altice labs

Anticipating the Future

The history of Altice Labs is linked to Portuguese telecommunications sector evolution

1950 | 50´s / 60's | 70´s / 80's | 90's | 2000's | 2010's | 2016

Automatic Switching

Portugal becomes the first country with a fully automated telephone network

GECA
1950

- *Analogue Switching*

Digital Transmission and Switching

MIC 30
Full digitalization of the transmission network

Aveiro University
Created in 1973

CET
1972

- *Electronics*
- *Network Management Systems*
- *Digital Transmission & Switching*

Broadband

Broadband
First Broadband ATM european connection (Aveiro - Madrid)

MIMO (vssp)
First cellular prepaid service in the world

PT Inovação
1999

- *International R&D collaboration*
- *Broadband*
- *Intelligent Networks*

Mobile Networks Multimedia and Television

i9 Mobile Portal
First live TV commercial service over GPRS

picoDSLAM
Portugal becomes the 4th country in the world with full Broadband coverage

MEO
Innovative service of interactive TV

- *Internationalization*
- *Real Time Service Control*
- *Mobile & TV*

Optical Access Digital Society

GPON / NG-PON2
First interoperable ONT
Field tests at US Tier 1 Operator (2015)

SMART2M
M2M managed connectivity & IoT (2013)

ACM
Real time one-to-one Contextual Campaign Execution

- *Optical access*
- *Digital Economy*
- *Programmability/Virtualization*

altice labs

ACTIVE CAMPAIGN MANAGER

Interpretability

www.alticelabs.com

CONCEPT: CONTEXTUAL REAL-TIME 1-TO-1 MARKETING

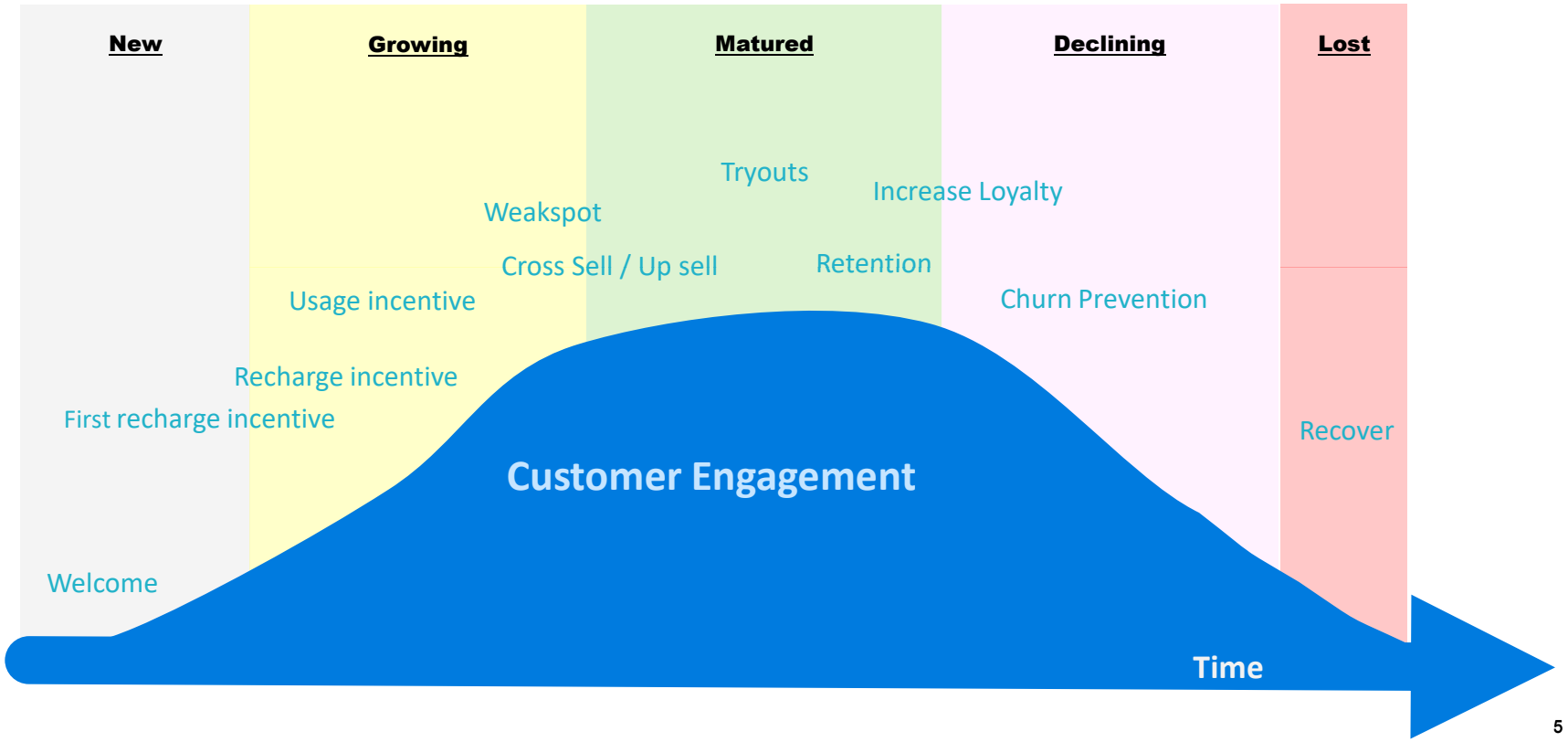
Contextual Real-Time One-To-One Marketing

Contextual marketing, also known as Behavioral Targeting, is an **online and real-time** marketing model that allows companies to sell **the right thing to the right person at the best moment**.

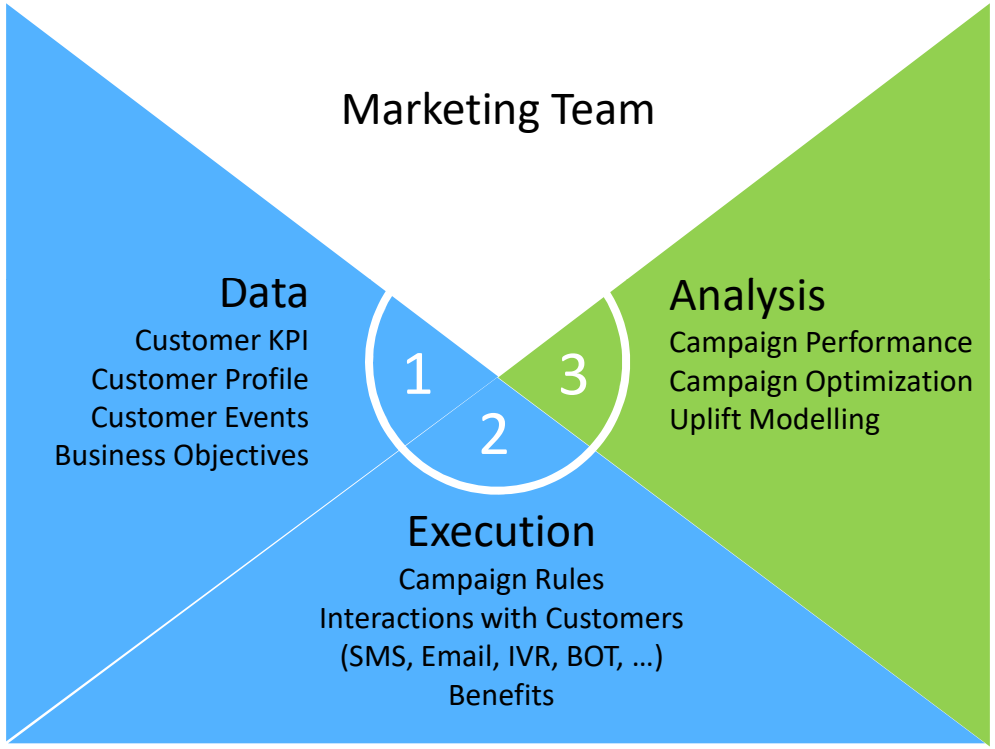
By using sophisticated applications, it is possible to use personal information in order to launch one-to-one campaigns.

altice labs

Campaigns in customer lifecycle - example



How does it work?



Simple Plan Upsell Example

Subscribed a plan “Hello 30”: 1GB for 30 days, cost $30.

Just reached 90% of the data cap in the first 20 days.

ACM proposes the subscription of “Hello 40”: 3GB for 30 days, cost $40, discount $6 in the first invoice.

→ Accepted: monitor.

→ Did not accept: propose 1 free movie if upgrade to “Hello 40” when reaching the data cap.

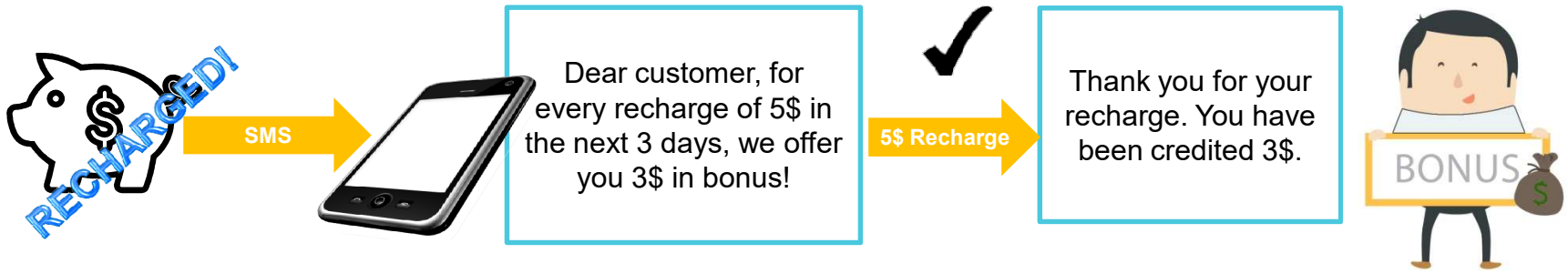
altice labs

Campaign: Recharge Incentive

Goal: Increase customer's recharge amount

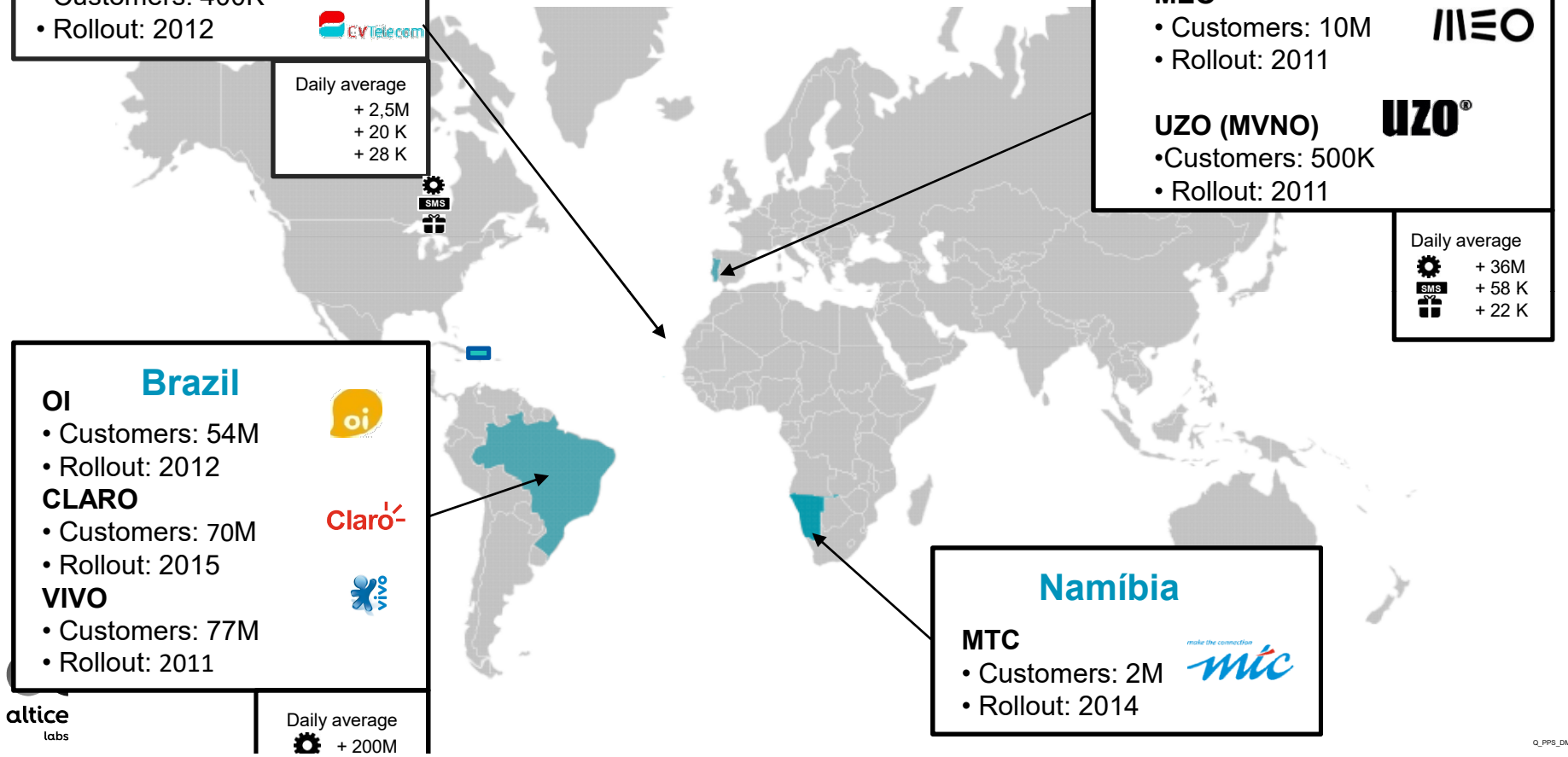
Targeted customers: Prepaid customers (approximately 72k customers)

