

Financial Technology Partners

November 2016

FT Partners Research

Transaction Security

*At the Nexus of E-Commerce,
Payment Market Structure Complexity
and Fraud*



Courtesy of:

FINANCIAL
TECHNOLOGY
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Transaction Security

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I. Executive Summary



Executive Summary

Overview

Transaction security has emerged as one of the fastest growing sub-segments of Financial Technology benefiting from both the rapid growth in e-commerce and the increasing demand for smarter authentication and fraud solutions

- **The explosive growth in e-commerce is creating corresponding growth in card-not-present (CNP) transactions, which in-turn, is creating a huge need for better authentication / fraud / security solutions for merchants and issuers since these transactions are more vulnerable to fraud compared to card-present transactions**
 - The implementation of EMV in the United States will only exacerbate the problem as fraudsters will increasingly set their sights on card-not-present transactions, which are not directly impacted by the added security of EMV; a similar shift in fraud has occurred in other countries that have already implemented EMV
 - The underlying payment processing market structure will only become more complex with the introduction of EMV, the emergence of mobile wallets along with a growing number of alternative payment methods; this creates new challenges for merchants, issuers and transaction security vendors in not only navigating the complexity, but in managing risk across channels and payment types
- **Transaction security providers are attempting to solve the authentication / fraud / security problems from various angles: some cater just to merchants, others cater to issuers, and others serve both; some are point solution providers while others offer a broader set of risk management services beyond transaction security; there are also collaborative solutions that leverage data across participating merchants and issuers in order to combat fraud**
 - A large acceptance gap exists between card-present and card-not-present transactions because issuers have more difficulty in authenticating card-not-present transactions due to the shortcomings of the legacy payment infrastructure
 - While merchants aim to reduce fraud, they also do not want to introduce any friction into the consumer purchase process for fear of losing the sale; moreover, fraud prevention tools must also ensure that they are not overzealous and therefore eliminating what otherwise would be "good" authorizations
 - Industry solutions like 3-D Secure attempt to solve the authentication problem with card-not-present transactions, but have gained a poor reputation around potential friction with consumers; still, 3-D Secure protocols, when leveraged optimally, can bring significant benefits to merchants (i.e. higher approval rates, interchange incentives, liability shift)
- **In recognition of the growing market opportunity for transaction security, private equity funding has increased across the space broadly, which is a leading indicator for future M&A activity**
 - A number of providers are likely to be acquired by larger organizations that are looking to either deepen their authentication / fraud / security or payment expertise or broaden their product and service lines



Executive Summary

Overview (cont.)

In this report, we ...

- **Discuss the key industry trends driving card-not-present transactions and the subsequent increase in demand for smarter transaction security solutions**
 - E-Commerce and mobile channels experiencing strong growth, thus driving card-not-present transactions
 - Payment infrastructure constantly evolving and becoming more complex
 - Difficulty managing the payment ecosystem leads to frictions and inefficiencies
 - Payment-related fraud growing rapidly on a global basis across all channels
 - Significant data breaches becoming more commonplace
 - EMV mandates expected to increase card-not-present fraud
 - Consumers can leverage new online and mobile apps to protect against fraud
 - It's all about authorizations ... good authorizations!
- **Highlight the various transaction security technologies and solutions available for merchants and issuers**
 - Authentication solutions (including 3-D Secure)
 - Fraud screening
 - Digital identities
 - Tokenization and encryption
 - Machine learning engines
 - Collaborative solutions
- **Interview 6 CEOs of leading transaction security companies**
- **Provide a broad landscape of transaction security including sector sub-segments**
- **Profile 42 companies involved in transaction security**
- **Include a comprehensive list of private equity financing and M&A transactions in the space**

