SHORT	1007	XX€	A-247	247

\* Data Example (NOT REAL DATA)

# A/B testing analysis



## What have we learned?

Once you have the **actioned** the project, and obtain a significant **impact**, you need to focus on **how to** <u>scale</u>

**Measuring** helps you to bring the impact to the stakeholders but also it is necessary to **understand the dynamics of the actions taken** 

# What have we learned?

Code: be prepared for the future



> Flexible. Tons of changes will be made

- ightarrow Scalable. You'll have to scale it, for sure
- > Documented. You're not alone
- > Organized. Keep track using tools as Git

# What have we learned?

## I + D: interpretability is key

- > Don't focus on precision but on getting the job done
- > You will have always to make assumptions: be aware of them



"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

## What have we learned?

### I + D: interpretability is key

> Make sure results are understandable:

use The GrandMa principle



"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

# What have we learned?

Team: a solo mission is a suicide mission



> Diverse team: gender, background, experience...

ight
angle Get good engineers to help you with the

infrastructure

> Be aware of your needs: there is a huge BigData ecosystem

# "You can have data without information, but you cannot have information without data."

Daniel Keys Moran, American computer programmer and science fiction writer

# Final remarks

> We need to take informed decisions. Knowledge is key

There are a lot of opportunities to assist on the business decision making. Tons of room for growth and to develop I+D tools

BUT, it is important to make our DS projects actionable measurable and with an impact, otherwise, we will not succeed in the long run





# Thank you

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PS. We're hiring!

# MANGO