Scenario: Immediately after a low value recharge (3$ or less), the ACM is sent a SMS, proposing the customer to do 5$ recharges in the next 3 days. For each 5$ recharge, a bonus of 3$ is credited in the customer wallet.



ACM Overview

Where is ACM ?



Cape Verde

CVT
- Customers: 400K
- Rollout: 2012

Daily average
+ 2,5M
+ 20 K
+ 28 K

Portugal

MEO
- Customers: 10M
- Rollout: 2011

UZO (MVNO)
- Customers: 500K
- Rollout: 2011

Daily average
+ 36M
+ 58 K
+ 22 K

Brazil

OI
- Customers: 54M
- Rollout: 2012

CLARO
- Customers: 70M
- Rollout: 2015

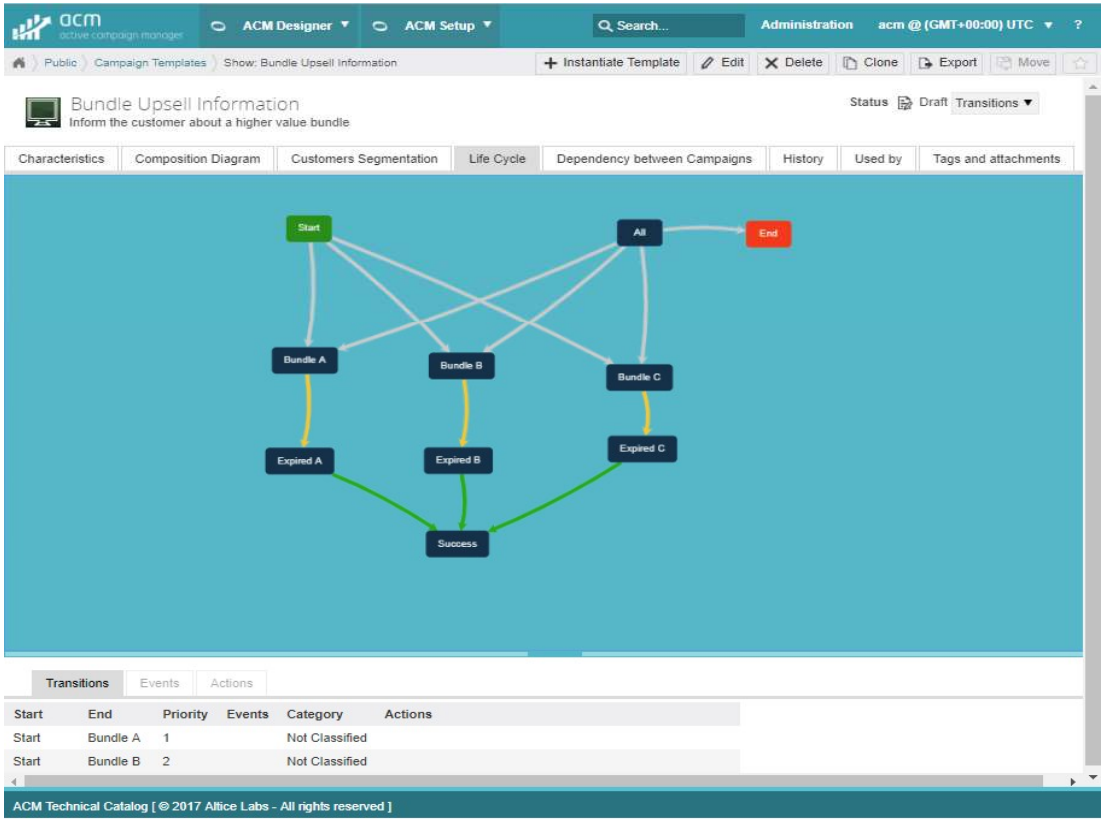
VIVO
- Customers: 77M
- Rollout: 2011

Daily average
+ 200M

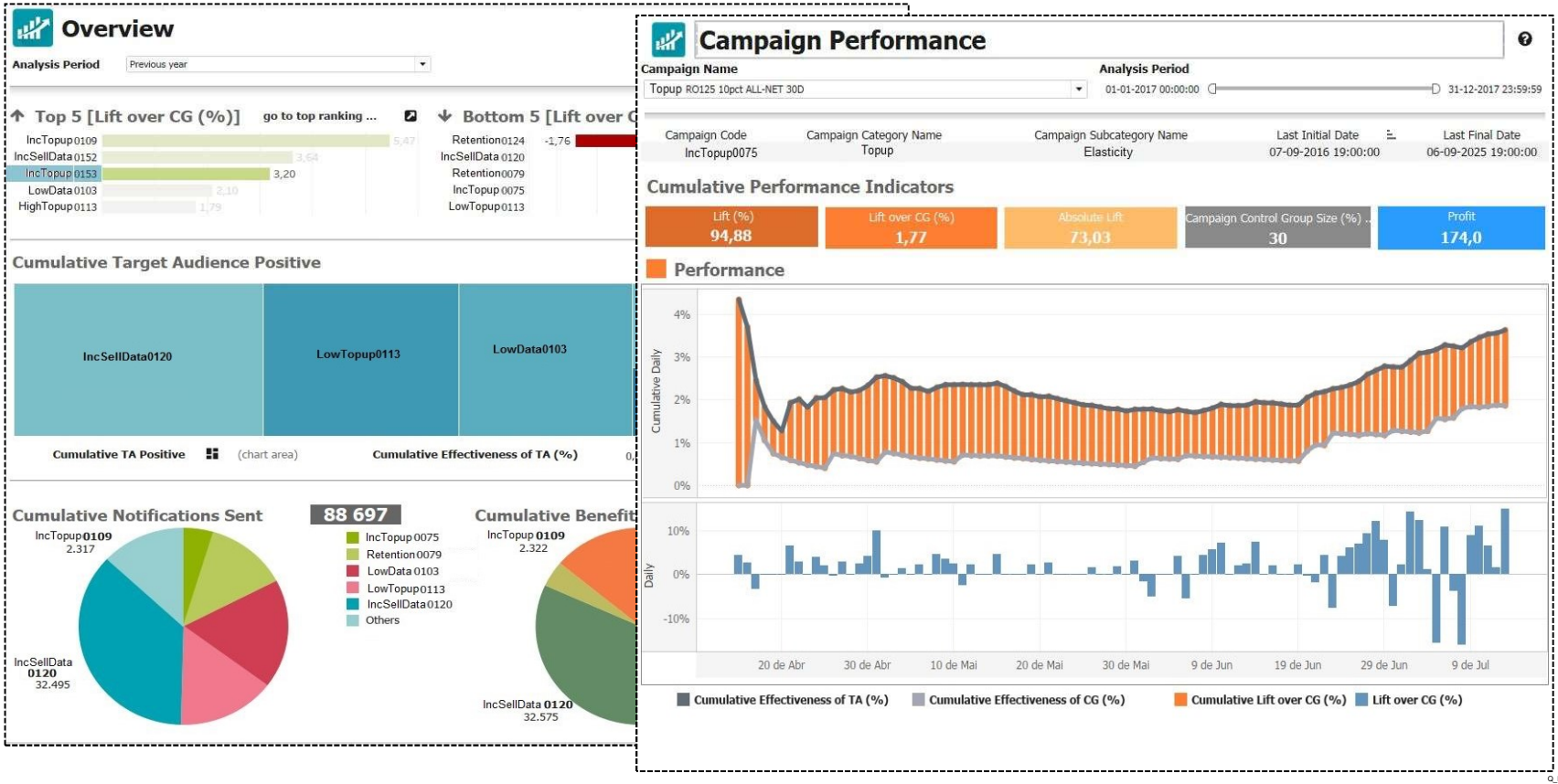
Namíbia

MTC
- Customers: 2M
- Rollout: 2014

User Friendly and Highly Productive Campaign Designer



Out Of The Box & Self Service Analytics



Formulas

Metrics to measure campaigns success:

- **Effectiveness of TA (%)** = (SUM([TA Positive])/ SUM([TA Incentivized]))* 100

- **Effectiveness of CG (%)** = (SUM([CG Positive])/ SUM ([CG Incentivized])) * 100

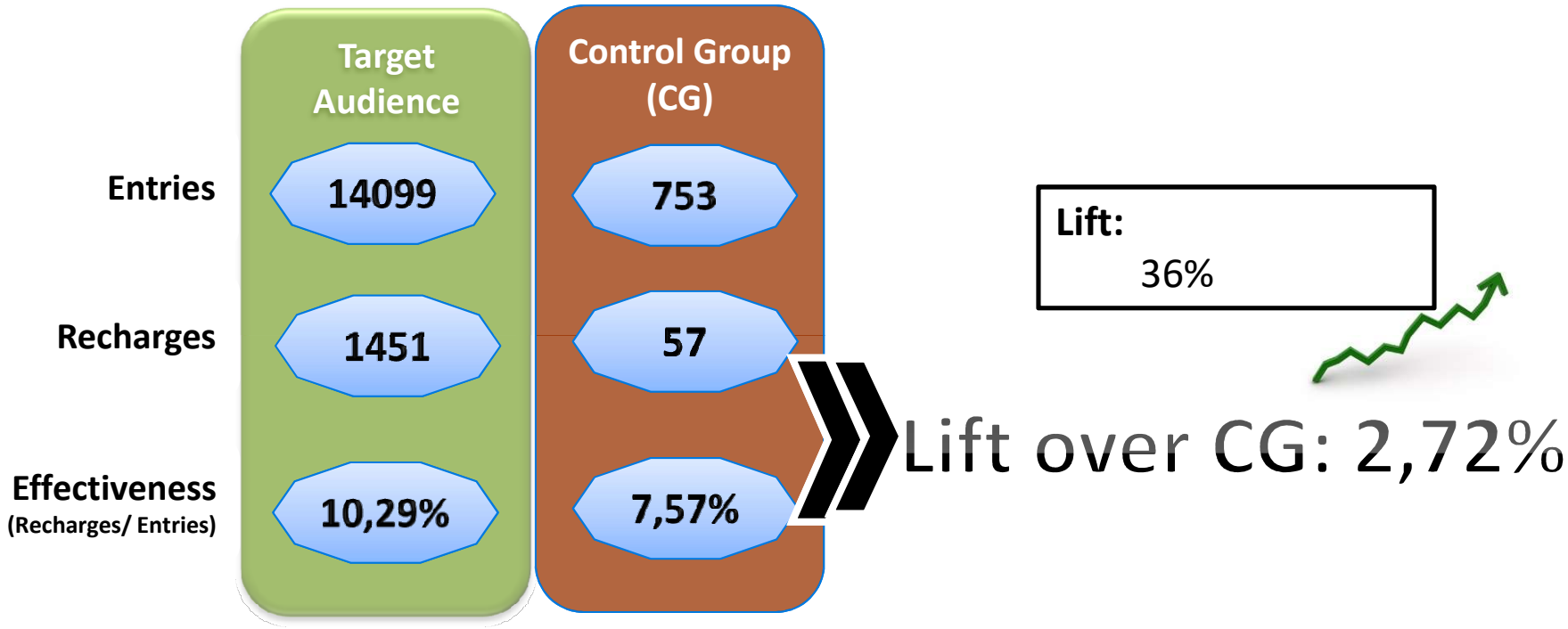
Formulas

Metrics to measure campaings success:

- **Lift (%)** = (([Effectiveness of TA (%)]-[Effectiveness of CG (%)])/[Effectiveness of CG (%)])*100

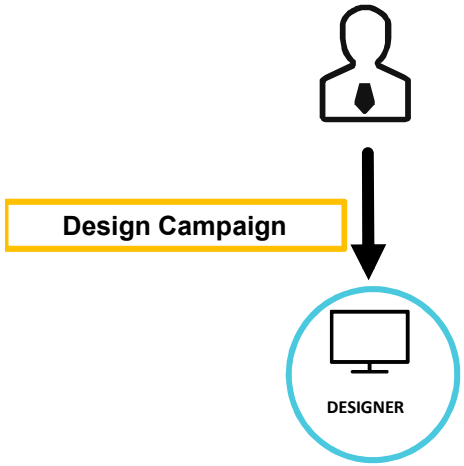
- **Lift over CG (%)** = ([Effectiveness of TA (%)]-[Effectiveness of CG (%)])

Example

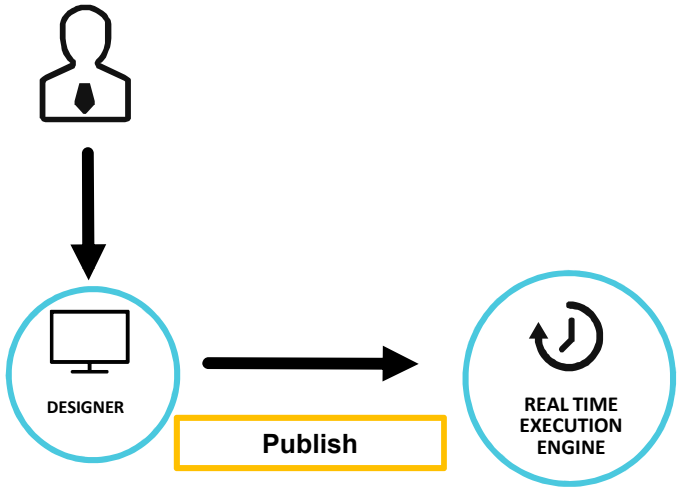

Target Audience
Control Group (CG)
Entries
14099
753
Recharges
1451
57
Effectiveness
(Recharges/ Entries)
10,29%
7,57%
Lift:
36%
Lift over CG: 2,72%