II. Selected Industry Trends



Selected Industry Trends

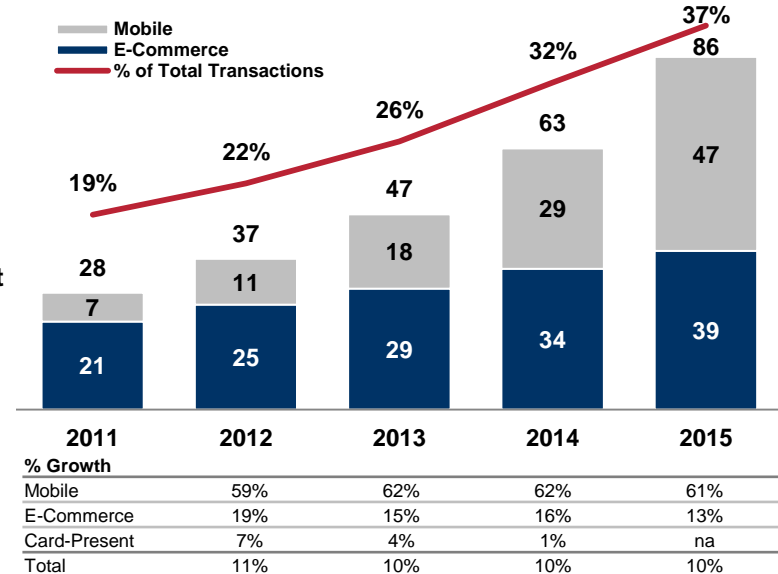
E-Commerce and Mobile Driving Card-Not-Present Transactions

The rapid growth in mobile and e-commerce is driving corresponding growth in card-not-present payment transactions

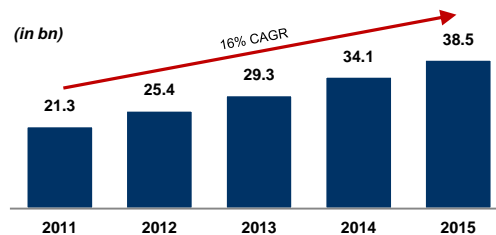
E-Commerce and Mobile Driving Growth

- In aggregate, e-commerce and mobile payments are projected to continue to account for an increasing percentage of total global payment card transaction volume – 37% expected in 2015, up from 19% in 2011
- Mobile payments are expected to expand by 61% in 2015 while e-commerce payments are expected to grow by 13%
- The slowing growth in e-commerce is resulting in part due to increasing convergence between the two channels as e-commerce transactions migrate towards the mobile channel owing to increased use of smartphones and tablets as opposed to personal computers
- The growth in e-commerce and mobile is creating a corresponding growth in card-not-present (CNP) transactions and a deceleration in card-present transactions

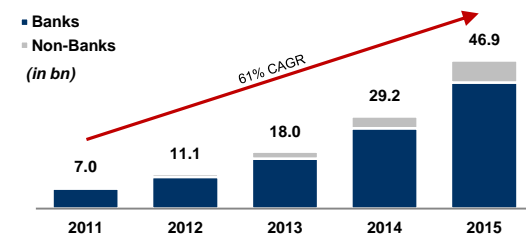
Global Card Transactions (in bn) ⁽¹⁾



E-Commerce Transactions 2011-2015



M-Commerce Transactions 2011-2015



Source:

(1) CapGemini World Payments Report 2014.



Selected Industry Trends

Greater Payment Infrastructure Complexity Creates Headaches for Merchants

An increasingly complex payment ecosystem is creating new challenges for transaction security and risk management

- The relative shift towards CNP transactions is having a profound impact on the decades old underlying payments infrastructure, which was never intended to be used for card-not-present transactions
- New payment brands / methods are constantly being developed and consumers want to seamlessly use them across all channels and devices; this creates both acceptance challenges as well as security and risk management headaches for merchants, who never want to miss a sale, but at the same time don't want to be exposed to fraud





Selected Industry Trends

Difficulty Managing the Payment Ecosystem Leads to Frictions and Inefficiencies

Traditional card-not-present security and fraud measures taken by merchants and issuers can be overly restrictive and create unnecessary friction in the checkout process, thus resulting in a large acceptance gap between card-present and card-not-present acceptance rates

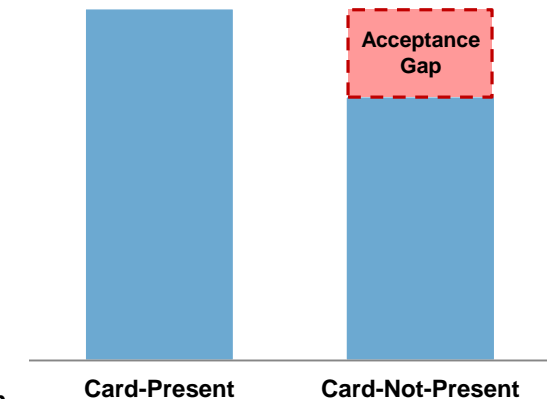
Poor User Experience ...

