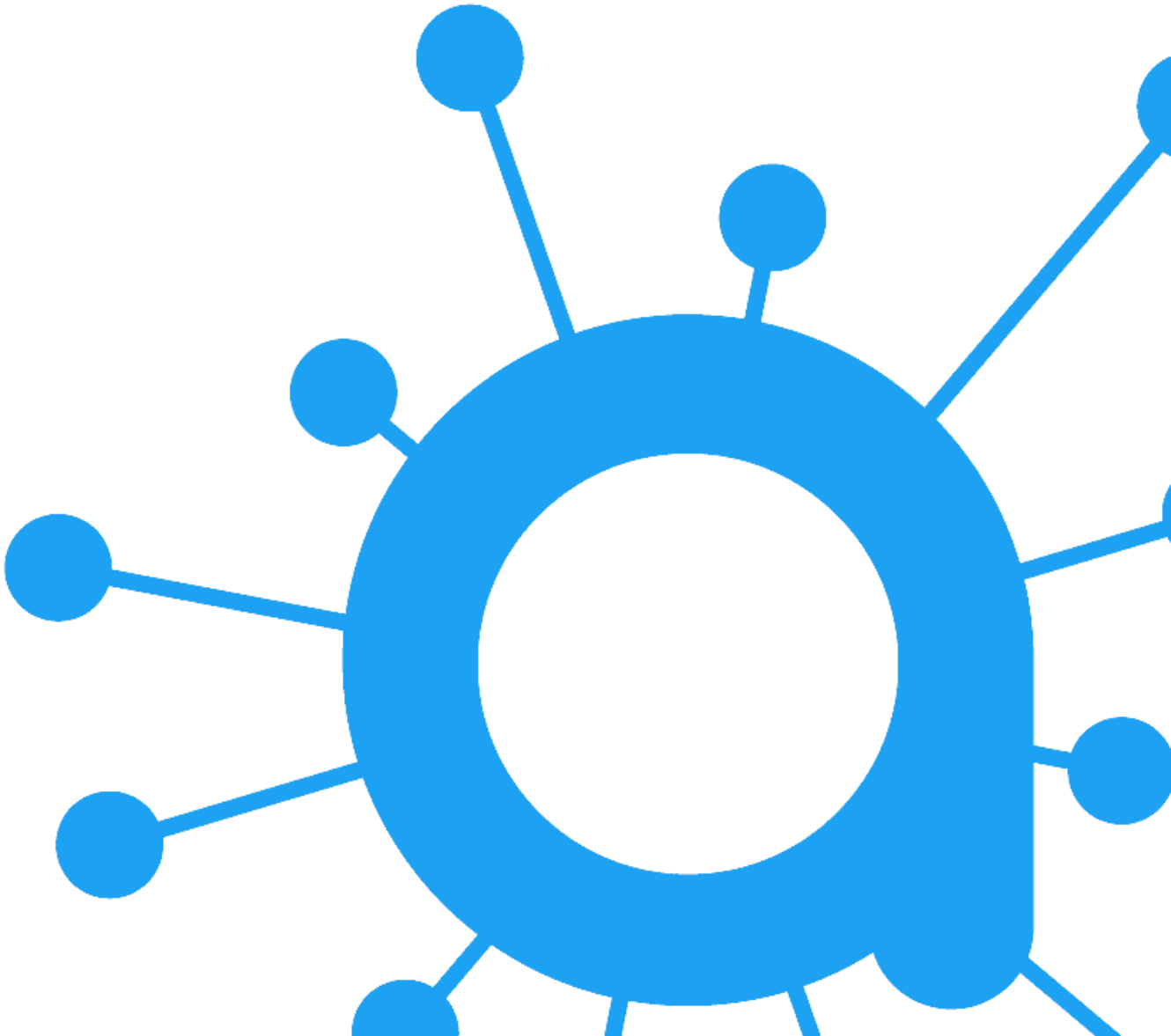
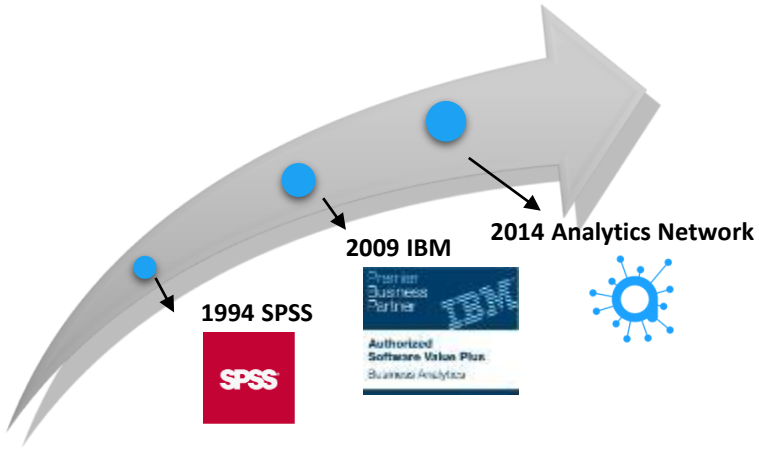
ANALYTICS NETWORK
BBS FIELD WORK



BBS
BOLOGNA BUSINESS SCHOOL


Intelligence That Works^AN

MORE THAN 20 YEARS OF EXPERIENCE



+20 YEARS OF EXPERIENCE

+100 PROJECTS IN DATA SCIENCE

+30 DATA SCIENTISTS

AWARDS

Analytics Network

Driving Business Decision with Data

How much money can a bank save by sending its armored truck only when the ATM needs to be refilled? More than one could possibly imagine. One of the top banks in Italy saved roughly a million dollars in two years by optimizing ATMs' cash management. This profit is one of the several proven results of using Analytics Network's cognitive solutions in a world that is filling to the brim with an ever-flowing fountain of data. Analytics Network, a cognitive solution provider, has taken upon itself the mission to promote machine-driven decision-making. The organization has made this possible by blending unique machine learning algorithms into business processes that allow companies to achieve better business outcomes. "Built with a collective experience of over 20 years in the cognitive sector, Analytics Network benefits companies from across industries with cutting-edge analytics applications. These applications help companies reduce operational costs, drive customer retention, and optimize production environments while increasing revenue," says Luca Camporese, Managing Partner and Founder at Analytics Network.

