PYTHON PREDICTIONS
A TOBANIA COMPANY

Use cases

DSC & Titanic

Recap last session

- Data preparation
- Algorithms – your presentations
- Other evaluation metrics
  - Lift
  - Response
  - Gains
- Profiling

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Advanced analytics in fundraising

How knowing donors helps growing donors

The client

Direct Social Communications

your partner in fundraising

1985

Communication agency founded in **Belgium**

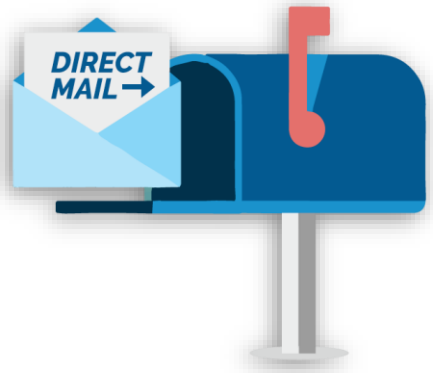
22

Fundraising for 22 humanitarian organisations

20

With an enthusiastic team of 20 people

How could this client raise money?



Advantages of direct mail

Easy to organise

Write

Print

Post

Easy to measure

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Average campaign response rate

1.8%

Can we do a better job using a model?

Objective

Build a predictive model to select the best candidates for a fundraising campaign

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Convince the CEO and Head of Data Analytics that your model is smarter to use than a random selection

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Available data

Donors	Contains socio-demographic information on all donors that made at least one donation via DSC
Gifts	Contains a complete history of all donations made over a 20 year period
Campaigns	Contains details of all campaigns launched by DSC since 2004.

Available data

selection campaign 6169	Contains the list of people selected for campaign No. 6169 that took place on 04/09/2018
selection campaign 7244	Contains the list of people selected for campaign No. 7244 that took place on 18/06/2019

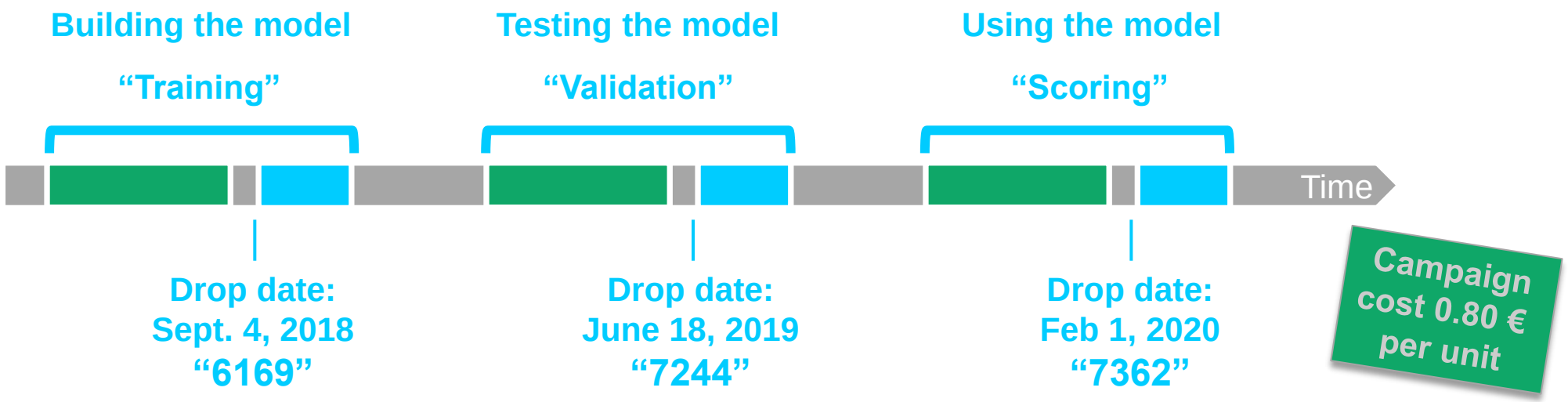
Procedure

1. Use information of campaign No. 6169 to train the model

2. Use information of campaign No. 7244 to test the model

3. Five days before deadline, a preselection of prospects will be sent. Apply your model to provide a selection.

Timeline of drop dates



Deliverables

1. Final presentation (10 min.) to convince stakeholders to adopt your model
2. Well-documented notebooks used for building this model
3. Scored set of DonorID's based on preselection that is sent 5 days before deadline

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Machine learning from disaster

How a previous disaster can help you survive a boat trip?