- Consumers want simple, fast, friction-free checkout, however, they often need to manage multiple payment types and passwords
- Intrusive identification requests can create unnecessary friction
- Poor user experience can lead to purchase abandonment, which hurts sales and negatively impacts brand image

... Creates an Acceptance Gap

- Large disparity in purchase authorization rates between card-present transactions and card-not-present transactions
- Disparity in authorization rates due to an infrastructure that was never designed for CNP transactions
- Banks are more suspicious of card-not-present transactions
 - POS systems have location of buyer (at the exact store location)
 - Consumer could be anywhere in a CNP transaction
 - CNP transactions present a systematic risk to banks
- Data breaches / fraud are more common
 - Credit card information breaches have become more prevalent
 - Stolen card number are widely available if you know where to look
- Merchants are refusing transactions from certain geographic regions
 - Some merchants exclude international orders (even Canada)
 - Tight fraud screening criteria
- Huge opportunity exists to increase CNP authorization rates without adding significant additional frictions or increasing fraud rates, which would result in increased merchant sales

Authorization rates for CNP transactions are markedly lower than card-present transactions





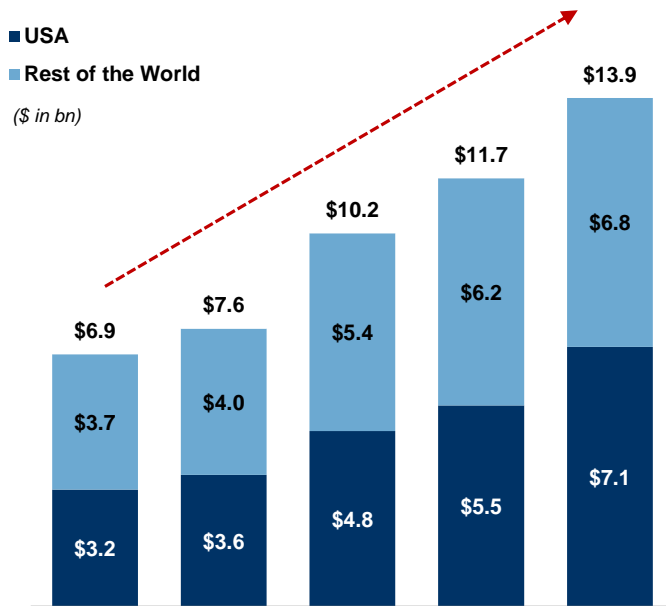
Selected Industry Trends

Payment-related Fraud is Growing Rapidly on a Global Scale

Substantial rise of fraud in the U.S. is shining a bright spotlight on the importance of transaction security

Global Cost of Payment Card Fraud

- U.S. loses more money due to credit card fraud than rest of the world combined; U.S. accounts for a significant proportion of global payment card volume, but even higher share of total fraud
- Cost of US payment card fraud grew by 29% in 2013 (vs. 11% in rest of the world)



% Growth

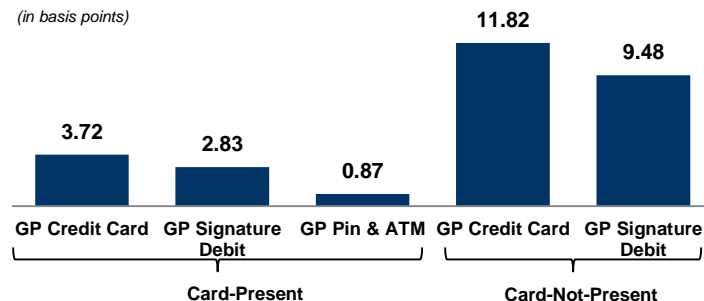
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|---------------|----|-----|-----|-----|-----|
| USA | na | 13% | 33% | 15% | 29% |
| Rest of World | na | 8% | 35% | 15% | 11% |

General Purpose Card Transactions

- CNP 3rd party fraud rates by number of transactions for signature debit and credit cards are estimated to be 3 times as likely to be unauthorized as card-present
- CNP fraud can be characterized by relatively frequent, but lower value unauthorized transactions