Luca Camporese, Managing Partner and Founder

and implement data analytics algorithms. Finally, the apps are customized to the client's industry and specific use case. These apps suggest clients the right decisions that allow them to achieve smart processes where they can take preemptive actions. They also help in improving the adoption of connected solutions for further growth and success.

Built with a collective experience of over 20 years in the cognitive sector, Analytics Network benefits companies from across industries with cutting-edge analytics applications

Camporese highlights that every algorithm they create is trained on specific client's unique challenges. With a deep understanding of different business processes and the functional areas of different industry verticals, Analytics Network takes an informed approach to configure smart apps for its clients. The applications offered by the company help clients with insights into customer requirements, allowing them to deliver personalized services. Using cognitive analytics, "We make it possible for organizations to streamline their business processes and improve customer satisfaction, manage risks better, and enhance production optimization," says Camporese.

Analytics Network supports several industries such as manufacturing, retail, and financial services. Amongst several applications, Propensity is an application that deciphers the likelihood of a customer to buy a product and provides recommendations based on searches and previous purchases. Appending to the abilities of Propensity, the Attrition solution helps to create alerts for high customer churn rates—the possibility of a customer to discontinue a subscription. On the risk management front, the company offers Fraudwall and Creditscore. Fraudwall predominantly focuses on preventing internal fraud where the risk of cashier fraud is

CIO Applications europe TOP 10

COGNITIVE

SOLUTION PROVIDERS - 2019


ANALYTICS APP STORE
PROPENSITY
FORESIGHT
FRAUDWALL
QUALITY ASSURANCE
EARLY WARNING
CREDIT SCORECARD
ATTRITION
INTERACTION BUILDER

METHODOLOGY (CRISP – DM)

BUSINESS UNDERSTANDING

- Defining business goals
- Translating them into *Data Mining Goals*
- Assessment and project plan

DATA UNDERSTANDING

- Identifying the *Data Sources*
- Assessing *Data Quality*
- Describing the data and their relationships

DATA PREPARATION

- Reconciling datasets
- Summarizing the data
- Manipulating the data and building value added indicators

MODELING

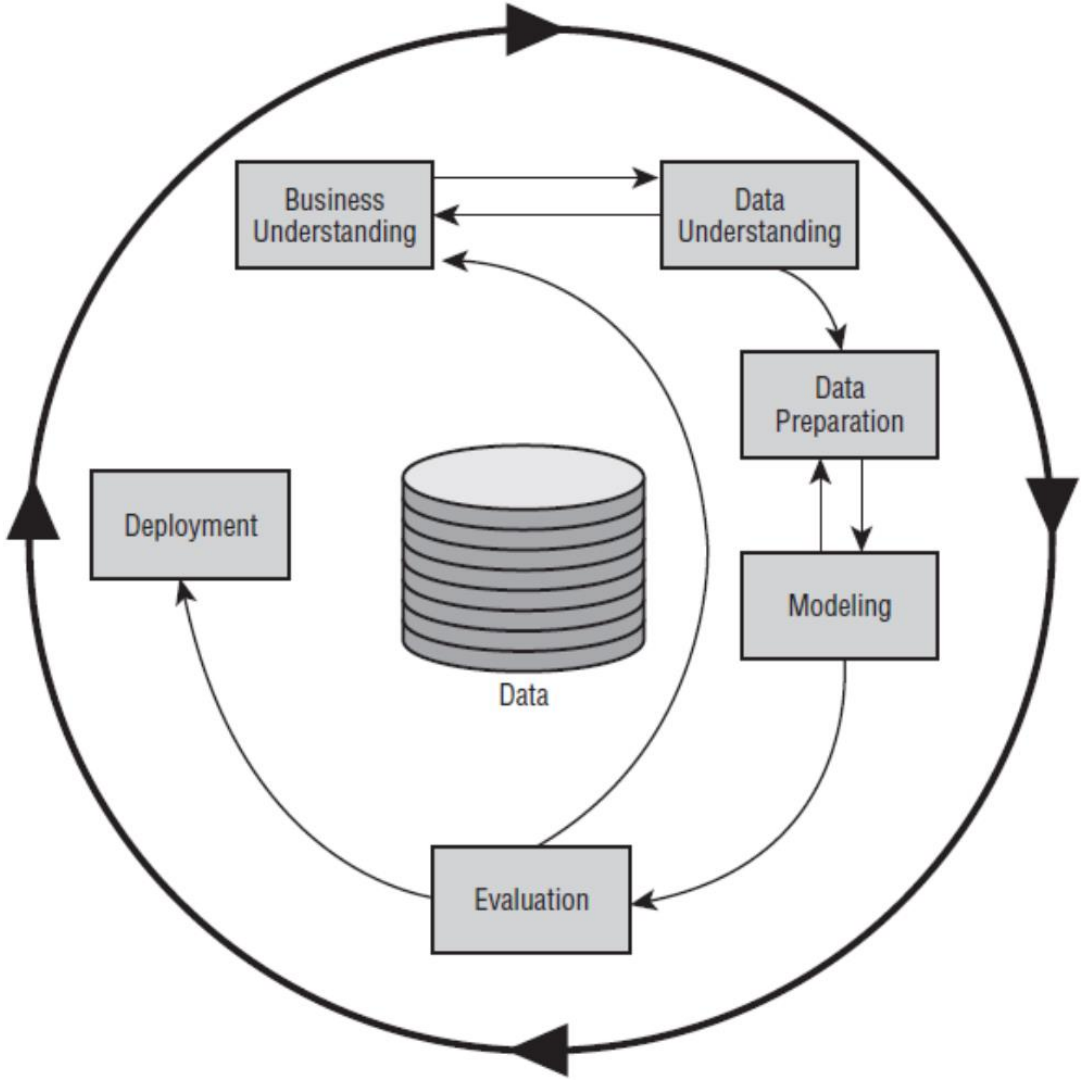
- Selecting / calibrating algorithms
- Identifying and creating KPIs
- Training the Models

EVALUATION

- Testing the Models
- Comparing and understanding the results
- Exploring *Root Causes*

DEPLOYMENT

- Setting *Batch Executions*
- *Real-Time* implementation
- Ensuring integration with business processes



ANALYTICAL JOURNEY

01 DESCRIPTIVE

What happened?