Case study: Titanic

Machine learning from Disaster

Goal of the exercise

Rose
Gender: Female
Age: 17
Class: 1st
Fare: 145$

Can we predict who will survive?

Jack
Gender: Male
Age: 20
Class: 3rd
Fare: 21$

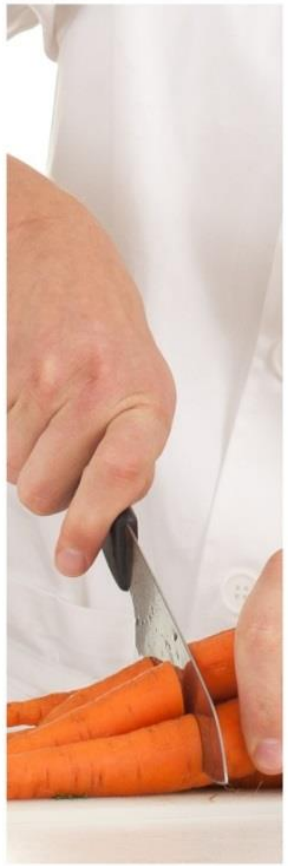
Data

- **Survived**: this is the target that we want to predict
- **Pclass**: passenger class (1 – 2 – 3)
- **Name**: passenger name
- **Sex**: gender (male / female)
- **Age**: age of passenger
- **Sibsp**: number of siblings or spouses on board
- **Parch**: number of parents or children on board
- **Ticket**: ticket number
- **Fare**: total fare for ticket
- **Cabin**: cabin number
- **Embarked**: where did passenger embark? (C(herbourgh), Q(ueenstown), S(outhampton))
- **Lifeboat**: with which lifeboat did the passenger return
- **Body**: number of dead body
- **Home destination**: where was the passenger going to

Process

Project definition

Data Preparation



Model Building

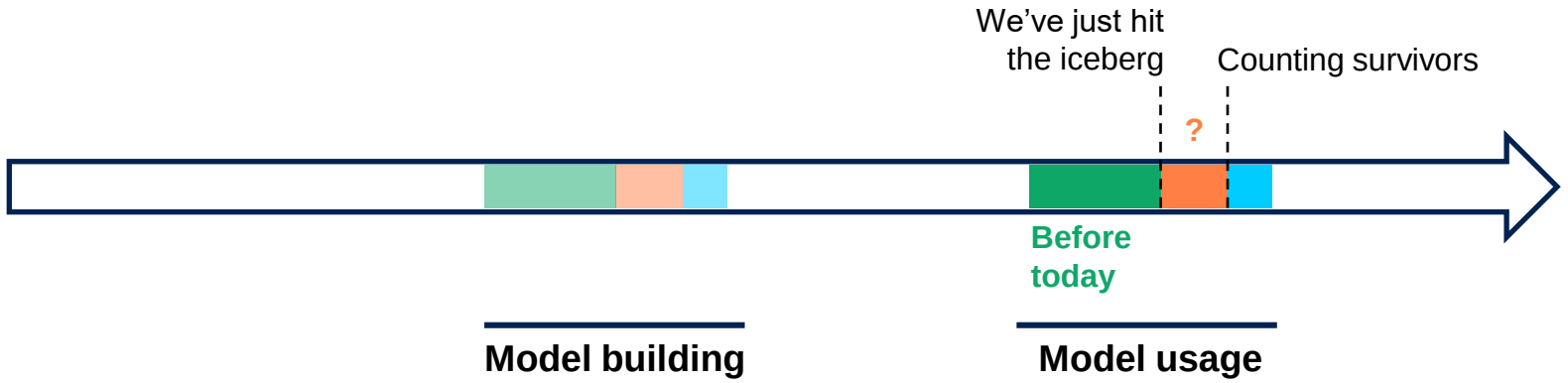
Model Validation

Model Usage

Project definition

“Realistic” scenario

- *“I’m on Titanic II and we’ve just hit an iceberg, let me make a small model that tells me whether I’ll survive”*
- *“Do I know of any other ships that encountered this issue?”*
- *“Yes! Titanic had it too! Let me look up the data and build a model”*



To summarize

40% of final grade – group assignment

DSC case (donor data)

In assigned groups of 3 – 4 people

Guidance: during Q&A on 1 dec. 2021

Deadline: 8 dec. 2021

Today's lab exercise

Titanic data

Groups (optional)

Guidance: during lab session

"Deadline": today – send notebook to n.janssens@ieseg.fr