Typical Use Case

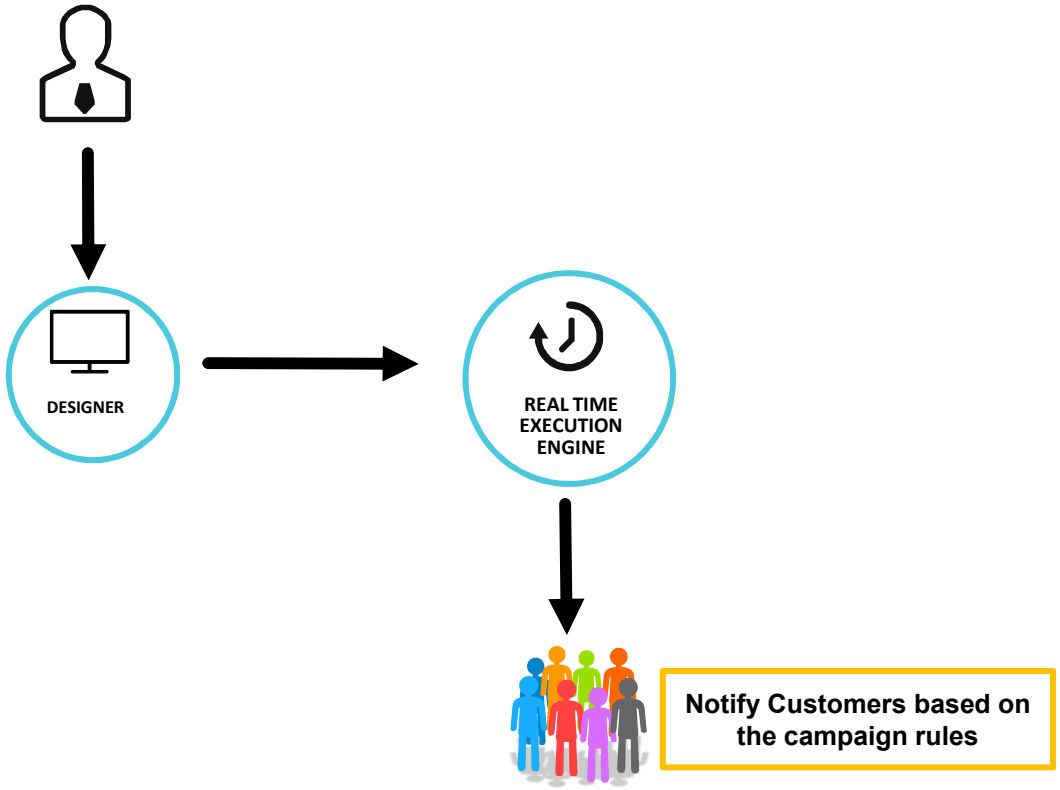
Typical approach



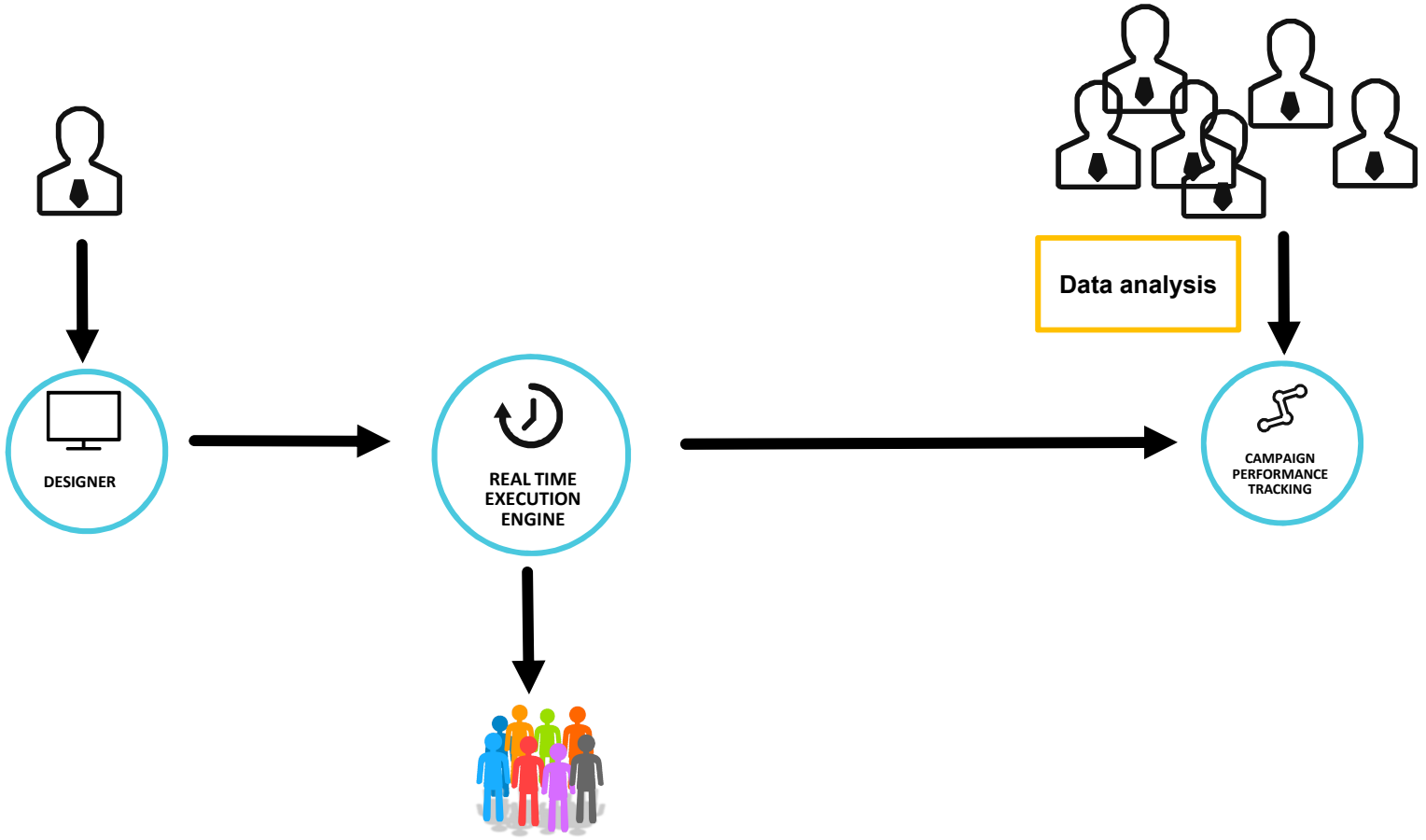
Typical approach



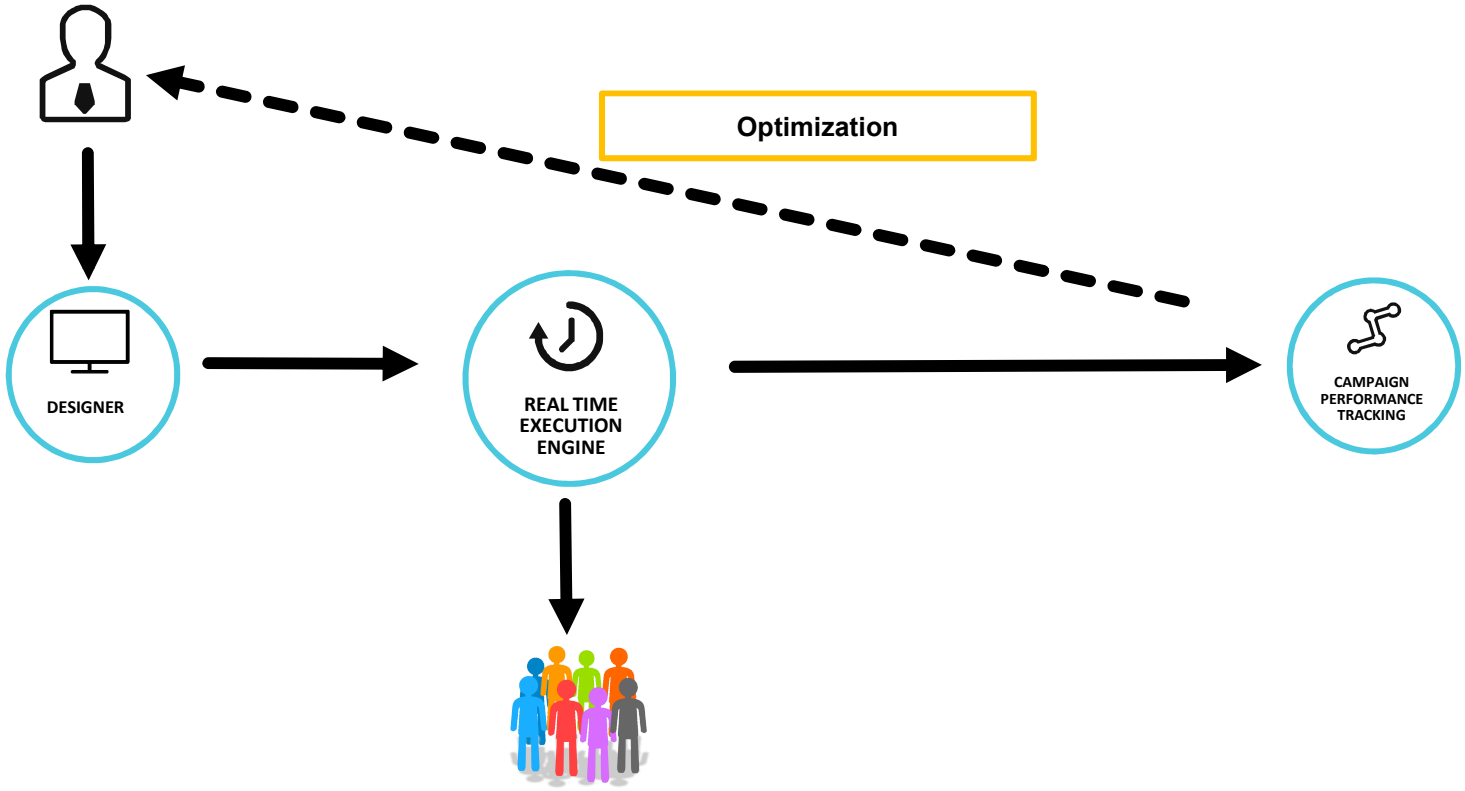
Typical approach



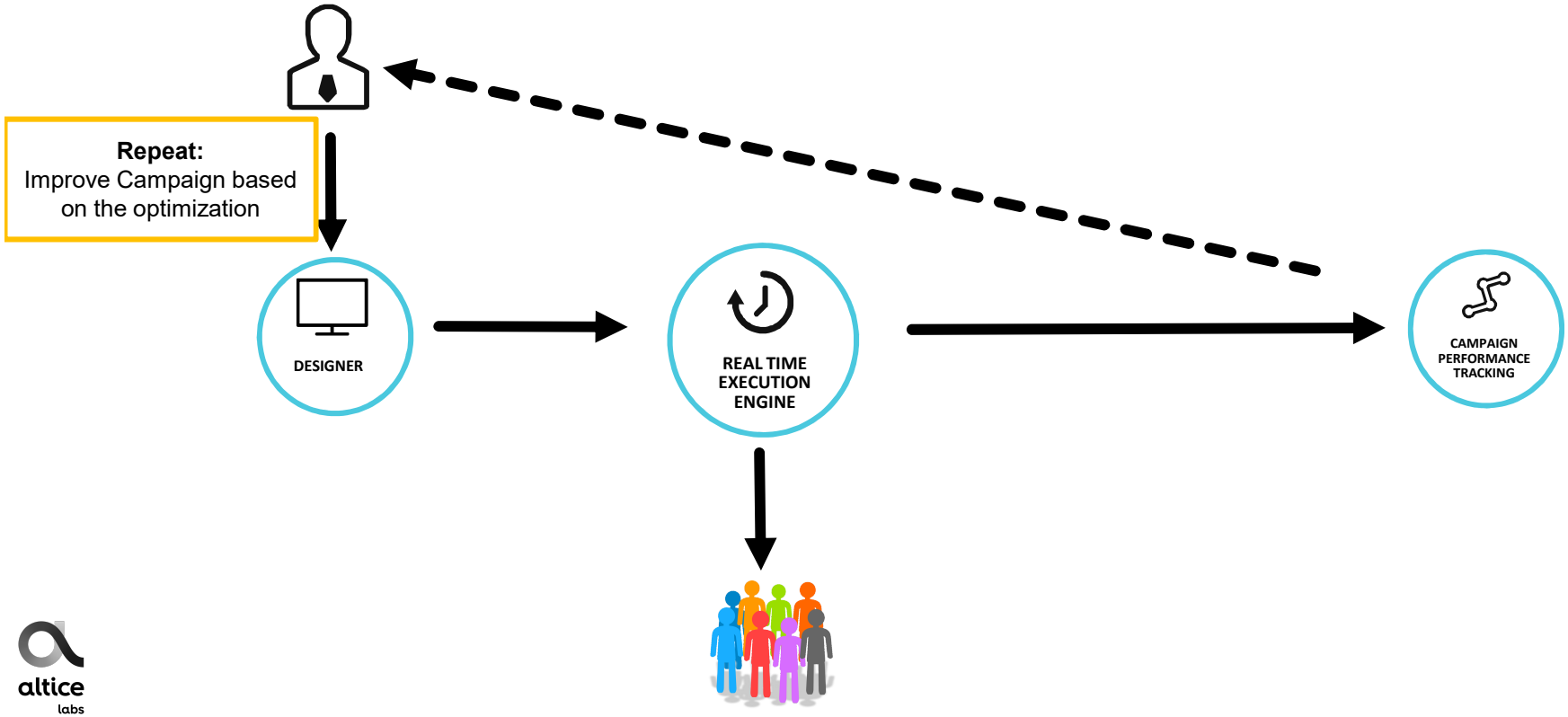
Typical approach



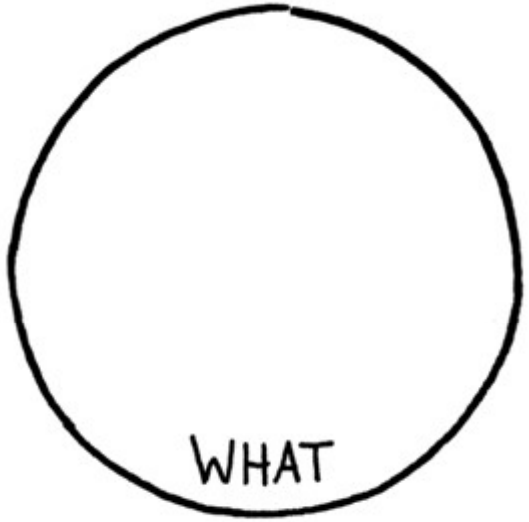
Typical approach



Typical approach



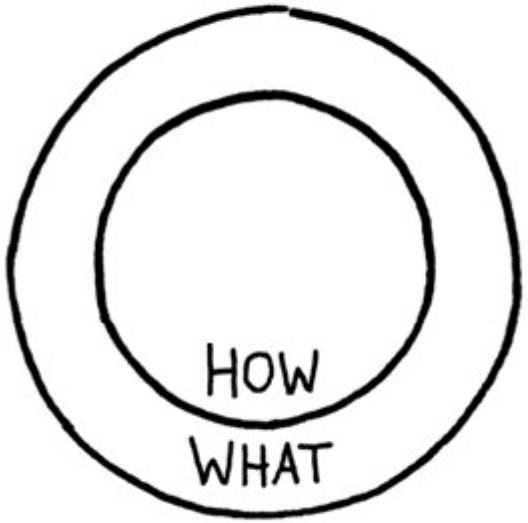
Why Interpretability?



Improve Uplift:
Identify patterns in the clients

Improve Profit.

