Vodafone Egypt

Fighting Fraud Using HCL Tech/FMS

Presented By:
Mahmoud Farouq
Hani Zikri



Vodafone Egypt
TOGETHER WE CAN

DATA. INTELLIGENCE. A SAFER TOMORROW.

FMS

Executive Overview

GLC → Real Time → Machine Learning

EGP 17.4M
GLC FVA

Achieved: **EGP 17.4M**
Target: **EGP 50M**

EGP 433K
Real-Time FVA

Achieved: **EGP 433K**
Target: **EGP 2M**

EGP 1.38M
Machine Learning FVA

Achieved: **EGP 1.38M**
Target: **EGP 1.5M**

2,119.5 Hours/Year
GLC Time Saving

60%
Automation

Achieved: **60%**
Target: **65%**

67%
Efficiency

Achieved: **67%**
Target: **75%**

Business value, operational visibility, machine learning and real-time prevention at scale.



PEOPLE | TECHNOLOGY | A SAFER TOMORROW

Vodafone Egypt

Fighting Fraud Through Machine Learning



Detection Approaches using Machine Learning

Behavioral Matching / Behavioral Group Matching

Find customers who behave like known fraud.

Behavior Profile → Known Fraud → Similar Customers → Action

Known fraud → Find similar behavior

Anomaly Detection

Find behavior that significantly deviates from normal.

Behavior Profile → Unknown → Analysis → Action

Normal behavior → Detect significant deviation

Behavioral Matching and **Anomaly Detection** address two different questions:

"Who behaves like known fraud?" vs. "Who suddenly behaves differently from normal?"

USE CASE: SIM Box Behavior Matching Profile

1. Selecting a fraud behavior
2. Profile Design
3. PoC & Validation
4. Operational Action
5. Feedback
6. Result



530
MSISDNs Suspended

26
False Positives / Complaints

>95%
Accuracy / Positive Outcome

SIM Box Behavior Matching — Demo & Match Analysis

1 Step 1 — Build the reference profile

First, we add an MSISDN that was suspended on a specific date.

SIM Box Behavior Matching Demo

Identifier: 201098049695

Profile: Simbox Usage Profile | 2026-08-24 | View profile

Behavior Features

Profile date: 24/08/2026 00:00:00 (a month ago) | Add to group | Filter: Custom | Find matches

Feature	Value(s)
OUTGOING CALLS	334
OUTGOING CALLS DURATION	11,373
OUTGOING CALLS SPREAD	97.010
OUTGOING INT CALLS	0
OUTGOING ONNET CALLS	153
OUTGOING OFFNET CALLS	180
INCOMING CALLS	14
INCOMING DURATION	538
TIME COVERAGE	28.470
ACTIVE HOURS	6.833
ACTIVE DAYS PERCENTAGE	85.710
OUTGOING CALLS PER HOUR	48.880
NIGHT ACTIVITY PERCENTAGE	0.000
CELLS	16
IMEIS	1
IMEI CHANGES COUNT	0

2 Step 2 — Find similar behavior

Then, we click the "Find Matches" button to retrieve all MSISDNs that have similar behavior to the inserted profile, along with their matching percentage.

SIM Box Behavior Matching Analysis

Behavior Matches | Show Data

Compare only selected features

Entity	Profile Date	Match %	Case details		
201093209110	2026-10-05	99.10%	No case(s) found	Compare	Add to group
201042019966	2026-10-05	98.80%	No case(s) found	Compare	Add to group
201038944355	2026-10-05	98.79%	No case(s) found	Compare	Add to group
201039970289	2026-10-05	98.73%	No case(s) found	Compare	Add to group
201033409146	2026-10-05	98.72%	No case(s) found	Compare	Add to group
201043849030	2026-10-05	98.70%	No case(s) found	Compare	Add to group
201042087916	2026-10-05	98.68%	No case(s) found	Compare	Add to group
201009244171	2026-10-05	98.66%	No case(s) found	Compare	Add to group

Showing 1 to 200 of 200 entries

Demo takeaway | One known fraudulent profile → identify **up to 200 similar behavioral matches**

