# Turkcell Analytics as a Service - Credit Risk Scoring with Telco Data

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**Çağatay Özdemir**
**Big Data Services Senior Product Manager**
**Emrah ANAYURT**
**COO, Organon Analytics**

# OUR AIM IS TO CREATE VALUE FROM OUR RICH DATA SET

Dealing with this type & size of data involves critical thinking in data privacy and data regulations.

Requirements of all regulations are met including -

- Data governance
- Technical architecture security
- Turkish Data Protection regulations ( Very similar to GDPR)
- Customer consent

# TURKCELL'S VISION ON EXTERNAL DATA MONETIZATION

USE ADVANCED AI & MACHINE LEARNING CAPABILITIES TO CREATE NEW INSIGHTS AND PROPOSITIONS

**SHARING ONLY INTELLIGENCE BUT NO PERSONAL DATA**

**Credit Risk Services**

**Fraud Risk Services**

**Customer Digitalization Predictions**

**Location Based Demand Predictions**

**Banks**

**Insurance**

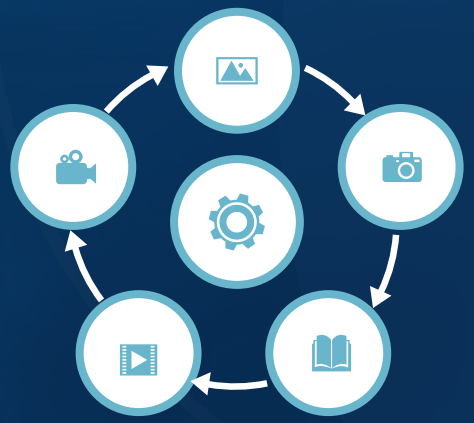
**E-commerce**

## TURKCELL ANALYTICS AS A SERVICE

# The process: What it is & How it Works

## We build predictive scores with **machine learning**

The  score is based on telco data and predicts the likelihood of a future event to the bank



Data sources

(all possible with consent)

Predictive Modelling & Scoring

SCORES

API

BANKS

# Opportunity: Credit Risk Scoring

**BUSINESS PROBLEM**

- 19M citizens have no credit history in Turkey
- Banks have no data for credit risk assessment
- 40% of credit applications are declined because of it and this is a missed opportunity for banks

**SOLUTION**

- Alternative data sets would help banks to assess customers with no banking history.
- Turkcell can build a credit risk score for a bank based on Turkcell's data on that customer
- Customer provides consent in the loan application process for this score to be used

# Organon Analytics: Machine Learning With Telco Data

TURKCELL PARTNER ON AI & MACHINE LEARNING

Organon AI Platform

## ORGANON ANALYTICS

27 MACHINE LEARNING PROJECTS WITH TURKCELL

Next Best Action
Customer Reason To Contact
Call Center Demand Prediction
Churn Prediction
AI Based Cyber Security

## MACHINE LEARNING WITH TELCO DATA

TELCO DATA AND ADVANCED FOR B2B INSIGHT & PREDICTIVE SERVICES

Market Share Reports
Insight Reports
Location Based Analytics
Fraud Risk Services
Credit Risk Services
Customer Digitalization Predictions
Anonymised Location Based Predictions

## TURKCELL ANALYTICS AS A SERVICE

## & INSIGHTS AS A SERVICE

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# Credit Risk Scoring With Telco Data & Advanced ML