- Recognize and summarize information about the process
- Anomaly detection remains a user responsibility
- Close to the traditional concept of Business Intelligence
- Examples:
  - Plant operation report
  - Failure Reporting
  - Sales Reporting
  - Service Statistics

02 DIAGNOSTIC

Why did it happen?

- Tracking indicators in relation with an acceptance range
- The range can be set w.r.t. experience / expert opinion / historic data
- Warnings Management
- Failure Analysis
- Root Cause analysis

03 PREDICTIVE

What happens next and when?

- Training a model on historic data to perform a classification task
- Updating of the model based on self-learning logics
- Providing expected probabilities for each possible outcomes leveraging signals and correlations
  - Load Prediciton
  - Failure Prediction
  - Price Estimation
  - Demand Forecast

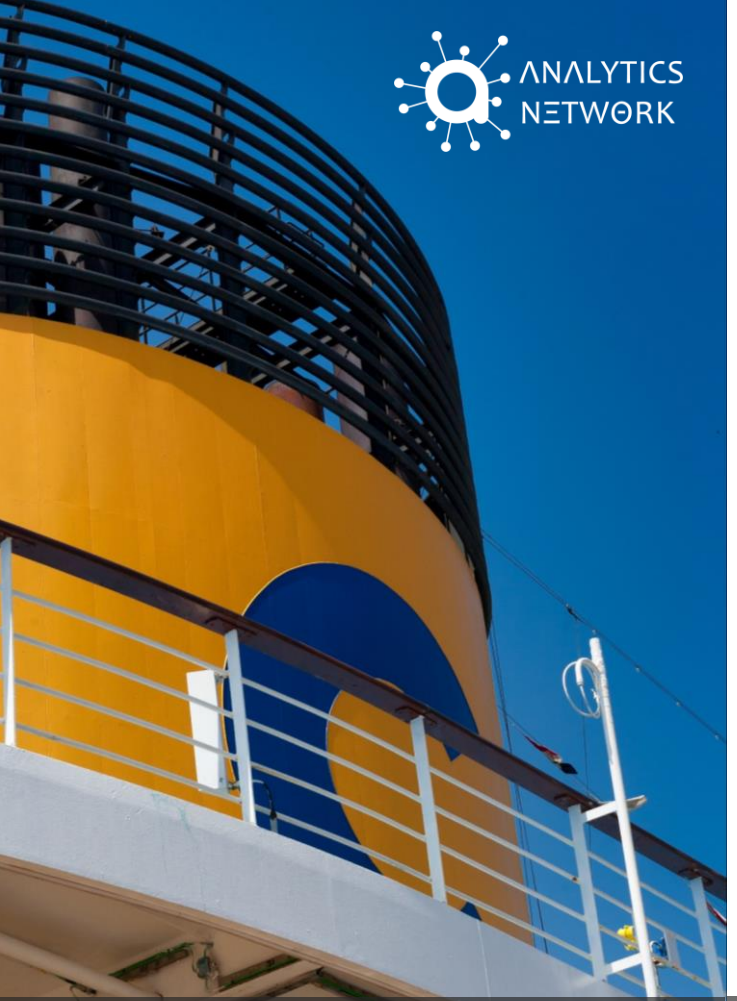
04 PRESCRIPTIVE

When this happens, take these steps.

- It is the result of the automation and optimization of the models in the downstream of the deployment of the predictive step.

- Self-learning systems
- Control systems optimization
- Load balancing
- Planning systems

TALES OF SUCCESS



***The one and only cruising company flying an Italian flag**, the Costa Group is the largest Italian turistic operator. Part of the Carnival Corporation & plc Holding, worldwide leader in the sector, the Costa Group holds two brands: Costa Crociere and AIDA Cruises.*
As part of its selling and CRM activities, Costa chose Analytics Network to create a virtuous system and serve clients at its best leveraging up-selling and cross-selling opportunities.

INITIAL CHALLENGE

Increase revenues throughout targeted upselling (cabin upgrade) and cross-selling actions (special packages alongside the cruise ticket)

SOLUTION

Analytics Network provided support to Costa developing predictive models (**app Propensity**) to target selling actions:

- Identyfing clients with higher willingness to upgrade their bookings (upselling);
- Defining client groups to target with special package offers (hiking, entertainment, wellness and sport activities).
- Providing reliable and constant guidance to integrate the analytical know-how within the Costa existing processes and allowing the company to sustain autonomously and succesfully the whole cycle.