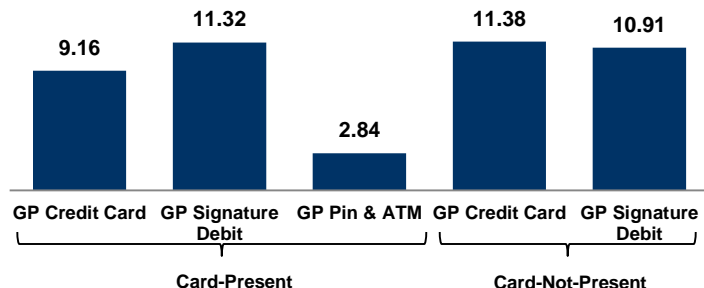
2012 Rate of Unauthorized General Purpose Card Transactions (# of txns)

(in basis points)



2012 Rate of Unauthorized General Purpose Card Transactions (\$ volume)

(in basis points)

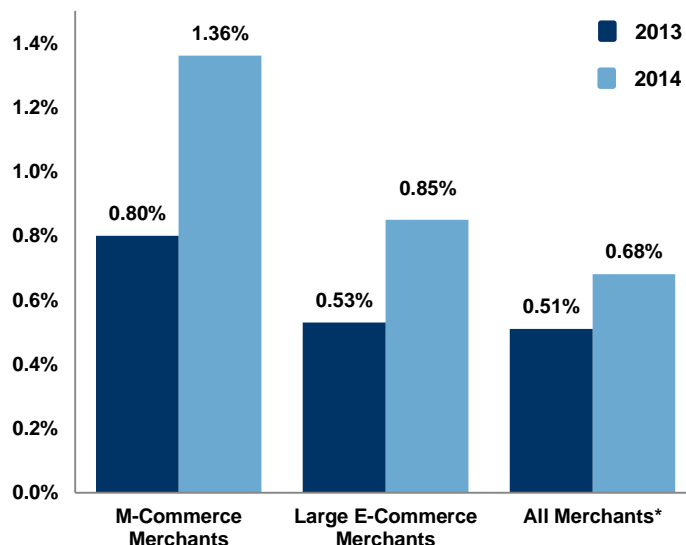




Selected Industry Trends

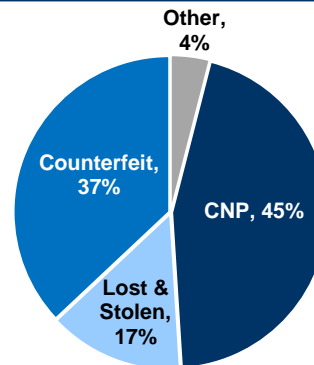
Comparison of Fraud Rates Across Channels

Fraud as a % of Revenue by Segment



- Mobile commerce transactions account for only 14% of total transaction volume, versus 21% of all fraudulent transactions
- Online merchants are paying 10% more per dollar of fraud in 2014 than 2013 – this is driven by the increased volume in mobile payments; mobile channel fraud costs merchants \$3.34 per dollar of fraud loss – dramatically higher than the online channel at \$2.69 per dollar of fraud ⁽¹⁾
- Mobile commerce merchants tend to sell through multiple channels – this complexity creates more opportunity for criminals to compromise security
- Also, mobile transactions are newer and do not offer as many data points for fraud algorithms

U.S. Card Fraud Loss by Type ⁽²⁾



- CNP fraud is the largest category of fraud loss for merchants
- Estimated one-third of card fraud losses are borne by merchants
- Data issued by FICO shows that CNP fraud is growing even faster than counterfeit fraud

CNP Fraud

Unauthorized use of payment card number, the security code printed on the card (if required by the merchant), and the cardholder's address to purchase products in a setting where the customer and merchant are not face-to-face

Counterfeit Fraud

Fake card is created using compromised details obtained from the magnetic stripe or electronic chip in a legitimate card

Lost & Stolen Card

Includes cards that are reported as lost or stolen by the original cardholder

Mail & Non-Receipt Fraud

Involves intercepting legitimate cards while they are in transit from the issuer to the cardholder








First-Party Fraud

Fraudster purports to be legitimate cardholder or a legitimate cardholder intentionally decides not to pay off a credit card balance, leaving the card issuer with the debt