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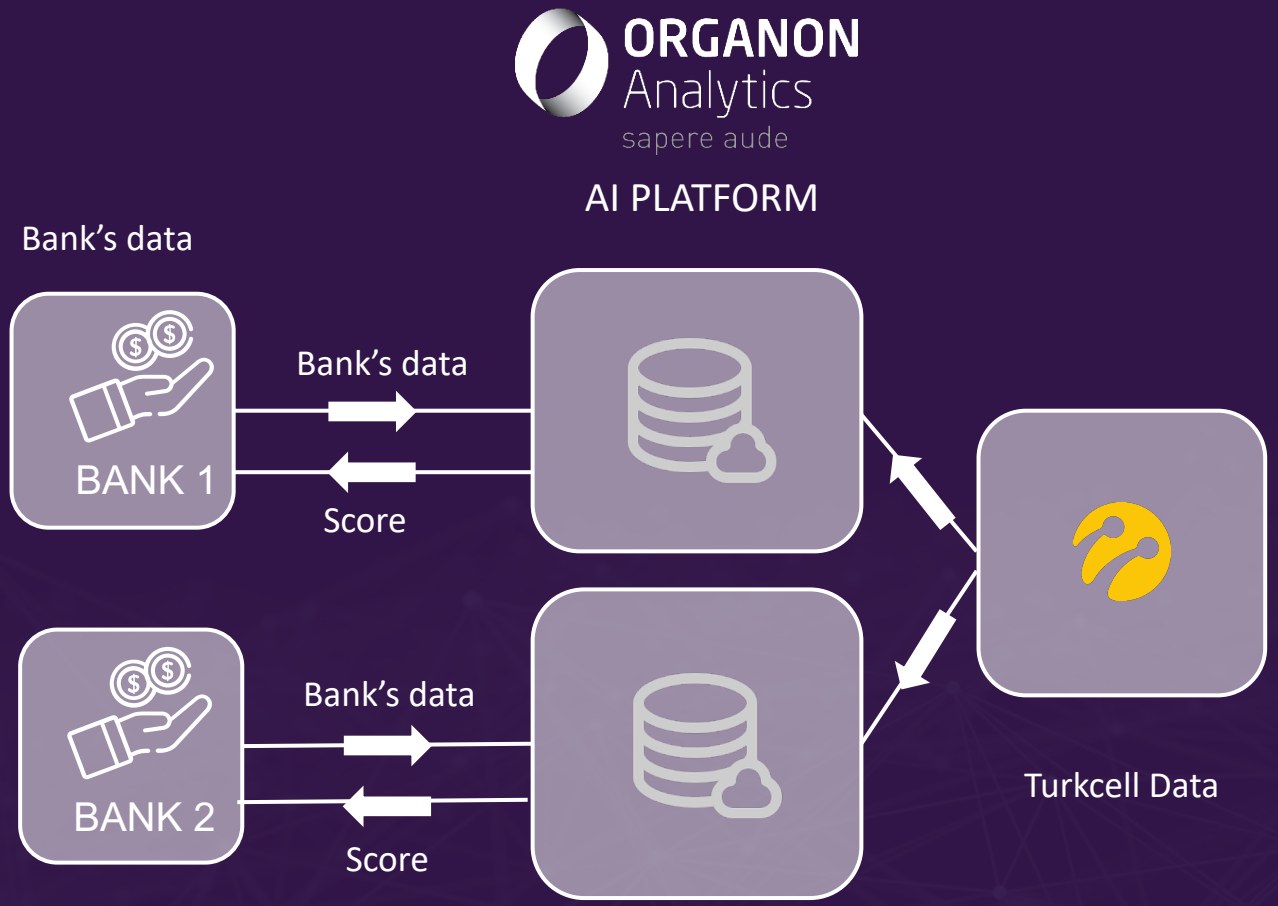