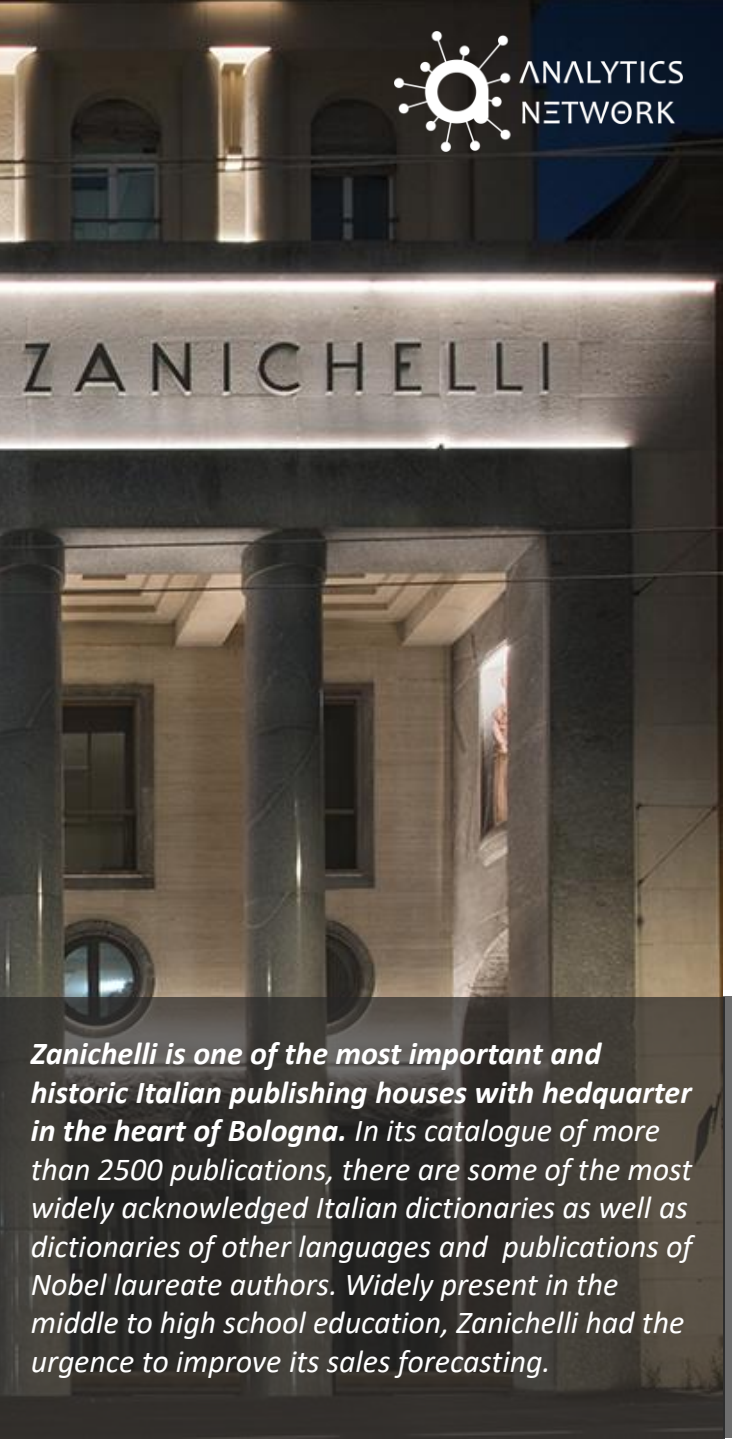
RESULTS

Increase of the on-board revenues; increase of the number of signed contract in the direct marketing phase for both up-selling and cross-selling; Increase in the sales of new cruises; optimized search contact process both with respect to resources and budget.

X2,5
On-board Revenues

CONTACT SEARCH OPTIMIZATION
Time and budget

INCREASE IN PRE-CRUISE SALES
Target clients



ZANICHELLI

INITIAL CHALLENGE

Need for an efficient planning of the resources to increase the accuracy of sales forecast for school textbooks with preavious selling history as well as for new products without any past information to leverage for the forecasting task. Decrease missed sales due to the lack of availability of products in bookstores.

SOLUTION

In order to manage the volatility of new books' forecasts, Analytics Network provided support to Zanichelli as a premier partner with its know-how on the use predictive analytics, pairing traditional modeling techniques with the most innovative and creative ones. The **Foresight app** allowed to forecast the adoption of the newly released textbooks combining data on schools' willingness to purchase with the preavious average selling rate.

RISULTATI

- Appreciable improvement in the accuracy of selling data beyond the existing forecasts.
- Capability to anticipate the printing and distribution processes as well as the sales planning.
- Decrease in the time required to analyze the data to generate a forecast.
- Real-time updating of the forecasts and daily monitoring of the production.

Zanichelli is one of the most important and historic Italian publishing houses with hedquarter in the heart of Bologna. *In its catalogue of more than 2500 publications, there are some of the most widely acknowledged Italian dictionaries as well as dictionaries of other languages and publications of Nobel laureate authors. Widely present in the middle to high school education, Zanichelli had the urgence to improve its sales forecasting.*

