

## SESSIONE PITCH 3

### IT Architecture, Security & Governance

**BankSealer** – Il sistema di supporto semiautomatizzato alle decisioni per l'analisi delle frodi nell'Online Banking

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Claudio Caletti, *Founder*, Buildo





**BANKSEALER**

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Catch financial frauds. The smart way.

# ABOUT US

- Spin off

- **Politecnico di Milano (strong academic background)**
  - Top engineering technical university in Italy
- **Secure Network s.r.l. (top industry experience)**
  - Leading security firm in Italy
- **buildo s.r.l.s. (software engineering expertise)**
  - Experts in delivering high quality software products



**POLITECNICO**  
MILANO 1863



# FINANCIAL FRAUDS

- Massive growth and adoption of Internet banking services
  - **EU28 Zone:** number of customers doubled from 25% (2007) to 50% (2015) [[Eurostat](#)]
  - **Italy:** number of customers grows from 10% (2007) to 30% (2015) [[Eurostat](#)]
- Increase of **online banking frauds** and **financial malware attacks**
  - In 2015 almost 2 million users attacked [[Kaspersky Security Bulletin 2015](#)]
    - “Dyre Wolf Banking Malware Stole More Than **\$1 Million**” [[IBM Security Intelligence](#)]
    - “Online attackers steal **£20m** from UK bank accounts” [[BBC](#)]
    - “Hackers Stole **\$300 Million from 100 Banks** Using Carbanak Malware” [[Kaspersky](#)]

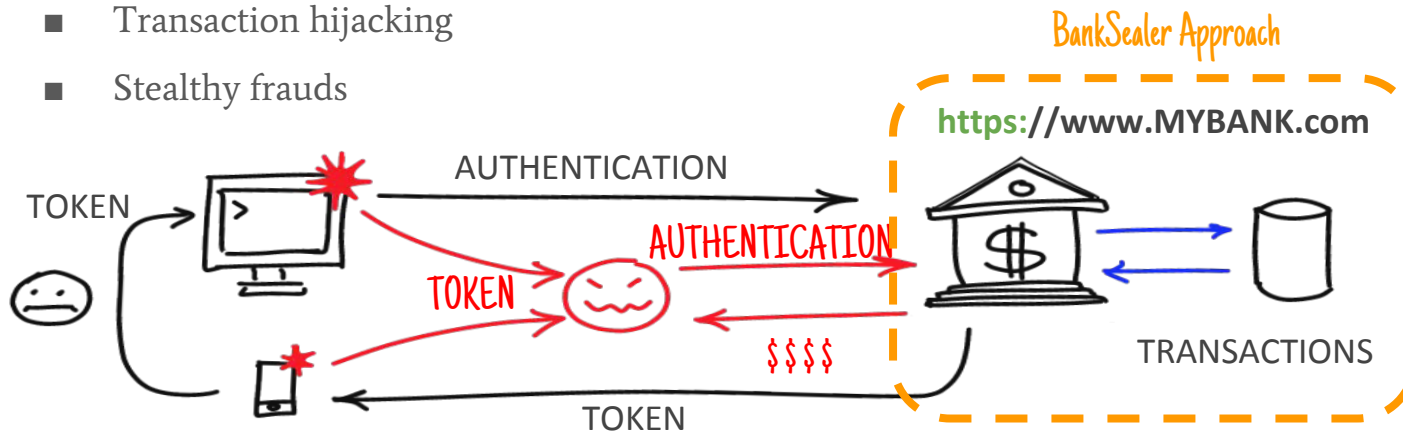
# FINANCIAL FRAUD SCENARIOS

- Traditional threats

- Phishing
- Credentials database compromise

- **Advanced and most prevalent techniques**

- Man in the browser (MITB) and man in the mobile (MITM) trojans
  - Transaction hijacking
  - Stealthy frauds