SIM Box Behavior Matching — Comparison & Data Export

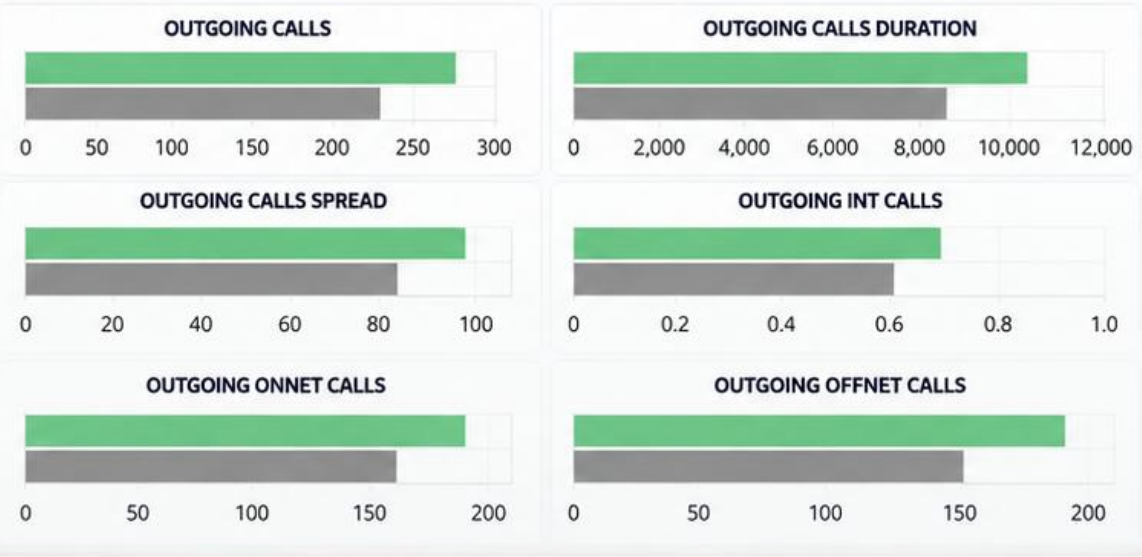
3 Step 3 — Compare matched profiles

We can compare the inserted MSISDN with any matched profile to view the comparison visualization below.

Reference MSISDN	Matched MSISDN	Match %			
20101983317	201016575113	98.46%	No case(s) found	Compare	Add to group

Feature(s)

Profile Feature	20101983317	201016575113
Select Status	Active	Active
Billing Status	Pre	Pre
Pre/postpaidName	PRE PAY	PRE PAY



4 Step 4 — Show and export matched data

We can also click on **"Show Data"** and then export all matched MSISDNs for further analysis.

Show Data

CSV

Entity	Profile Date	Match %	Case details	Action
201039970289	2026-10-05	98.73%	No case(s) found	Compare Add to group
201033409146	2026-10-05	98.72%	No case(s) found	Compare Add to group
201043849030	2026-10-05	98.70%	No case(s) found	Compare Add to group
201042087916	2026-10-05	98.68%	No case(s) found	Compare Add to group
201009244171	2026-10-05	98.66%	No case(s) found	Compare Add to group
201042019965	2026-10-05	98.80%	No case(s) found	Compare Add to group
201038944355	2026-10-05	98.79%	No case(s) found	Compare Add to group
201039970289	2026-10-05	98.73%	No case(s) found	Compare Add to group
201033409146	2026-10-05	98.72%	No case(s) found	Compare Add to group
201043849030	2026-10-05	98.70%	No case(s) found	Compare Add to group

Showing 1 to 200 of 200 entries

SIM Box Behavior Matching Analysis — Group Automation

5 Step 5 — Create a behavioral group

We also have the option to **create a group**, allowing us to add multiple MSISDNs with similar behaviors and **automate the full cycle.**