+26%

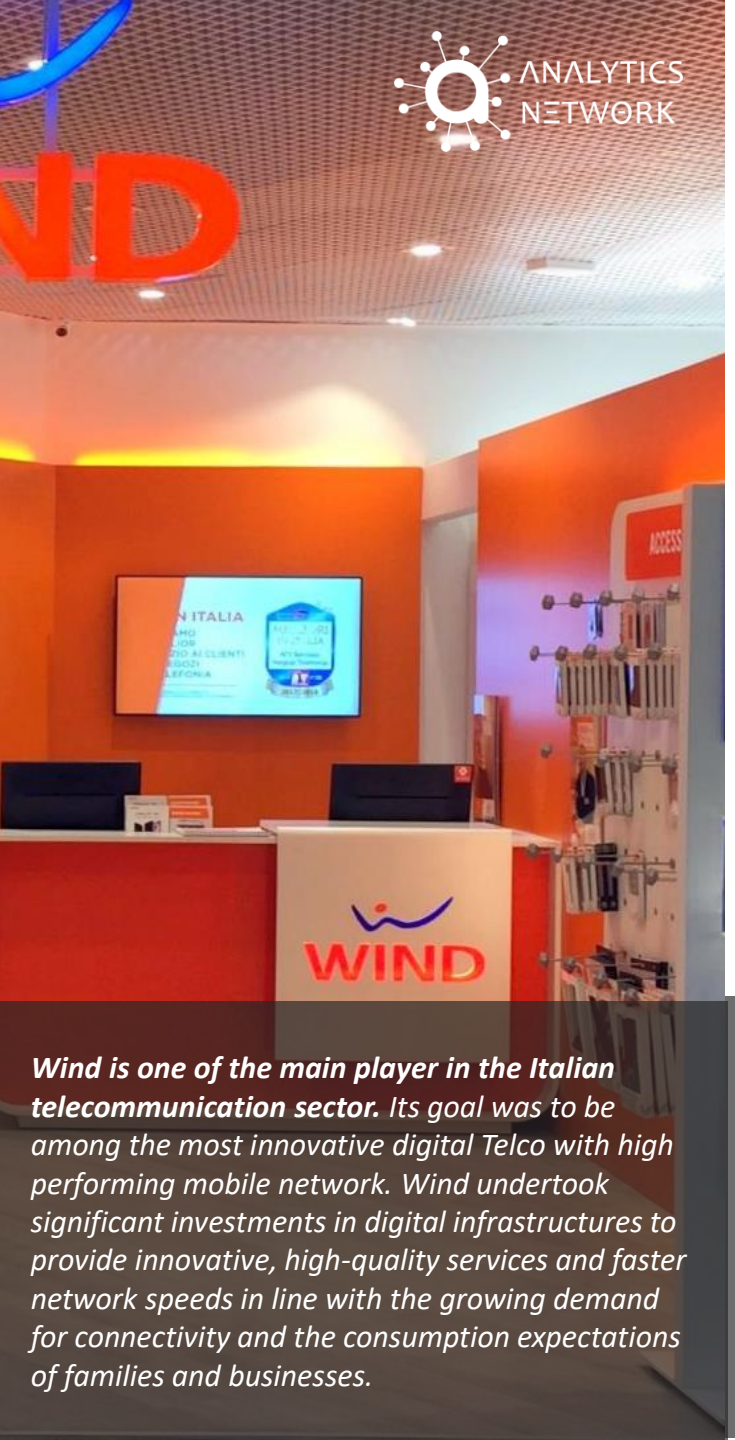
Sales forecast accuracy

16%

Shortages reduction

10%

Decrease in out of stock



INITIAL CHALLENGE

Wind expressed the need of evaluating in an automatic manner the fraud and credit risk associated with the activation of new lines. A second need was that of preventing the circumnstances leading to the loss of the client as well as, identifying value added services (VAS) to be offered to users.

SOLUTION

Analytics Network used the **Propensity app** to identify VAS, and **predictive analytics** to prevent the churning as well as fraud and credit risk. Whenever a new request is incoming throughout the many possible channels (a branch, a selling partner or online), the system is now capable of evaluating it in real time using historic client data toghether with additional collected information, **providing accurate estimates of the froud risk level.**

The **inquiry fast-track** allowes to save time and budget with respect to the revisioning of the activation requests, information integration or with regard to the transmission to the revisors for manual examination. In this way Wind knows that time and resources are spent on relevant cases, keeping false positive at the minimum.

RESULTS

- **Decreased burden associated to manul revisions,** keeping the same level of fraud detection.
- Use of the results of the model to instruct the definition of the anti-fraud policy.
- Halving of the misclassification errore of activation requests.

Wind is one of the main player in the Italian telecommunication sector. *Its goal was to be among the most innovative digital Telco with high performing mobile network. Wind undertook significant investments in digital infrastructures to provide innovative, high-quality services and faster network speeds in line with the growing demand for connectivity and the consumption expectations of families and businesses.*

