

Machine learning for financial crime prevention and detection

AGENDA



- **The Scale of Money Laundering**
- **Comarch's approach**
- **AI for Financial Crime Detection**
- **Preliminary Results**
- **Data, data, data**
- **Summary and Final Remarks**

FACT:

**„United Nations Office on Drug and
Crime: 2-5% of global GDP or \$800
billion - \$ 2 Trillion – estimated
amount of money being laundered
globally each year”**

FACT:

**„Italian market: 35 \$ billions per year
estimated amount of money being
laundered”**

FACT:

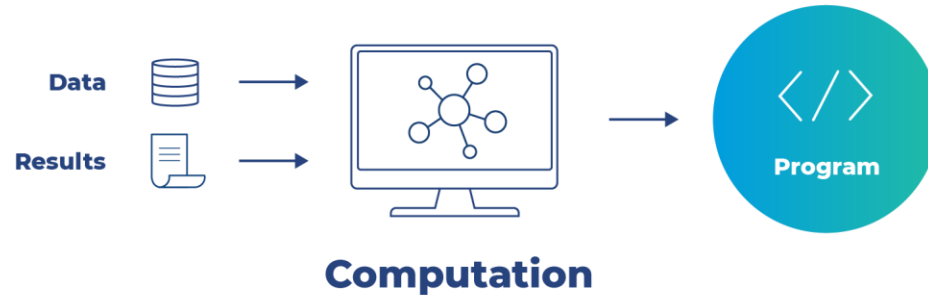
**„Fortune.com: From 2015 cybercrimes
are more profitable then drug dealing”**

AI ALGORITHMS VS EXPLICIT PROGRAMMING

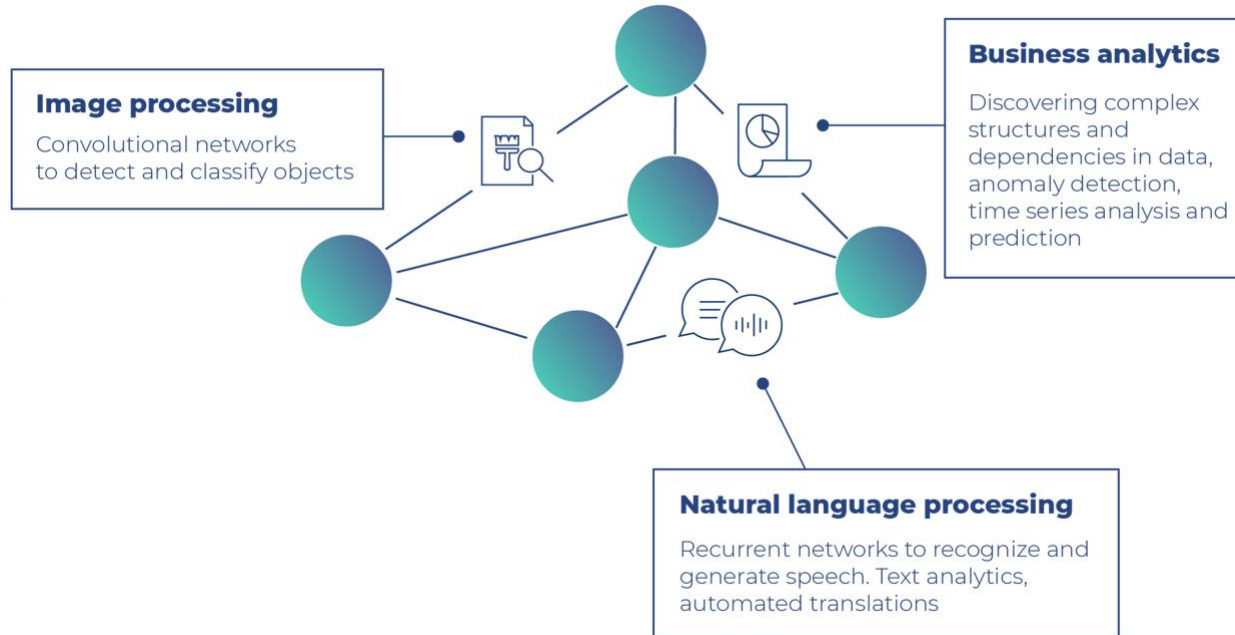
TRADITIONAL PROGRAMMING



MACHINE LEARNING APPROACH



WHY DEEP LEARNING?