Configuration

Select behavior profile: Simbox Usage Profile

Select behavior group: SIMBOX USAGE Group

Group indicators

3 - 0	0	27 / 35
Members valid now / future	*Pending capture*	*Features*

SIM Box Behavior Matching Analysis

Members

Search | Bulk action

Entity	Profile date	Date added	Valid	Effective Date	Source	Action
201019994593	23/08/2026 00:00:00 (1 month ago)	29/08/2026 13:07:44 (16 days ago)	Yes	5 days ago	Manual	Remove
201019927558	03/08/2026 00:00:00 (2 months ago)	16/09/2026 10:06:32 (21 days ago)	Yes	21 days ago	Manual	Remove
201019927636	02/09/2026 00:00:00 (1 month ago)	29/08/2026 10:05:11 (7 days ago)	Yes	6 days ago	Manual	Remove
201019928712	10/09/2026 00:00:00 (27 days ago)	01/10/2026 09:12:33 (4 days ago)	Yes	2 days ago	Manual	Remove

Features 27 / 35

Feature	Min	Max
OUTGOING CALLS	100	642
OUTGOING CALLS DURATION	7	3,498
OUTGOING CALLS SPREAD	0.92	16.49
OUTGOING INT CALLS	0	4
OUTGOING ONNET CALLS	2	59
OUTGOING OFFNET CALLS	3	188
INCOMING CALLS	7	1,257
INCOMING DURATION	53	8.66666667
TIME COVERAGE	28.47	93.34
ACTIVE HOURS	6.5	16
ACTIVE DAYS PERCENTAGE	65	1
OUTGOING CALLS PER HOUR	48.88	14.28
NIGHT ACTIVITY PERCENTAGE	0	0
CELLS	16	3
IMEIS	1	1
IMEI CHANGES COUNT	0	1
ONIMEI RATIO	0.19	0.25
OUT INT RATIO	0	0.2
OUT ON RATIO	0	0.1
SIM TO CELL RATIO	3	0
IMEIS TO CELL	0	0.01
IN INT CALL	0	0
IN TO CELL	0	0
IN SIM CARD	0	0

Core message | Move from checking one suspicious MSISDN to **maintaining a reusable fraud behavior group** that can be monitored automatically.

Scaling SIM Box

Reduced Manual Effort & Higher Coverage

Behavior Group Matching turns individual investigations into a continuously monitored, automated process.

Behavior Matching (BM)

Case-by-case matching

1. **Insert One Number**
   Provide a known fraudulent number.
2. **Find Matches**
   Identify customers with similar behavior.
3. **Review & Act**
   Review matches and take action.
4. **Manual Follow-up**
   Check results and follow up on new findings.

Behavior Group Matching (BGM)

Automated group matching

1. **Create Group**
   Define a group using the fraud behavior profile.
2. **Feed Automatically**
   Continuously add new numbers and data.
3. **Match & Act Automatically**
   Identify matches and trigger the defined action flow.
4. **Monitoring Loop**
   Monitor results, feedback and new matches.

Reduced Manual Effort
Automated group feeding and monitoring reduce individual follow-up.

Higher Coverage
Continuously identify similar behavior across a broader population.

Next Profiles

The proven SIM Box approach becomes the blueprint for scaling behavioral analytics across multiple fraud types, each at a different stage of the same journey.

POC VALIDATED

SIM Box

Capabilities
Behavior Matching + Behavior Group Matching

Result
530 actions, 26 complaints,
95% positive outcome rate

FVA EGP 1.38M | **Target** EGP 1.5M



92% achieved

SEPTEMBER ALONE
92% of target achieved in one month

6 months ahead
Potential for ~7x September FVA in total
If the September monthly pace continues

Next
Scale toward full group-level automation and feedback loop.

IN PROGRESS

Vishing

Capabilities
Behavior Matching +
Behavior Group Matching

Status
Applying the same validated behavioral approach toward group-based detection and automated investigation workflows.

Next
Profile validation and operational action.

IN PROGRESS

Web2SMS

Capabilities
Anomaly Detection

Status
Identifying meaningful behavior changes and significant deviations from established subscriber baselines.

Next
Validate anomaly thresholds and move to POC.

Study → Build → Validate → Automate → Scale