30%

Decrease in manual revision of requests

50%

Decrease of miscalssification

10%

Saving in manual operation workload

TEAM & CONTACTS

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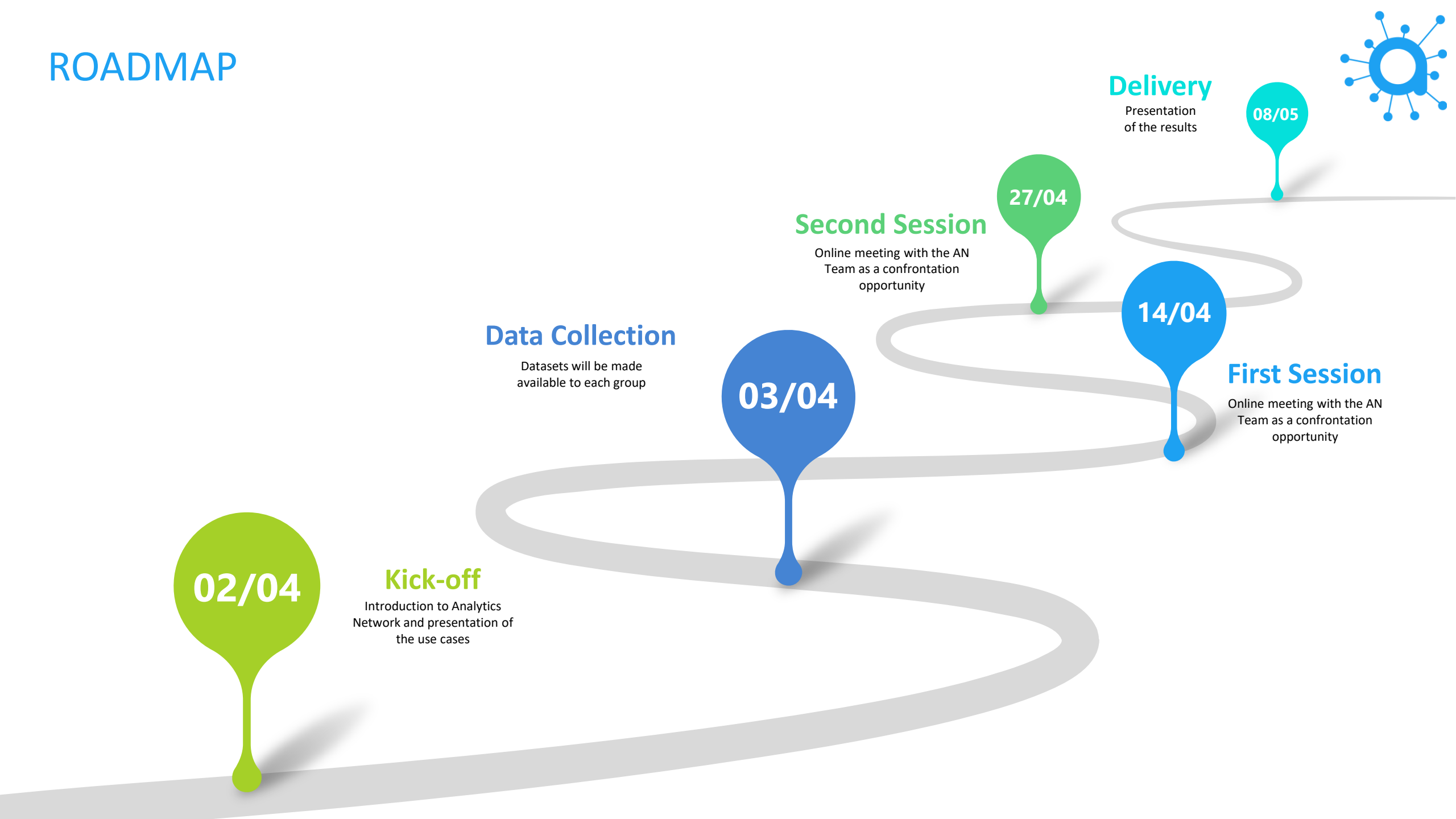
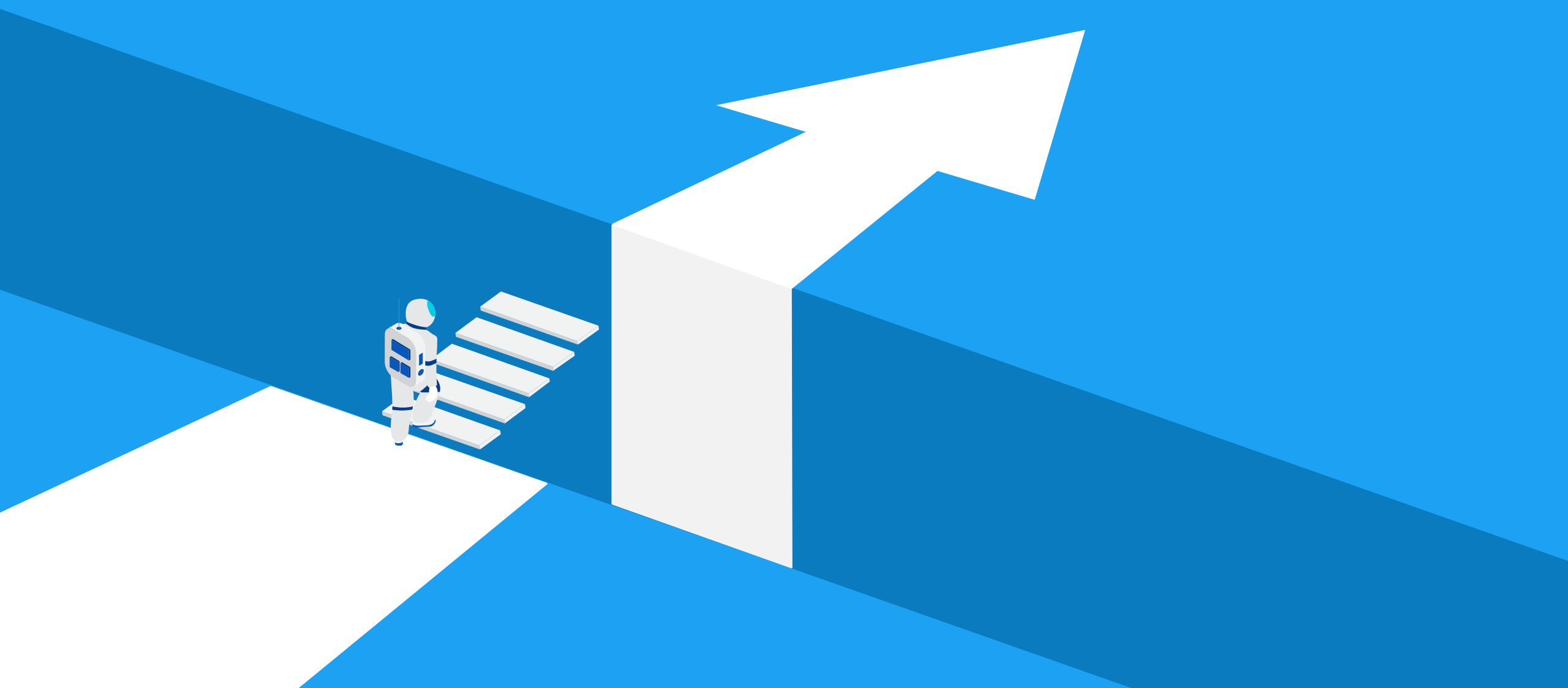
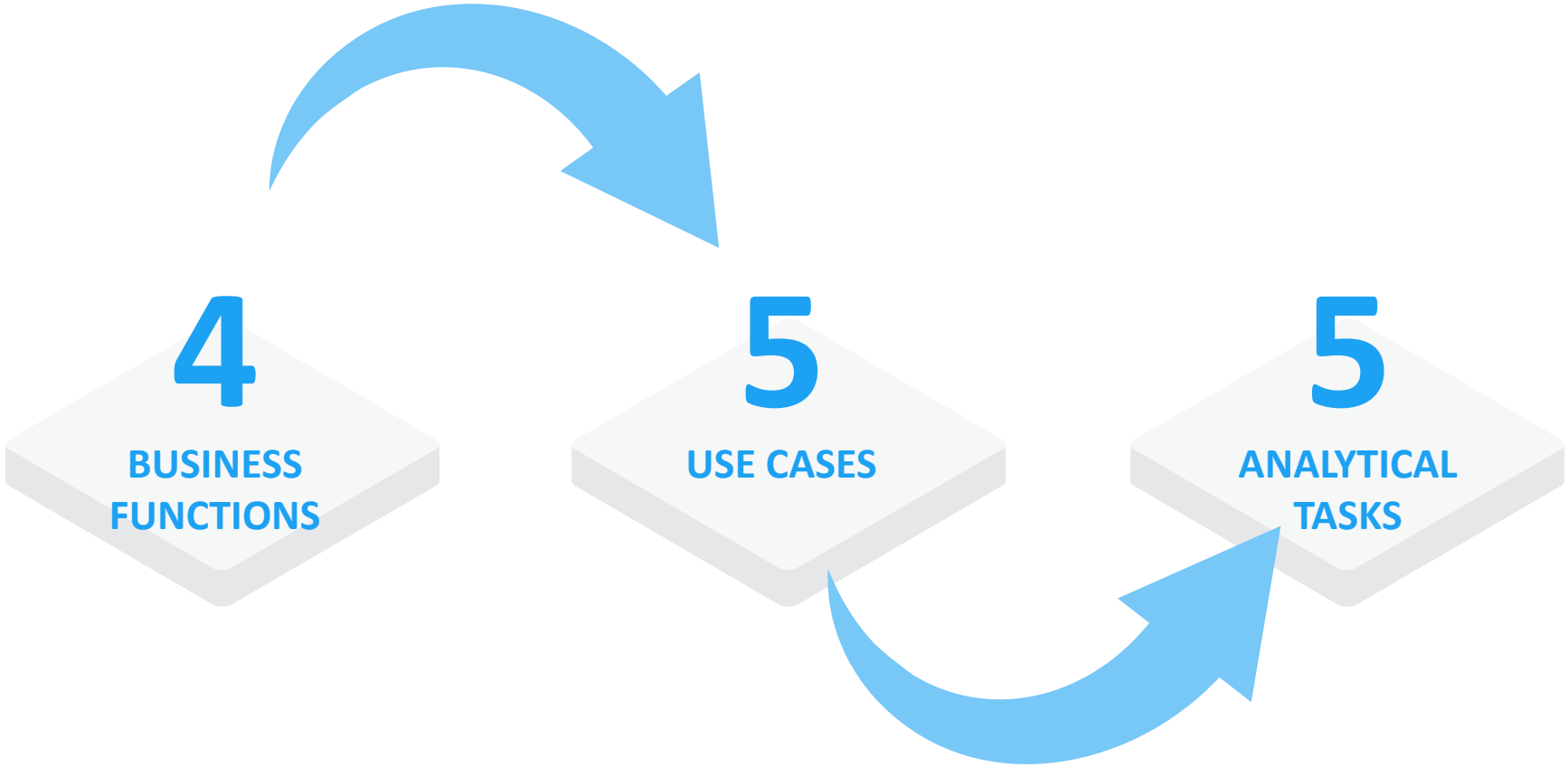
ROADMAP