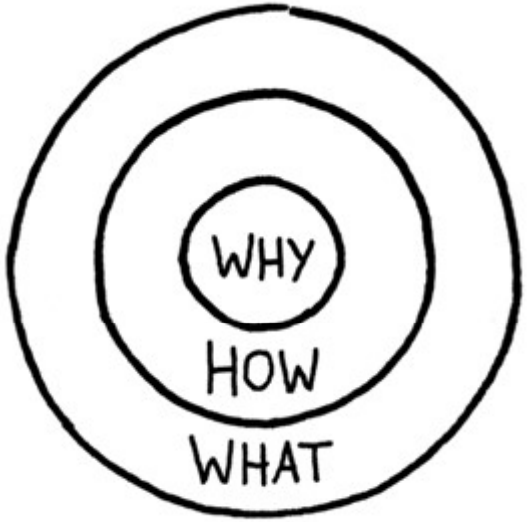
Improve Interpretability.



Easily **integrated** with ACM

Easily developed

Don’t increase product **cost**



Help in the campaign interpretability.

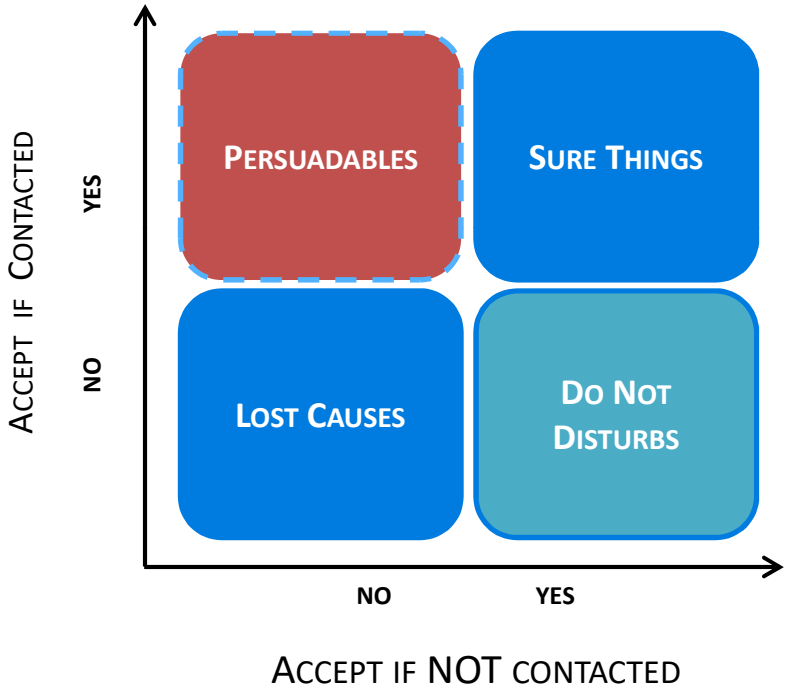
Retrieve the most **important** characteristics.

Reduce the amount of **time** needed by business analysts

Typical Use Case with ML

Improve Campaign Performance

Uplift Modelling



Improve acceptance rate.

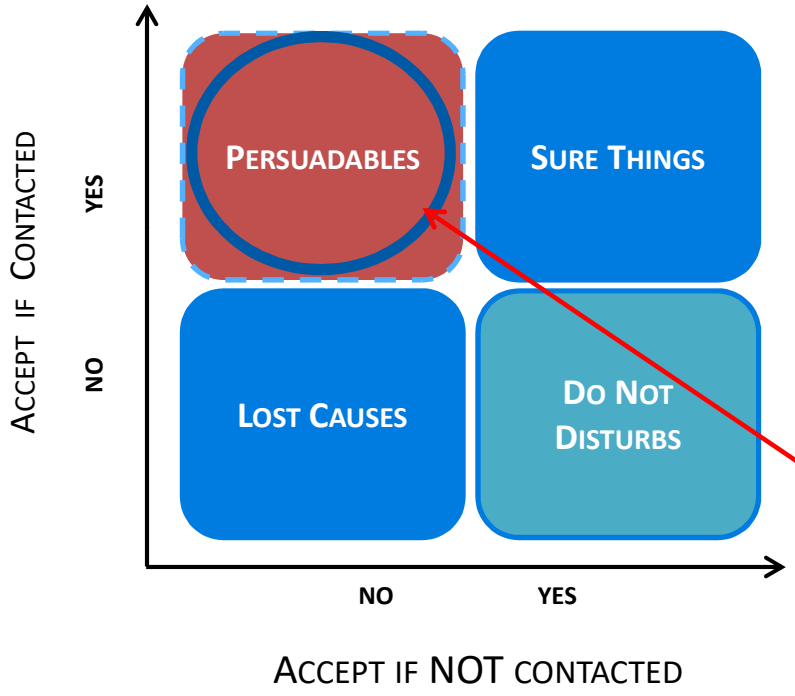
Who are the Persuadables?