DEEP LEARNING – APPLICATIONS



**PREVENTION AND
DETECTION OF
MONEY
LAUNDERING**



**RECOMMENDATION
ENGINES COVERING
PRODUCT OFFERS,
INVESTMENT
PORTFOLIO
STRUCTURES & NEXT
BEST ACTIONS**



**CREDIT RISK
ESTIMATION**



**CASH FLOW
FORECASTING**



**ASSISTANCE IN
INSURANCE
UNDERWRITING**



**POST-ACCIDENT
VEHICLE DAMAGE
EVALUATION**



**LOAN
ORIGINATION:
AUGMENTED
REALITY
INTEGRATED TO
DEEP LEARNING
MODELS**

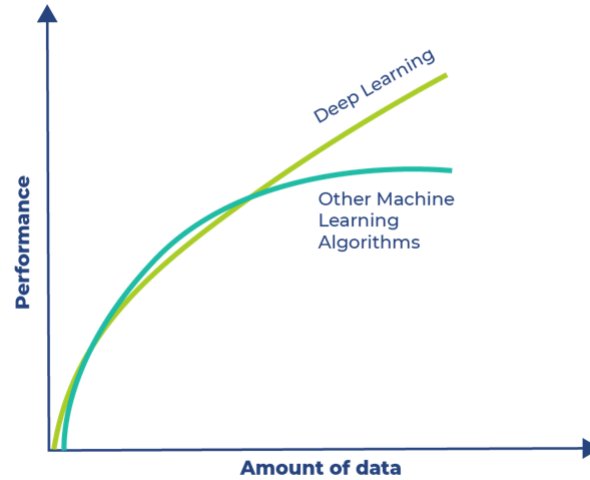


**VOICE ASSISTANTS,
SMART CHATBOTS &
CONVERSATIONAL
MODULES**



**EXTENSIVE
RANGE OF
COMMUNICATION
CHANNELS WITH
THE CLIENT**

WHY DEEP LEARNING?