02/04
Kick-off
Introduction to Analytics Network and presentation of the use cases
03/04
Data Collection
Datasets will be made available to each group
14/04
First Session
Online meeting with the AN Team as a confrontation opportunity
27/04
Second Session
Online meeting with the AN Team as a confrontation opportunity
08/05
Delivery
Presentation of the results

CHALLENGES AHEAD



CHALLENGES



Primary Italian company active internationally in the retail of perfumery and cosmetics goods.

Within the company, a dedicated unit is in charge of developing, planning and reporting of training activities towards employee.

In order to justify the investment in training activities the company asks for your support.

HUMAN RESOURCES - INFERENCE

CHALLENGE

Estimating the impact of HR training activities on employees selling performances

AVAILABLE DATA

- Sales
  - Employee ID
  - Daily sales (Local currency and unitary amount)
  - Tipe of product sold (Item vs accessory)
- Training
  - Employee ID and HR information (e.g. contract type etc.)
  - Date of training course completion
  - Course information (Type, Time spent)

EXPECTED RESULTS

The Client would like you to answer to the following quesitions: (i) Do training activities actually have an effect on performances? If so, (ii) how is this effect quantifiable? (iii) Is the alleged effect heterogeneous along any observable dimension?

KEY ASPECTS:

Accounting for possible confounding factors

Choice of the proper granularity of the time dimension

DEMAND PLANNING - FORECAST

CHALLENGE

Developing a sales forecasting tool and simulating its application for 2019.

AVAILABLE DATA

- 2014 – 2018 sales and warehouse data at active pharmaceutical ingredients (API) level
    - API (and API family) identification number
    - Kg of API sold per day
    - Daily warehouse information (E.g. stocks, booked etc.)

EXPECTED RESULTS

The client needs a forecasting tool for sales at API family and weekly level. To accomodate the production planning and safety policies the lead time requested for the forecast is 6 months. After testing the performance of the models underlying the forecasts, you are asked to simulate the application of the developed tool to cover the first 2 quarters of the year 2019.

Primary chemical company producing active principles and synthetic products for the pharmaceutical industry

The company has recently opened a demand planning unit and would like to leverage the available information to implement a forecasting tool to guide the planning processes.

KEY ASPECTS:

Assessing the quality of the series available

Accounting for possible seasonality

Defining the proper metrics of performance

PRODUCTION - ROOT CAUSE

CHALLENGE

Exploring the driving factors of different defects' onset in the production of metal coils

AVAILABLE DATA

- PLC data for ~2,5 months of production (i.e. setting of a specific production line)
  - E.g. Temperature, Pressure, Speed, etc. (~110 features)
  - One observation every 7 meters of material
  - Coil ID
- Defetcs detected
  - Coil ID
  - Location of the defects in the coil (i.e. from meter x to meter y)
  - Defect Type (coded from 1 to 6)

EXPECTED RESULTS

Understanding which factors, or combination of them, are likely to be responsible for defects' onset. Instructing the root cause analysis business processes.