Hundreds of variables;
Millions of customers;
Very complex for a human team.

Artificial Intelligence

Improve Campaign Performance

Uplift Modelling



Improve acceptance rate.

Who are the Persuadables?

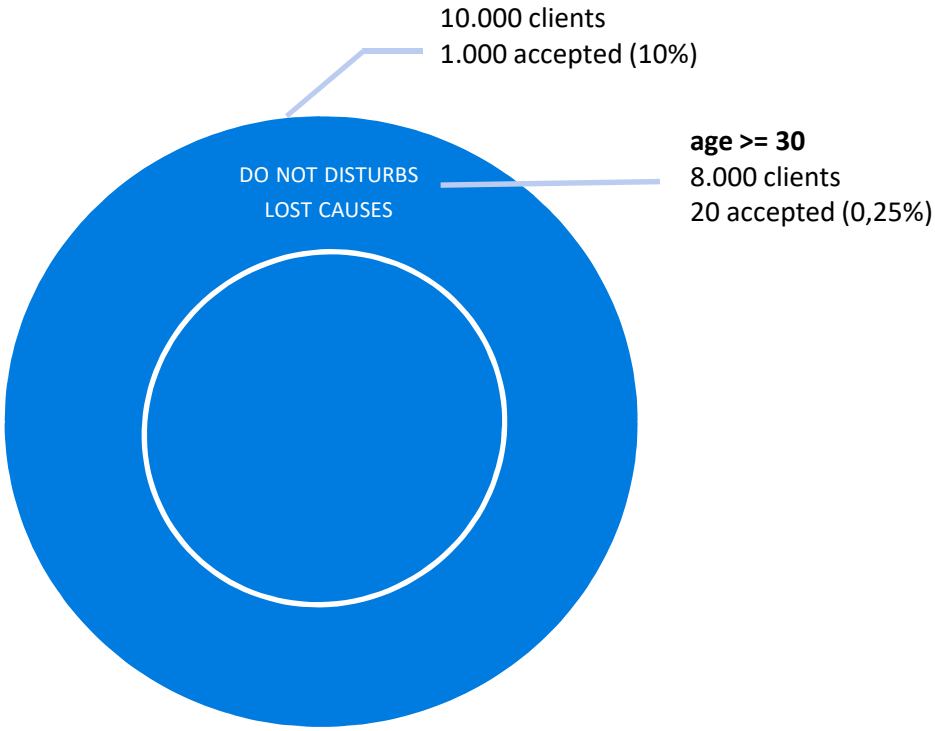
Hundreds of variables;
Millions of customers;
Very complex for a human team.

Artificial Intelligence

Identify these client's characteristics

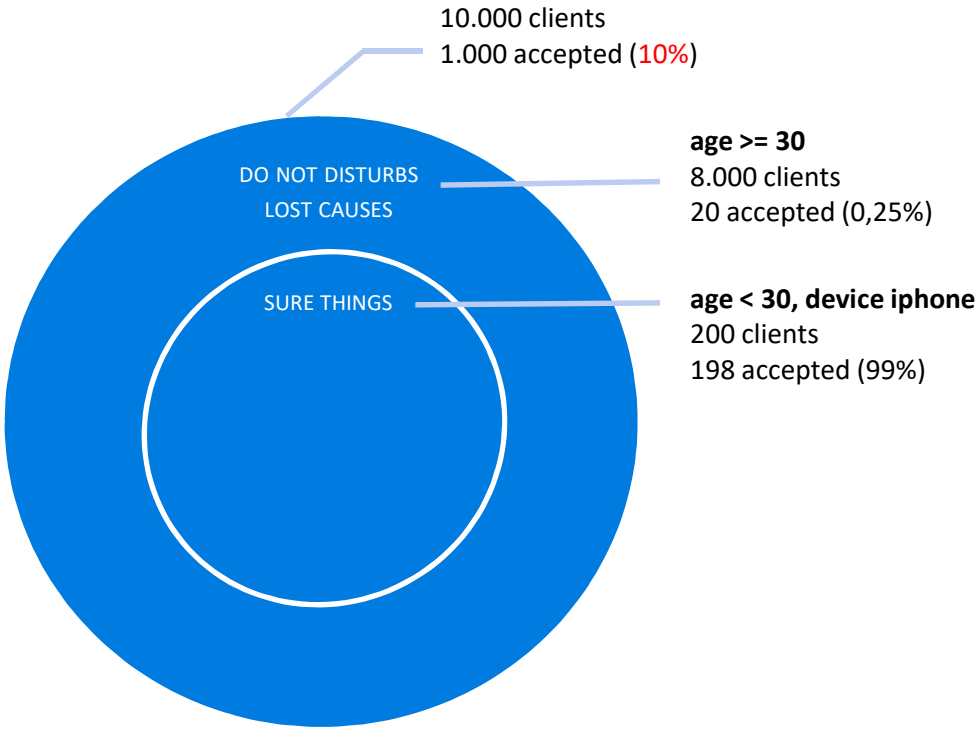
Artificial Intelligence

Uplift Modelling using Decison Trees



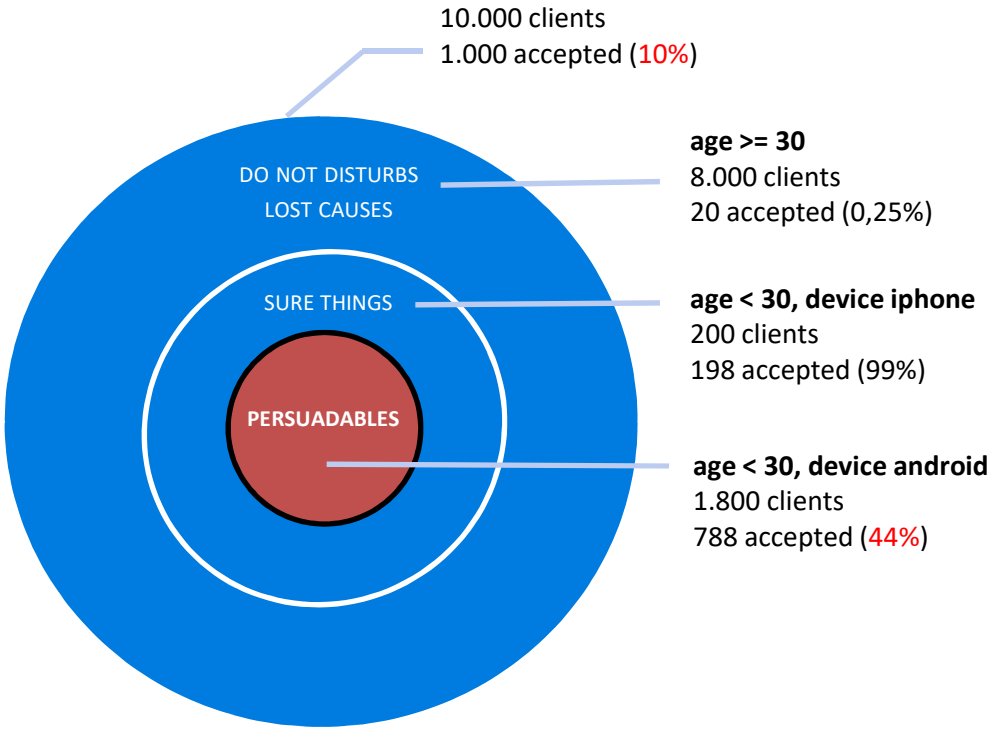
Artificial Intelligence

Uplift Modelling using Decison Trees



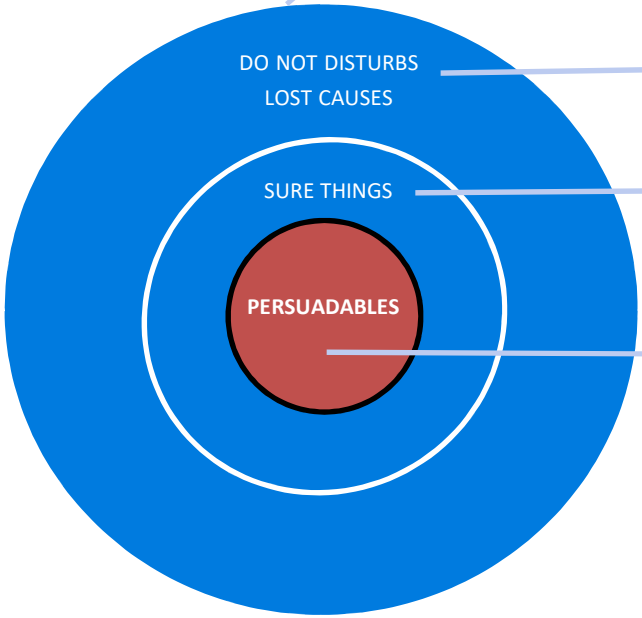
Artificial Intelligence

Uplift Modelling using Decison Trees



Artificial Intelligence

Uplift Modelling using Decison Trees



10.000 clients
1.000 accepted (10%)

age >= 30
8.000 clients
20 accepted (0,25%)

age < 30, device iphone
200 clients
198 accepted (99%)

age < 30, device android
1.800 clients
788 accepted (44%)

Technology
Decision Trees (CART)
SCIKIT-Learn (Python)

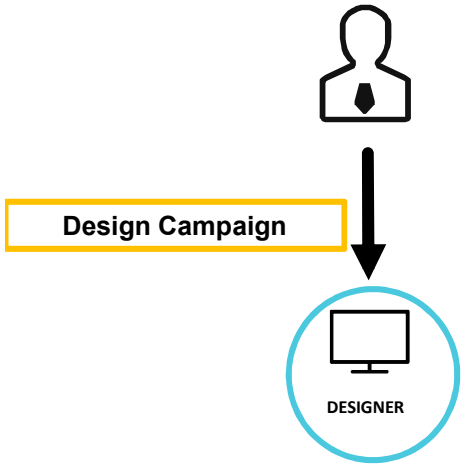
Real World Scenario
300+ variables
~100 campaigns

Lab simulation
~3% acceptance
AI -> ~5% acceptance
Waiting field trials

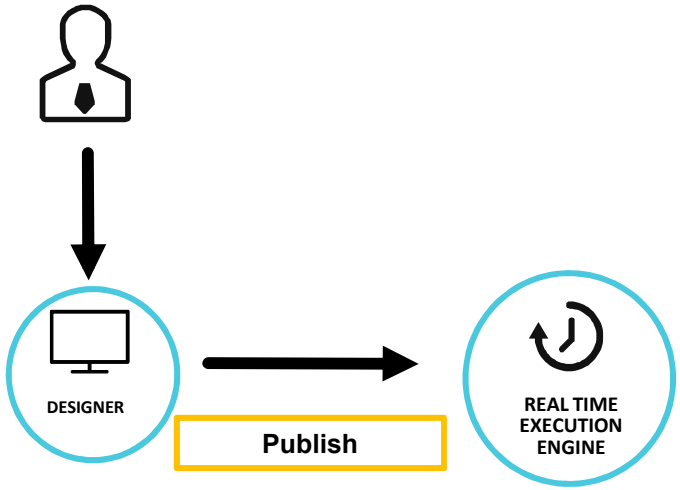
altice labs

How to integrate with ACM?