R&D: HOW WE PROCEED



**FOLLOWING
ACADEMIC
RESEARCH
RESULTS**



**MARKET
ANALYSIS**



**ROADMAPS FOR
OUR PRODUCTS**



**CUTTING-EDGE
TECHNOLOGIES**

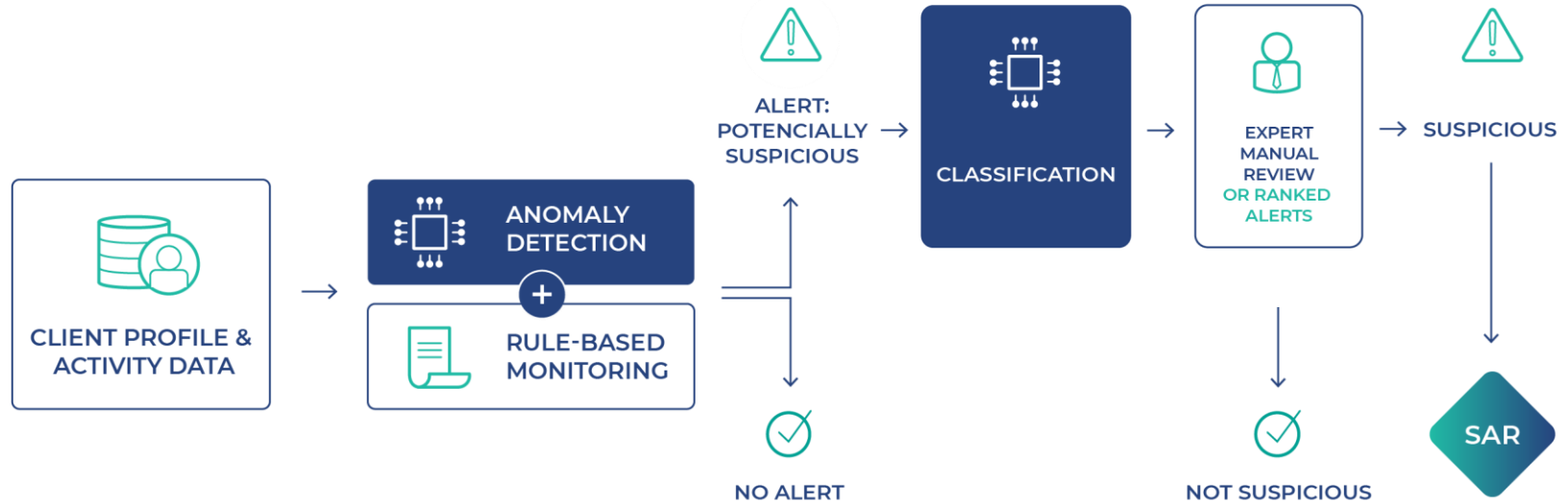


**NEURAL NETWORKS
TOPOLOGIES
OPTIMIZED
TOWARDS A
PARTICULAR DOMAIN**



**HARDWARE
INFRASTRUCTURE
FOR TRAINING
MODELS**

THE SOLUTION



LEARNING TO DETECT ANOMALIES



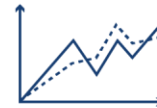
Learning
historical distributions
of activities and events



Improving
the breadth of
detection



Finding
Anomalous
Behavior



False negative rate
reduction

CASES CLASSIFICATION

- The idea of binary or multiclass classification
- Finding thresholds
- Case prioritization
- False positive rate reduction

REAL DATA FROM REAL CASE STUDY

Challenge



LARGE GLOBAL
BANK



HIGH NUMBER
OF FALSE ALARMS



LOW EFFECTIVENESS
OF AML DIVISION

Objective



REDUCING FALSE
POSITIVE RATE



BOOSTING AML
DIVISION PRODUCTIVITY



EVALUATION OF
AUTOMATION
POSSIBILITIES

Approach



SUSPICIOUS
CASES RANKING



DEEP LEARNING



DOUBLE-BLIND
VALIDATION

Results

POSSIBILITY
TO REDUCE
FALSE ALARMS
BY **60%**



COMARCH

SUGGESTED TRAINING DATA SCOPE

Bank, investment & insurance products, trade finance & other corpo products, cheques, account statements & other used services + params + history + documents if available

Contractors, Beneficiaries, Counterparties, Trading partners Due Dilligence Data

Payments, transfers, returns, cash deposits, cash withdrawals, credit card operations & repayments, fees, etc.

Bank segment, risk level, rentability, KYC, (Enhanced) Due Dilligence, Red Flags, Blacklists, Kinship & formal relationships