Important Italian company active in the metal industry producing semi-finished products for multiple transnational value chains.

Thanks to significant investments in the production lines, the company is able to collect extensive infomation on the productive process.

The company now wants to leverage such invormative capital instructing a defect analysis.

KEY ASPECTS:

Quality of the PLC data

Merging the two sources of information

Coils rework

MARKETING - PROPENSITY SCORING

CHALLENGE

Identification of the clients with the highest willingness to buy/subscribe to a new credit card service and life insurance product.

AVAILABLE DATA

- Client Registry Information
    - E.g. Client ID, gender, age and branch of reference
- Wealth data
    - Client ID observed monthly
    - Wealth management information (E.g. total direct deposit, funds, etc.)
- Product data
    - Number of active product and services (E.g. account, debit card, etc.) at Client/month level
- Transaction data
    - Type and amount of transaction at Client/month level (E.g. Salary, Deposit, etc.)

EXPECTED RESULTS

Development of a propensity scoring model(s) for clients' willingness to subscribe to a credit card and a life insurance product.

Italian banking group present in the entire national territory, with focus on northern Italy.

In light of the development of new credit card and life insurance products the bank would like to implement an accurate propensity score of the clients who are more likely to subscribe.

KEY ASPECTS:

Model specification

Definition of value added indicators

MARKETING - SEGMENTATION

CHALLENGE

Segmentation of the customer base to enable targeted communication campaings

AVAILABLE DATA

- Clients' purchase history (~2 years)
    - Client ID
    - Aggregate purchase level information (e.g. date, payment method, etc.)
- Receipt detail
    - Client ID / date of purchase
    - Detaild purchase informations (e.g. Item ID, quantity, price, etc.)
- Clients & Product Registry
    - E.g. Client registration date, residence location etc.
    - E.g. Item ID, Item category etc.

EXPECTED RESULTS

Effective segmentation of the customer base highlighting the significant dimensions that can succesfully be leveraged for targeted communications campaigns

Leading international food retailer active in the entire Italian territory.

With the perspective of renovating its targeted communication programs, the Italian subsidiary decided to update its customer base segmentation.

KEY ASPECTS:

Definition of the proper metrics of analysis

Definition of a convincing performance measure

DELIVERABLE – GENERAL GUIDELINES

&

BUSINESS

From the need to the solution

ANALYTICS

Raw output of your effort (i.e. *.csv*)

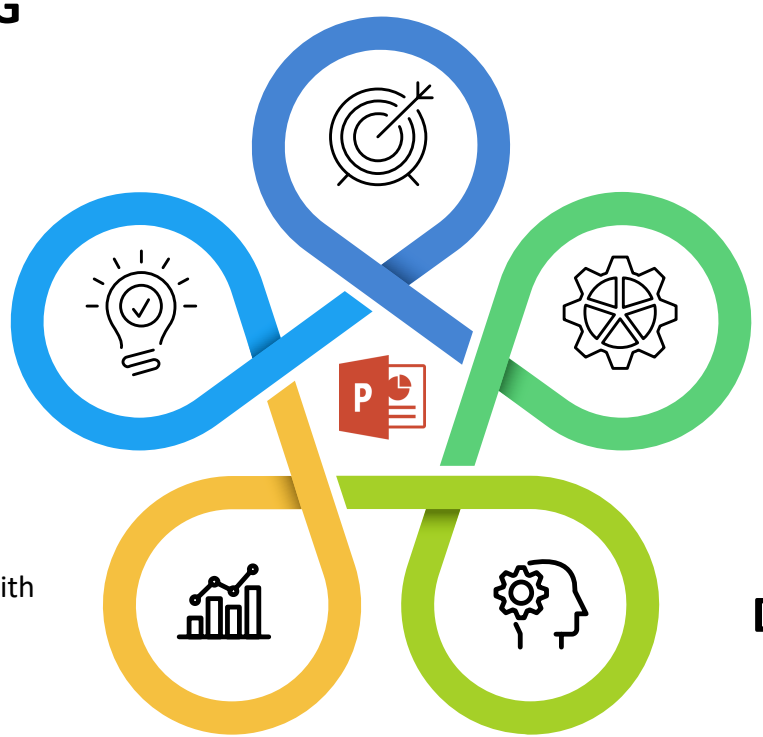
BUSINESS LEVEL DELIVERABLE – GENERAL GUIDELINES

EVALUATION

How is your model performing (out of sample, if this is important for the business case)? How do you interpret the results?

BUSINESS UNDERSTANDING

Recap the business goal highlighting possible critical aspects and giving a simple but clear understanding of how you decided to tackle the challenge



MODELING

Which modeling technique did you choose and why? Which feature did you select?

DATA UNDERSTANDING

Demonstrate understanding of the data with effective summarization of the main dimensions and relations.

DATA PREPARATION

Highlight the main assumption you made (if any) being ready to justify them. Provide a clear understanding of the data structure obtained.

DOS & DON'T

FOCUS ON SERVING THE **CLIENT'S NEED** EFFECTIVELY

PICTURES AND **PLOTS** ARE GOLD

CHOSE WHICHEVER **TOOL** YOU FEEL MOST CONFORTABLE WITH

CHOSE WHATEVER **TECHNIQUE** BEST SERVES THE GOAL OF THE CHALLENGE

DURING **ONLINE SESSIONS** (14/04 and 27/04)

- OK QUESTIOSNS: *«We are not quite sure about the choice of the modeling tecnique, shall we go this way or that way?»*
- NOT SO OK QUESTION: *«I'm having trouble converting a pandas dataframe into a dictionary, what am I doing wrong?»*

xkcd.com


Q&A

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