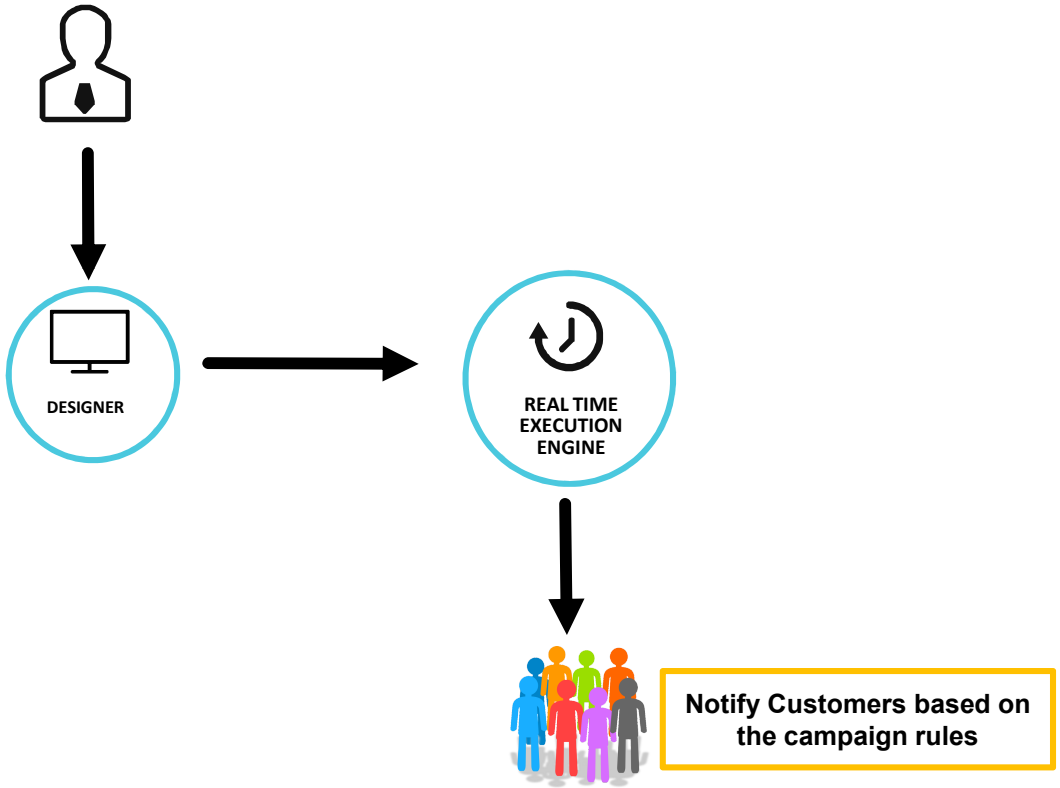
Machine-in-the-loop approach



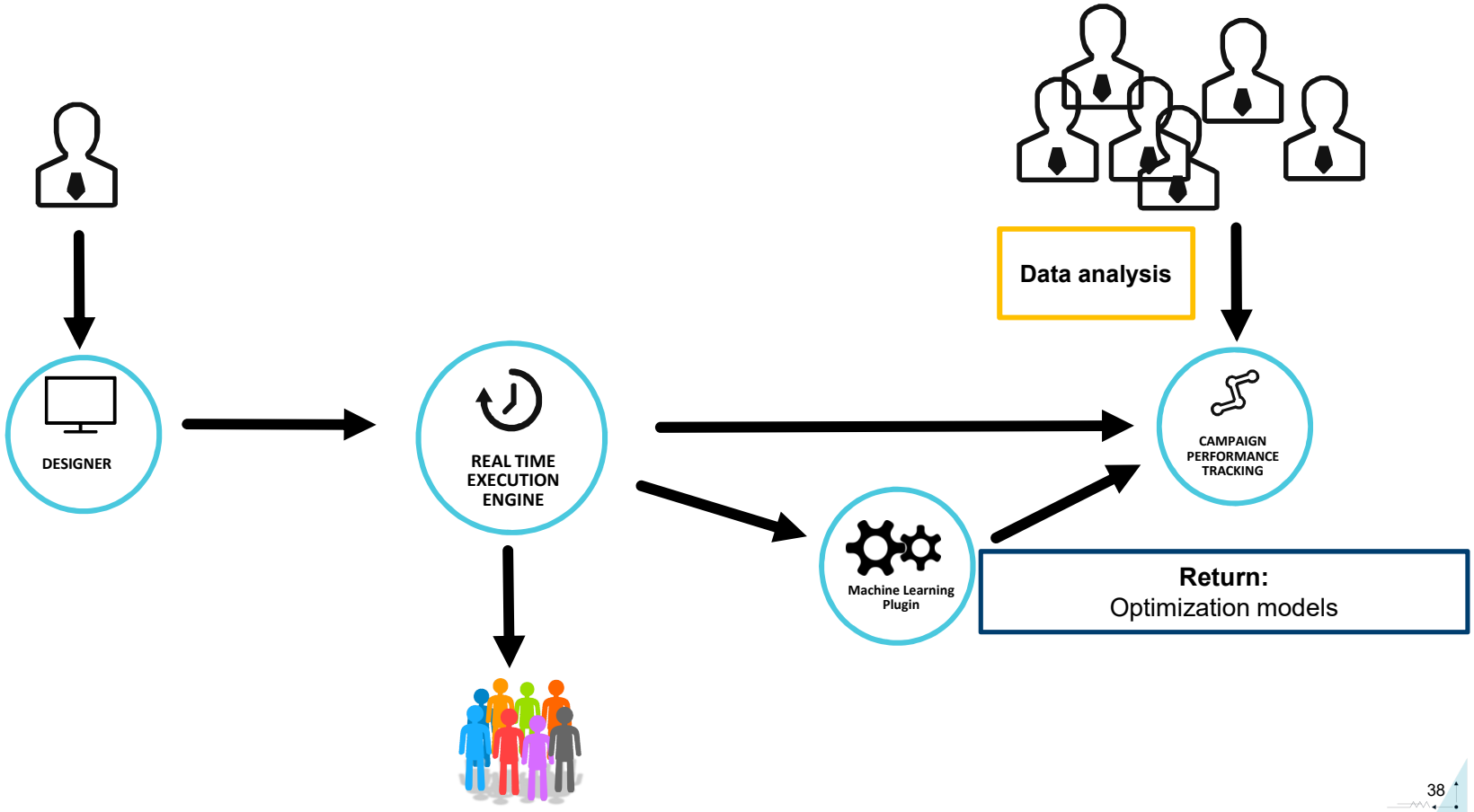
Machine-in-the-loop approach



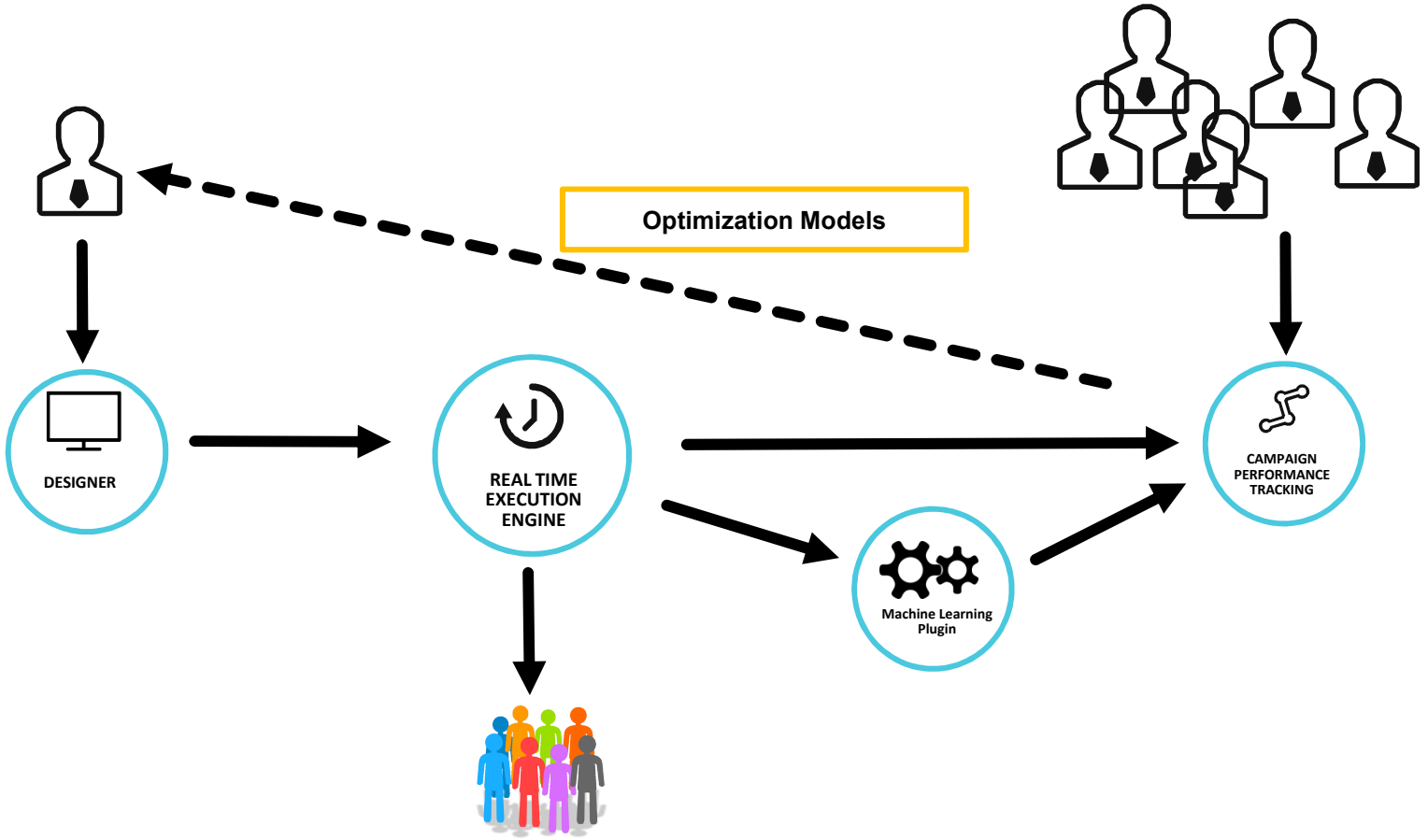
Machine-in-the-loop approach



Machine-in-the-loop approach



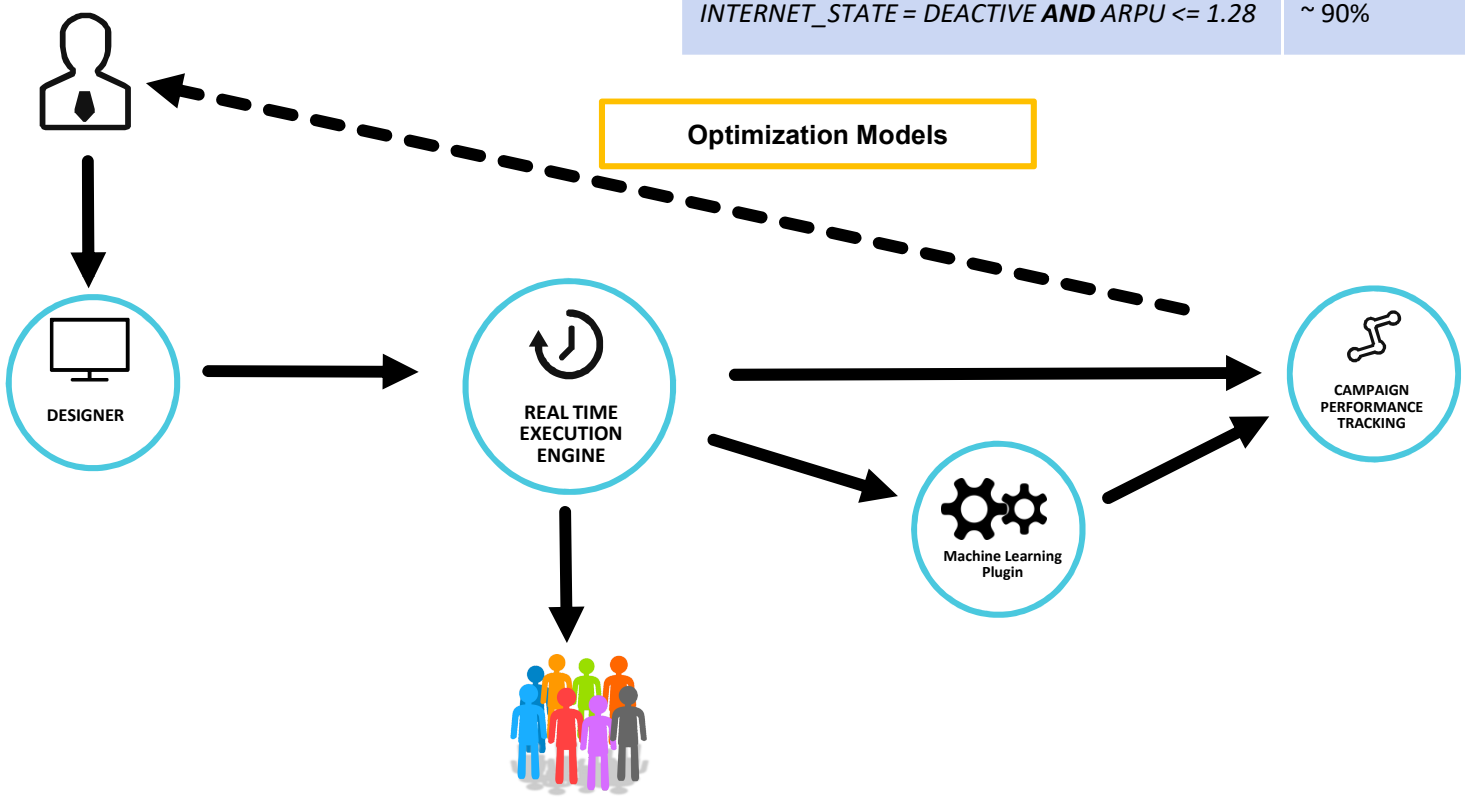
Machine-in-the-loop approach



Machine-in-the-loop approach

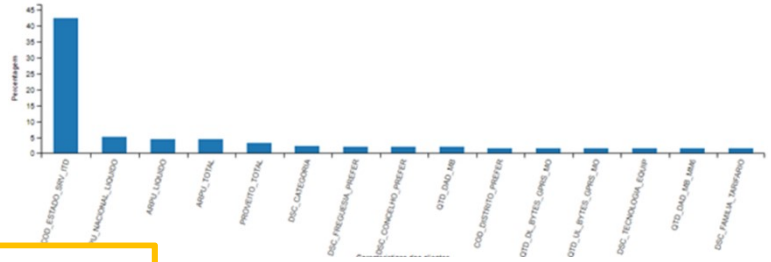
Rules:
Clients with the following conditions **didn't** subscribe the campaign :

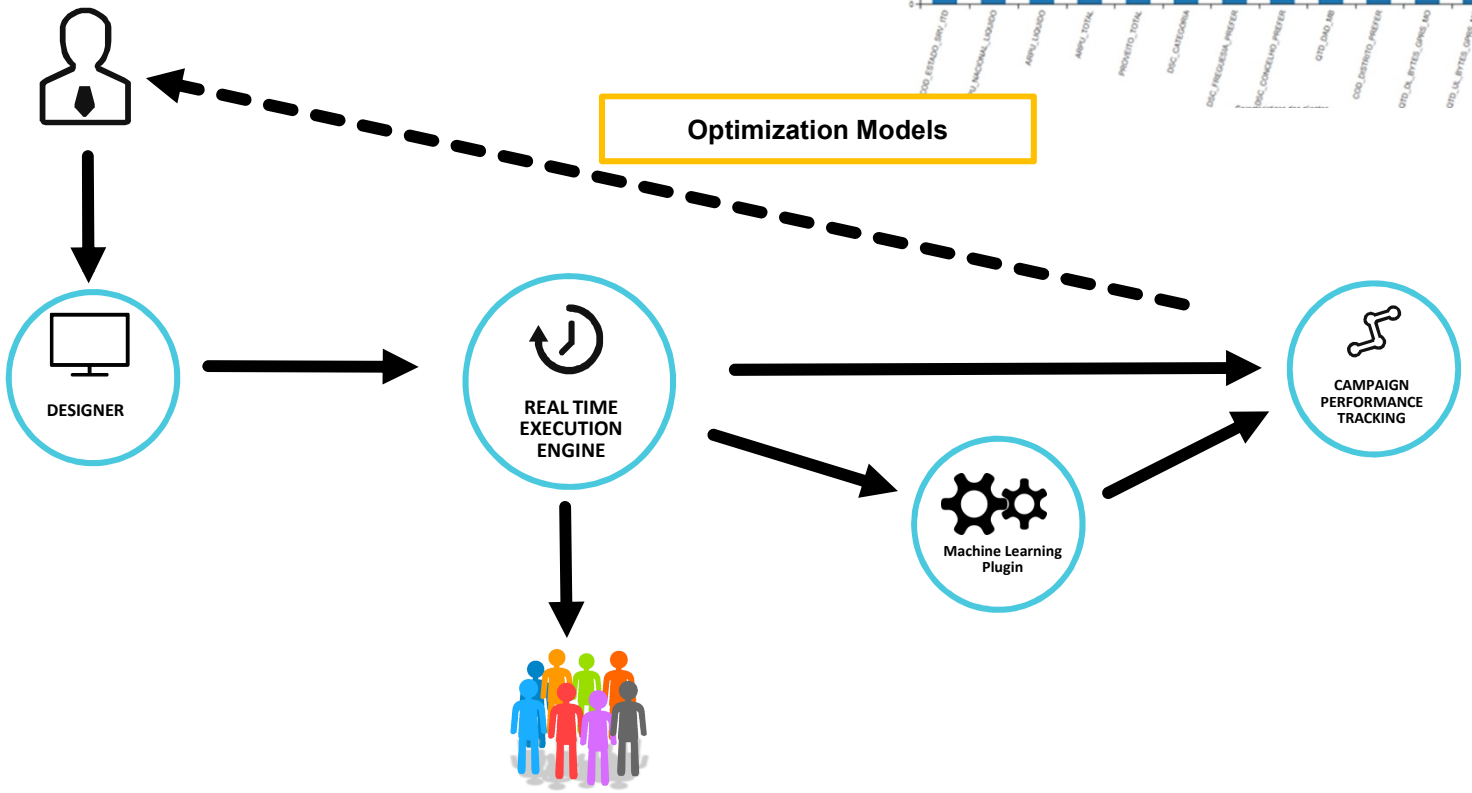
Rule	Campaign Public Reduction
*INTERNET_STATE = DEACTIVE **AND** ARPU <= 1.28*	~ 90%