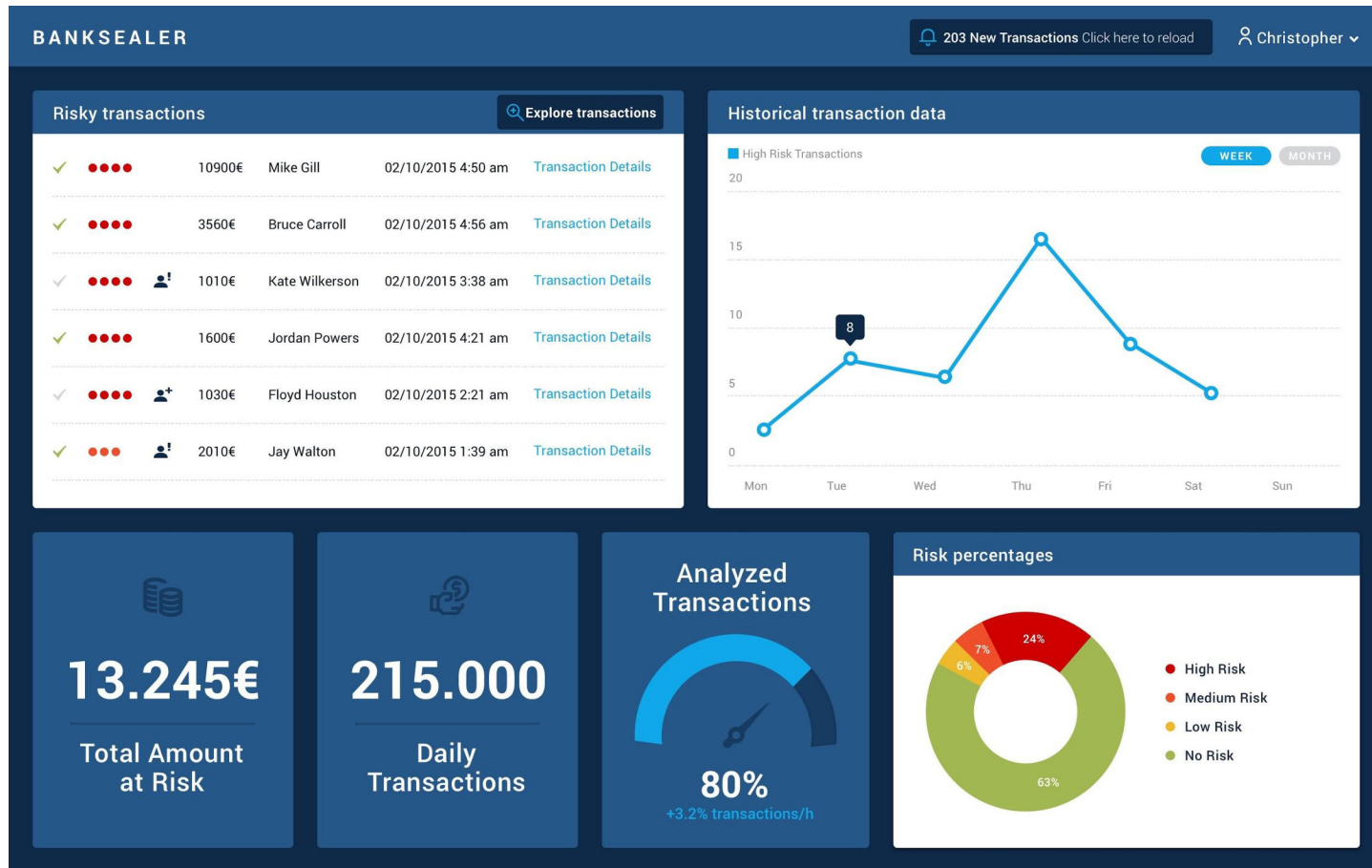
# WHAT ARE OUR COMPETITORS DOING?

- **Research-wise**
  - Few top-quality works (up to ~60% fraud detection capabilities) with several **limitations**:
    - Work in a **black box** fashion: little explanation attached to the identified frauds
    - **Non-adaptive**: cannot cope with an always-changing adversary
    - Tested only on **synthetic data**: would you deploy one of these tools in your infrastructure?
- **Industry-wise (Falcon, IBM, BAE, Actimize, Palantir - Anti Fraud, Simility)**
  - Large, **complex** products with strong, **same-vendor integration** and data lock in
  - **Horizontal**: claim they can catch **any** type of fraud
  - **Pricey!**

# WHAT MAKES BANKSEALER DIFFERENT

- Born as a **research tool**, not a product
  - Focus on **quality** and **scientific** foundation (up to 95% fraud detection capabilities)
  - **Adaptive** by design
  - **White-Box approach**: Easy readable models and results
- Developed in cooperation with one of the **largest national banks**
  - Tested "**in the field**" during development
  - Useful **feedback** that actually **supports the analysts (threat intelligence)**
- Lightweight and **pluggable**
  - Not another IT monster
  - Based on **open formats** and well-defined APIs, can be **easily integrated** into your infrastructure
  - Cross platform: runs on any **operating systems**

# THE DASHBOARD



✓	●●●●	10900€	Mike Gill	02/10/2015 4:50 am	<a href="#">Transaction Details</a>
✓	●●●●	3560€	Bruce Carroll	02/10/2015 4:56 am	<a href="#">Transaction Details</a>
✓	●●●●	1010€	Kate Wilkerson	02/10/2015 3:38 am	<a href="#">Transaction Details</a>
✓	●●●●	1600€	Jordan Powers	02/10/2015 4:21 am	<a href="#">Transaction Details</a>
✓	●●●●	1030€	Floyd Houston	02/10/2015 2:21 am	<a href="#">Transaction Details</a>
✓	●●●●	2010€	Jay Walton	02/10/2015 1:39 am	<a href="#">Transaction Details</a>