Alerts with their corresponding transactions

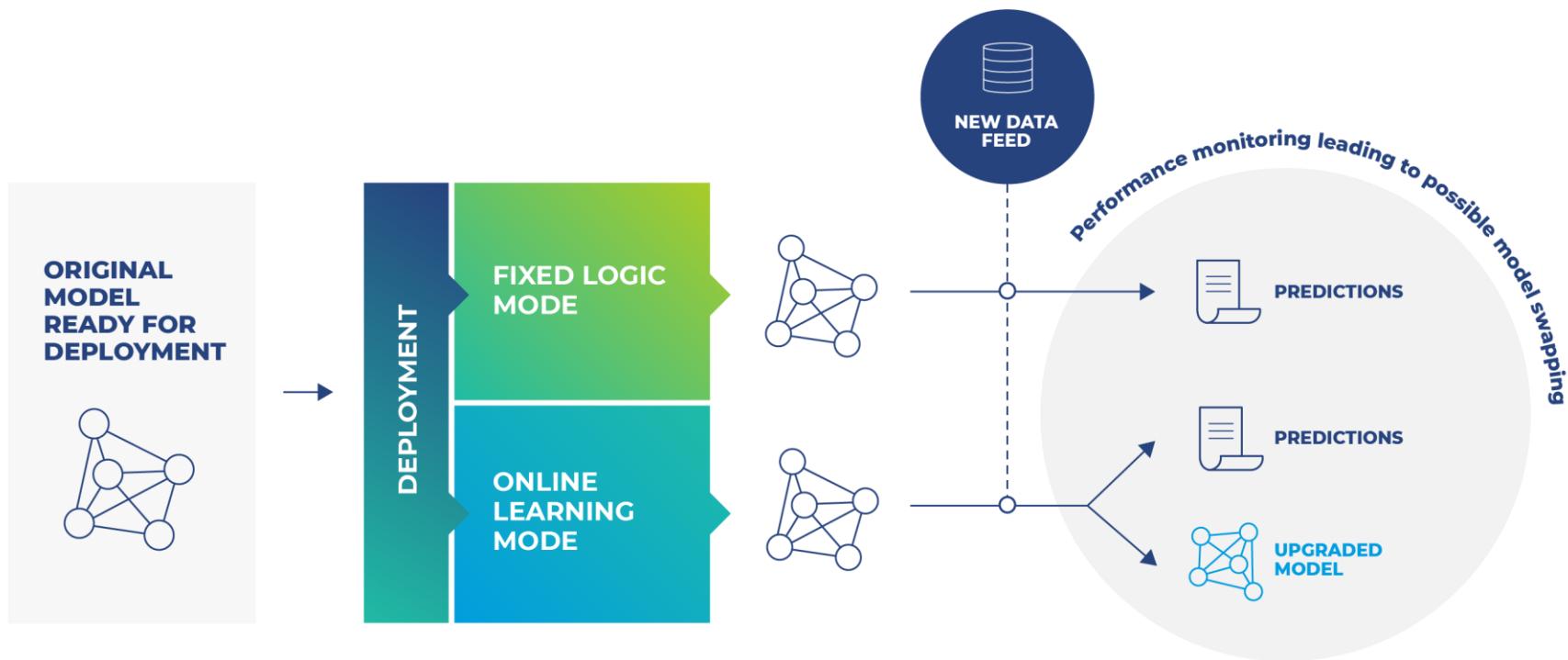
Products, services & transactions in other banks or other financial institutions

Credit scores, notes, contact history, claims, etc.

Jurisdiction classification for AML risk, tax havens, financing of terrorism, macroeconomic indicators, typical financial instruments, commodity & range of services between countries, businesses (turnover, income, share of cash, etc.)



CONTINUOUS LEARNING AFTER DEPLOYMENT



COMARCH - WHO WE ARE & WHAT WE DO

OUR EXPERTISE



Corporate Banking

- Cash Management
- Trade Finance
- FX Dealing
- eInvoicing
- Analytics
- Credit Management



Digital Insurance

- Front-office platform
- Omnichannel
- Agent support
- New business & advisory
- Customer self-service
- Commission & incentive



Anti-Money Laundering

- AI-based engine detecting money laundering
- Data integration
- Performance monitoring
- Tools for AML analysts



Wealth & Asset Management

- Advisor Front Office
- Client Reporting, Performance & Risk
- Portfolio Management
- Client Front-end
- Asset Management



Cyber Security

Transaction Protection (tPro)

- tPro ECC token
- tPro Mobile application
- tPro Authentication Server

Security Identity and Access Management

- Identity & Access Management (IAM)
- Privileged Access Management (PAM)
- Single Sign-on (SSO)
- Multi Factor Authentication
- Role-based Access Control (RBAC)



Loan Origination

- Process Management
- Collateral
- Scoring
- Printouts

OUR MARKETS

banks

insurers

brokerage houses

capital groups

mutual & pension funds

asset management companies

OUR CLIENTS



Provider of innovative software & IT services for financial institutions

Large domain expertise in R&D

Regular presence in renowned IT analyst ratings

Grazie per l'attenzione

Any questions?

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