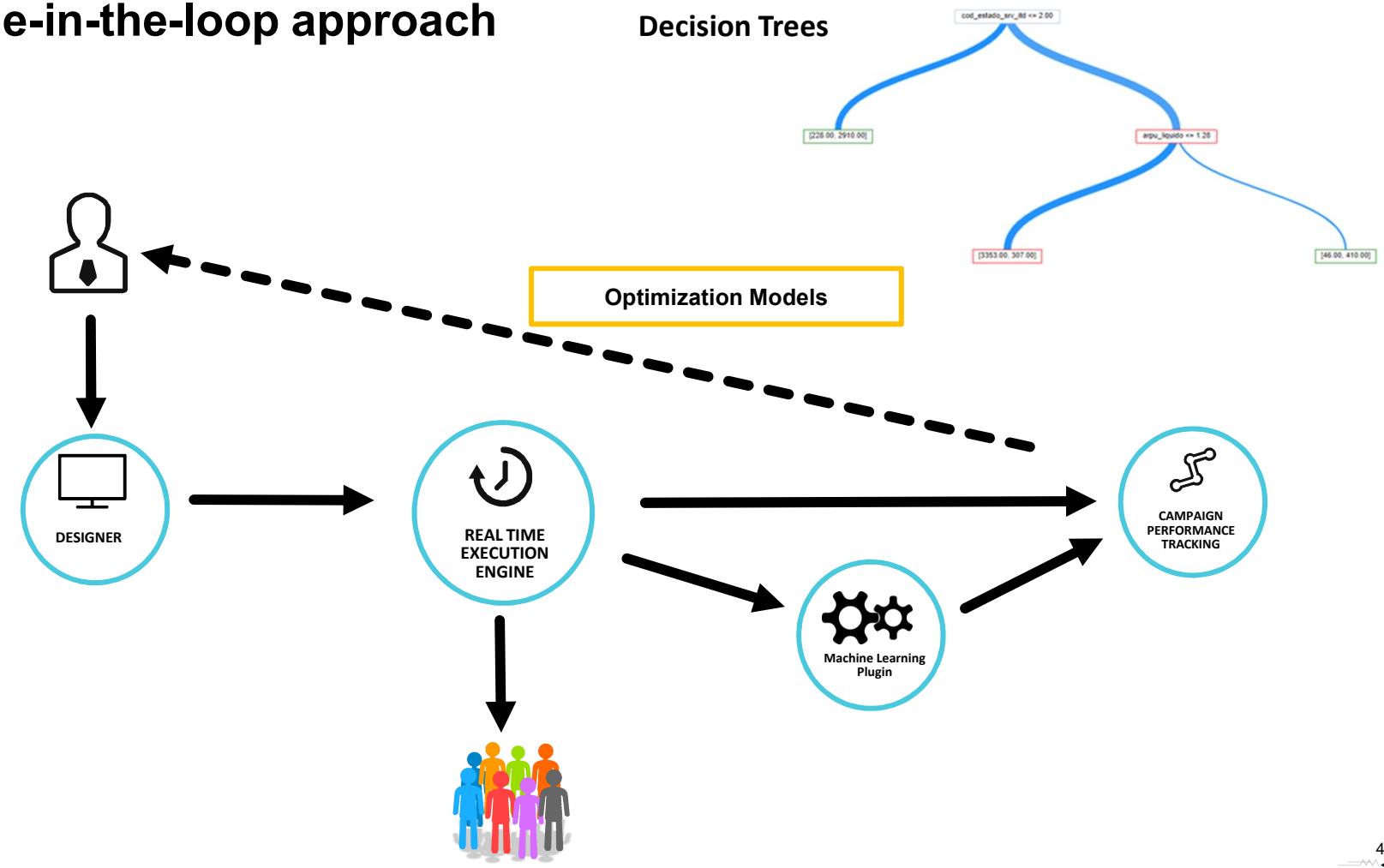
Machine-in-the-loop approach

Most important features to characterize the campaing

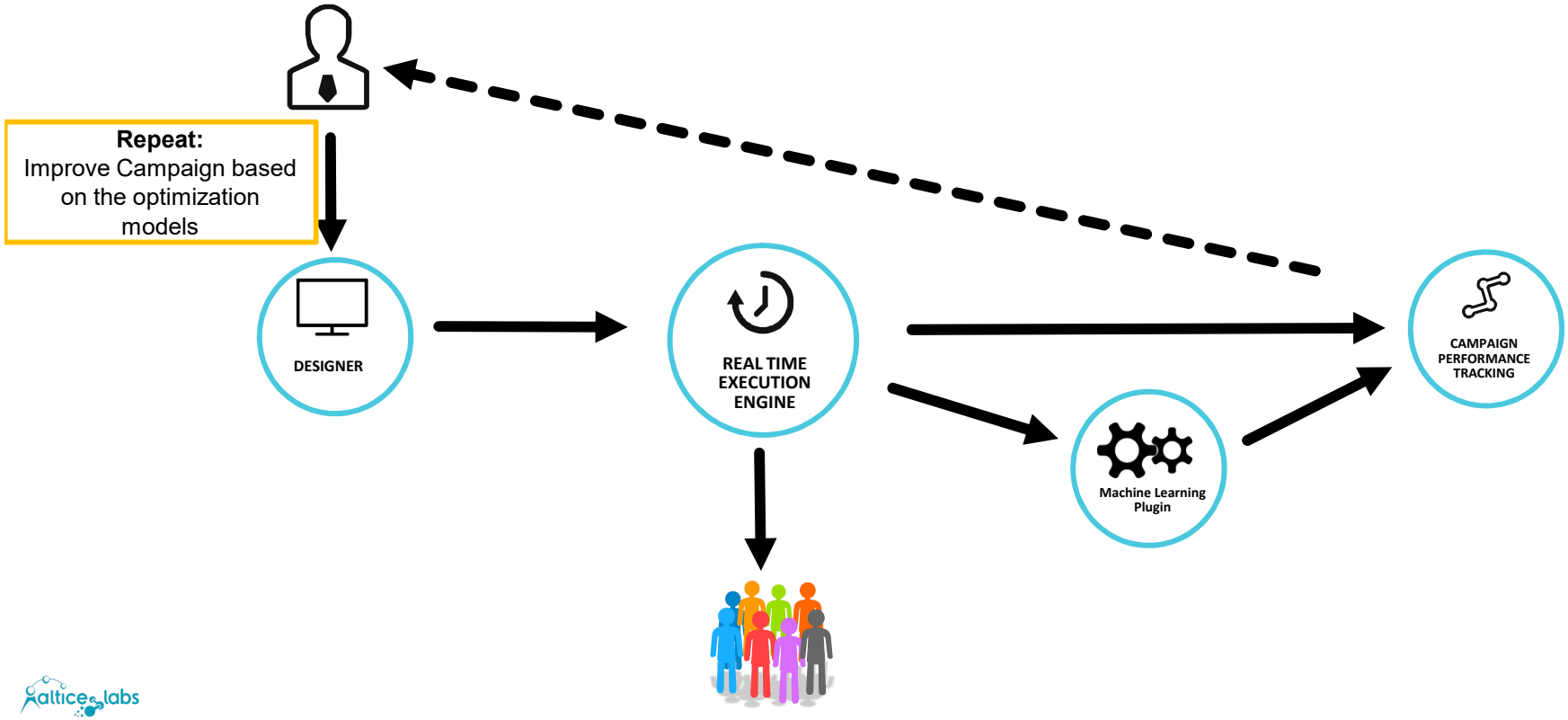




Machine-in-the-loop approach

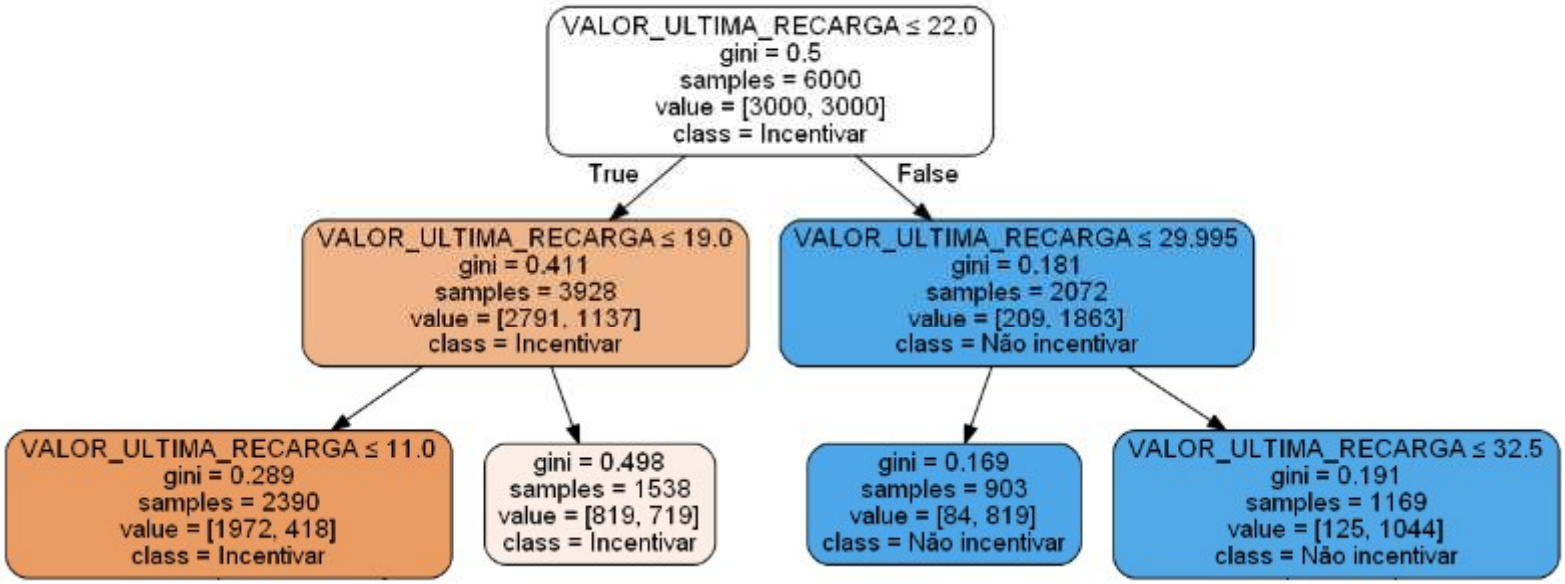


Machine-in-the-loop approach



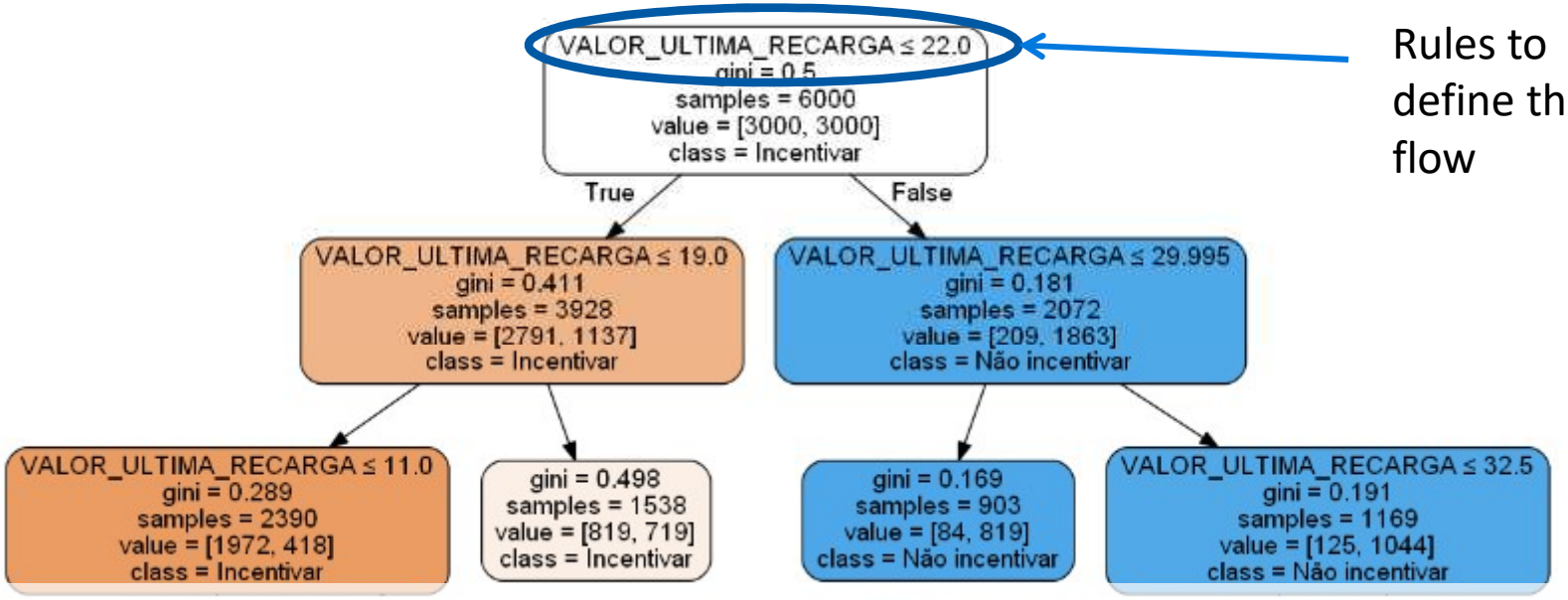
What results to present?

Decision Trees



- **Interpret** the campaign
- Leafs with Incentivize / Don't Incentivize

Decision Trees



Rules to define the flow

- **Interpret** the campaign
- Leafs with Incentivize / Don't Incentivize

New Metrics

Effectiveness for the new group

Uplift for the new group

Loss of clients

Target audience **reduction**

The path until the Trees…

The datasets…

Several **campaings** from distinct clients:

- Different:
  - Characteristics
  - ACM versions
  - Campaign Refinments

Missing values …

Categorical characteristics…

Wrong data…

Several methods tested… knn

	No Campaign	Campaign A	Campaign B
No campaign	159	60	68
Campaign A	75	143	48
Campaign B	65	27	171

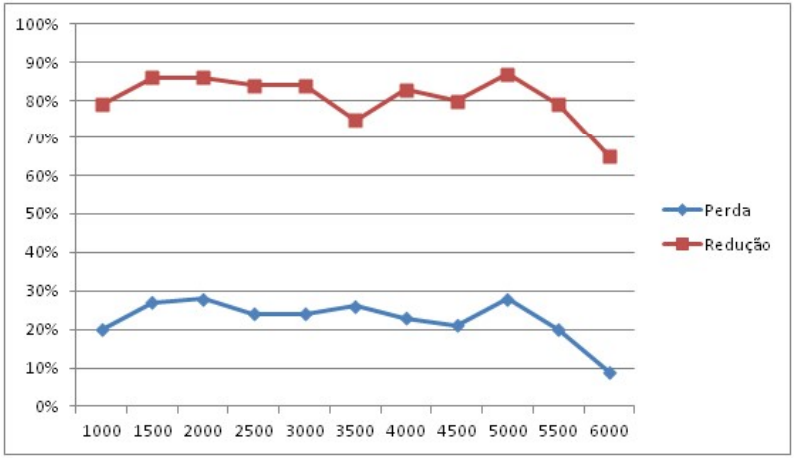
Several methods tested… trees

	No Campaign	Campaign A	Campaign B
No campaign	110	105	72
Campaign A	23	234	9
Campaign B	15	20	228

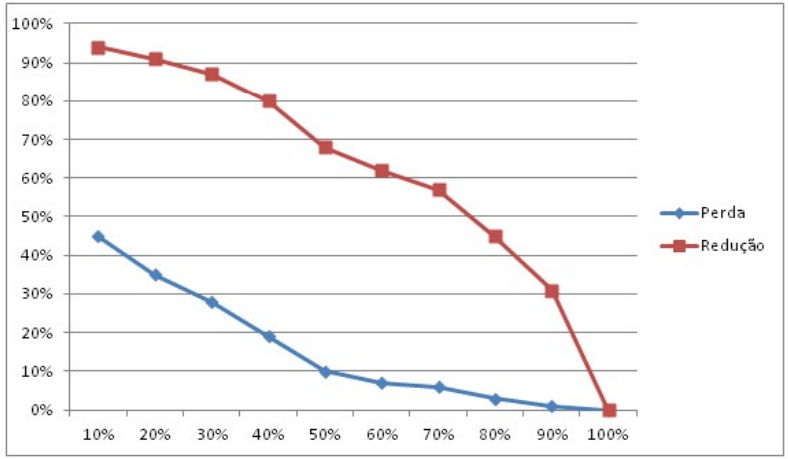
Several methods tested… percepton

	No Campaign	Campaign A	Campaign B
No campaign	159	60	68
Campaign A	75	143	48
Campaign B	65	27	171

Several methods tested… percepton



Several methods tested…



ricardo-a-filipe@alticelabs.com

Thank you!

Rua Eng. José Ferreira Pinto Basto,
3810 - 106 Aveiro Portugal
T: +351 234 403 200
F: +351 234 424 723
www.alticelabs.com