Organon Software &
Technical Architecture provides

- SECURITY
- SCALABILITY
- ACCURACY

# Credit Risk Scoring With Telco Data & Advanced ML

## HOW IT WORKS: PoC

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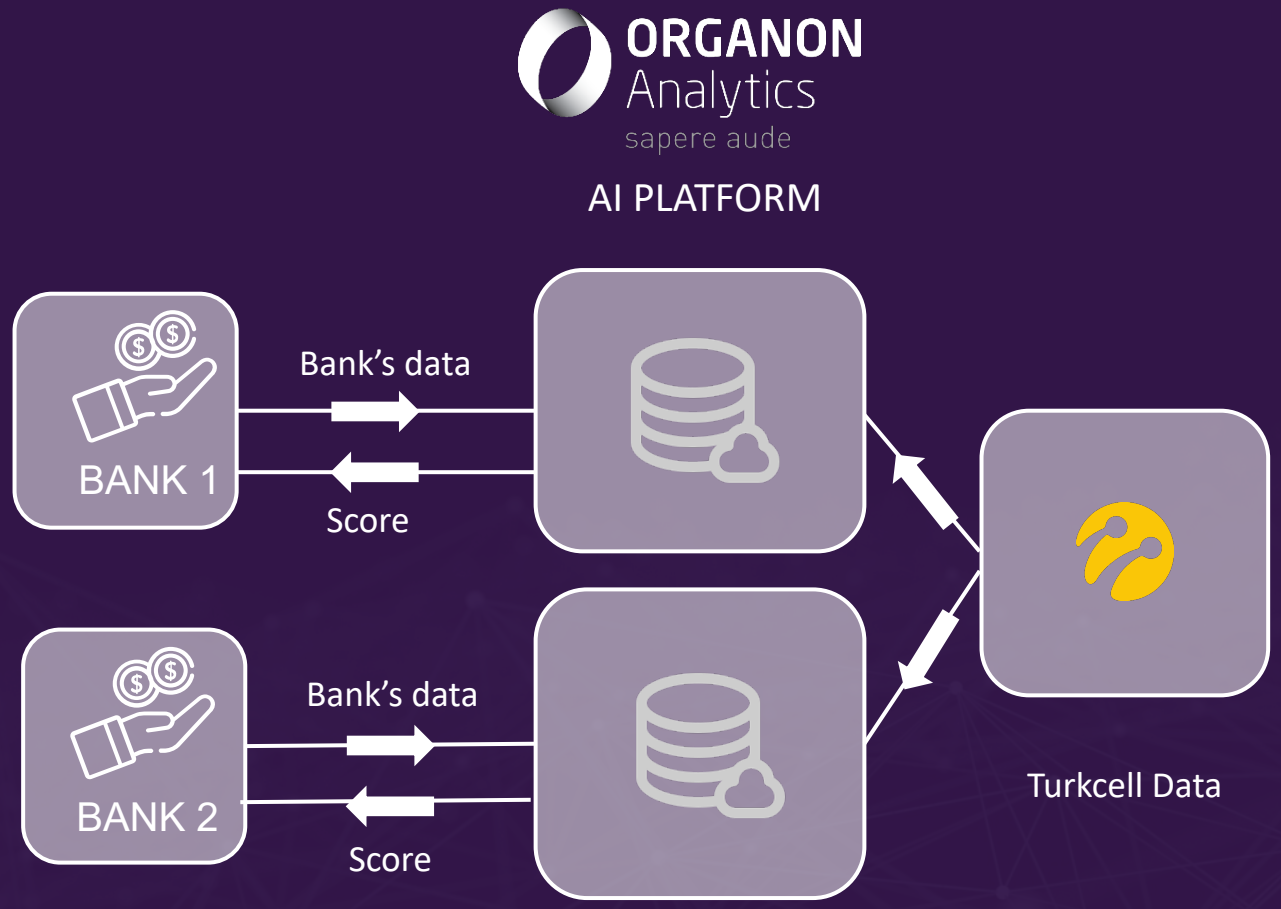
- Banks share hashed msisdn and default /non default indicator for modelling (%80 of data)
- Banks share a testing sample (%20 of data) without default indicators

- Turkcell provides customer data to be used in the modelling
- Organon matches Banks msisdn with Turkcell data (default/non default)
- Model is developed

- The model is tested/ validated with the bank.
- Organon shares scores for the test sample. Bank compares the scores for the test group to see the additional effect of Turkcell's score.

- The model is ready to be used to help Banks decision for any customer loan application

# Federated Learning Architecture for AaaS : Scalable Operating Model




- Bank provides hashed msisdn and default , non default information
- Turkcell provides hashed msisdn and customer data
- Banks data is held on Turkcell cloud platform –only Organon can access
- Organon AI platform sits on Turkcell cloud for modelling
- Turkcell can't see bank data and bank can't see Turkcell data
- Same hash & key used to match customers. Organon Analytics does not know the hash key, so can not identify customers
- No personal data is exchanged between any of the 3 parties

# Federated Learning Architecture for AaaS : Accuracy

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The proposition to the bank is only as good as the quality of the risk score i.e. how predictive it is.

- We use RoC as a metric to validate the models' predictive strength.
- RoC of the models have been confirmed by the banks that it is as predictive as the bank's own model with they built with financial data

**Ex. : Credit risk scoring:**
**Improvement on bank's RoC**

**+%15-25**

*AUC (ROC) : AUC is an abbreviation for area under the curve. It is used in classification analysis in order to determine which of the used models predicts the classes best.

# PoC RESULTS: Model Variable Examples

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- There are 30+ data variables in the credit risk model which the Organon AI platform has identified as highly predictive of good repayment behaviour.These include..

**If customer has auto payment or not**

**Average delinquency in-days for last 3 months**

**Maximum delinquency amount for last 12 months**

**Tenure of the customer**

**Equipment manufactoring group**

# WHAT WE'VE LEARNED

## DO'S

Get your IT & Regulation Teams by your side from the beginning phase of discussion

Get a clear understanding of bank's regulations & requirements of your country

Talk with your potential customers, get their feedback, develop together

## DON'T DO'S

Do not talk with Managers, go with C level!

Do not go prepared, do your own poc, get a reference point for the banks

Do not go running for every bank out there, start with the one, try it out, learn and get it better, you'll only get one bullet!

# THANK YOU

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