### Historical transaction data

■ High Risk Transactions

WEEK

MONTH



13.245€

Total Amount  
at Risk



215.000

Daily  
Transactions

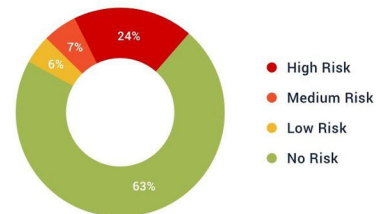
### Analyzed Transactions



80%

+3.2% transactions/h

### Risk percentages





# ANOMALOUS TRANSACTIONS

**BANKSEALER**

203 New Transactions [Click here to reload](#)

Christopher ▾

Risk	Info	Amount	User	IP	IBAN	Operation	Date
●●●●		10900€	Mike Gill	51.11.1.1	RO49 AAAA 1B31 0075 93 84 0000	Bonifico Italia e SEPA	02/10/2015
●●●●	User not very active	560€	Bruce Carroll	59.05.21.0	IT40 3456 5678 4567 34567 0909 987	Bonifico Italia e SEPA	02/10/2015
●●●●	?	1010€	Kate Wilkerson	55.01.09.11	IT17 X060 5502 1000 0000 1234 567	Bonifico Italia e SEPA	02/10/2015
●●●●		1600€	Jordan Powers	151.01.11.02	DE85 3703 0044 0053 2013 00	Bonifico Italia e SEPA	02/10/2015
●●●●	+	1030€	Floyd Houston	163.01.11.08	IT40 5054 2811 1010 10000 0123 456	Giroconto	02/10/2015
●●●	?	2010€	Jay Walton	152.01.11.23	IT40 5054 2811 1010 10000 0123 456	Bonifico Italia e SEPA	02/10/2015
●●●		1400€	Abbie Barnes	62.01.11.20	IT40 5054 2811 1010 10000 0123 456	Bonifico Italia e SEPA	02/10/2015
●●●	?	1300€	Mina Harvey	72.01.11.10	IT40 5054 2811 1010 10000 0123 456	Bonifico Italia e SEPA	02/10/2015
●●●	+	1100€	Charles Beck	72.01.11.10	IT40 5054 2811 1010 10000 0123 456	Giroconto	02/10/2015
●●		90€	Stanley Morales	102.01.11.10	IT17 X060 5502 1000 0000 1234 567	Bonifico Italia e SEPA	02/10/2015
●●		1130€	Antonio Griffith	102.01.11.10	IT40 3456 5678 4567 34567 0909 987	Bonifico Italia e SEPA	02/10/2015
●●		140€	Jordan Powers	101.01.11.10	IT40 3456 5678 4567 34567 0909 987	Bonifico Italia e SEPA	02/10/2015
●●		110€	William Peters	14.01.11.10	IT40 5054 2811 1010 10000 0123 456	Bonifico Italia e SEPA	02/10/2015
●●		34€	Iva Rodgers	103.02.11.10	DE85 3703 0044 0053 2013 00	Bonifico Italia e SEPA	02/10/2015
●●		21€	Hester Taylor	65.01.11.21	IT40 3456 5678 4567 34567 0909 987	Bonifico Italia e SEPA	02/10/2015
●	New user	678€	Jorge Hopkins	58.01.12.1	DE85 3703 0044 0053 2013 00	Bonifico Italia e SEPA	02/10/2015
●	+	43€	Emilie Erickson	14.01.11.10	IT17 X060 5502 1000 0000 1234 567	Bonifico Italia e SEPA	02/10/2015
●		789€	Albert Jenkins	62.01.11.20	IT17 X060 5502 1000 0000 1234 567	Bonifico Italia e SEPA	02/10/2015
●		56€	Jesus Reeves	72.01.11.10	DE85 3703 0044 0053 2013 00	Bonifico Italia e SEPA	02/10/2015
●		98€	Beulah Brady	152.01.11.23	IT17 X060 5502 1000 0000 1234 567	Bonifico Italia e SEPA	02/10/2015
●		2356€	Max Kim	163.01.11.08	IT17 X060 5502 1000 0000 1234 567	Bonifico Italia e SEPA	02/10/2015

**Jordan Powers**

Average monthly transactions 37

Active since Gen. 2014

Average monthly expenditure € 3670

**Transaction #13412342**

**Risk**

Average risk

**Motivation**

**Amount** 60%

**IP** 20%

**IBAN** 10%

**Date** 4%

**SMS** 3%

**ASN** 2%

**IBAN\_CC** 1%

Mark as suspect

Flag as fraud

# EXPLANATION OF ANOMALIES