Selected Industry Trends

Globally Recognized Brands have been Victims of Data Breaches

| Company | Date | Key Points |
|---|-----------------------|---|
|  | Spring 2014 / 2015 | <ul style="list-style-type: none"> In May 2015, the Sally Beauty confirmed a second breach after a malware had been installed in some POS systems The Texas-based company was breached the prior year |
|  | Winter 2015 | <ul style="list-style-type: none"> Breach mainly concentrated in Georgia, Maryland, Pennsylvania, Texas and Virginia Chick-fil-A operates 1,850 locations in 41 states and Washington D.C. |
| J.P.Morgan | Fall 2014 | <ul style="list-style-type: none"> Breach affected 76 million households and 7 million small businesses Hackers gained access to more than 90 bank servers |
|  | Fall 2014 | <ul style="list-style-type: none"> 56 million credit and debit cards were affected by the data breach plus and additional 53 million stolen email addresses |
|  | Winter 2014 | <ul style="list-style-type: none"> Approximately 350,000 customers were affected and over 9,000 customer cards have been use fraudulently since the attack |
|  | Winter 2014 | <ul style="list-style-type: none"> Approximately 2.6 million cards used at their stores were exposed The breach occurred over an eight-month period |
|  | Winter 2014 | <ul style="list-style-type: none"> The data breach affected 33 locations – the breach involved the theft of customer data from credit and debit cards The breach occurred over an eight-month period |
|  | Winter 2013 | <ul style="list-style-type: none"> 40 million debit and credit card numbers had been stolen Target spent more than \$60 mm responding to the breach |

Source: Forbes, Bloomberg, NY Times.

Data breaches at large chains are causing significant financial losses for banks and merchants

Payment fraud is putting entire global brands at risk



Selected Industry Trends

Overview of EMV

Implementation of EMV standards in the U.S. later this year is designed to combat counterfeit card fraud



Signature Vs. PIN

While Europe has implemented EMV using the "Chip & PIN" model for each transaction, issuers and the card networks in the US are divided between "Chip & PIN" and "Chip & Signature"

On the other hand, merchants tend to prefer the "Chip & PIN" model due to perceived security benefits

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Overview

- **EMV** – which stands for **E**uropay, **M**asterCard and **V**isa – is a global standard for cards equipped with computer chips and the technology used to authenticate chip-card transactions
 - EMV chip cards send data that changes with each transaction, making it more secure than static data on magnetic cards
- **Major transition to EMV expected due to card network mandates shifting fraud liability from card issuers to merchant acquirers / merchants on October 1, 2015 but many of them are not ready**
 - According to analysts, only 47% of merchants in the US will be ready to accept EMV by the end of 2015
- **Durbin prohibits card networks from restricting the number of card networks a debit card transaction may be processed to no fewer than two unaffiliated networks; solutions have only been developed very recently to address this issue making the EMV migration more difficult**
- **Banks earn less on debit card transactions due to Durbin than they did before**
 - Card fraud in the U.S. (est. \$6.8 bn per annum) now has a relatively bigger impact on banks' margins, motivating them to find new ways to lower fraud costs, including support of EMV
- **Certain estimates by analysts project 70% of US credit cards will be issued as EMV cards by the end of 2015**
- **EMV card adoption outside the U.S. and China is nearly 45%, reaching levels of 80% in Western Europe**

Timeline of Card Network Mandated Deadlines



October 2012

- Eliminated PCI compliance validation for any year in which at least 75% of a merchant's transactions originate from EMV terminals that support both contact and contactless acceptance

April 2013

- Required that acquirers, service providers and sub-processors have the capability to process any EMV point of sale transaction

October 2013

- 50% relief of merchants' liability for card reissuance and fraud costs due to data breaches if at least 75% of transactions occur on hybrid EMV terminals

October 2015

- Transfers counterfeit fraud liability from the issuer to the merchant acquirer for transactions in which a contact chip card is used but merchants have not adopted contact chip terminals
- The party (issuer or merchant) who does not support EMV assumes liability for counterfeit card transactions
- 100% relief of merchants' liability for card reissuance and fraud costs due to data breaches if at least 95% of transactions occur on hybrid EMV terminals

October 2017

- Transactions made at automated fuel dispensers (AFDs) will be excluded from the first liability shift until October 2017 due to the challenges in upgrading fuel terminals to accept EMV cards



Selected Industry Trends

EMV Mandates Expected to Increase CNP Fraud

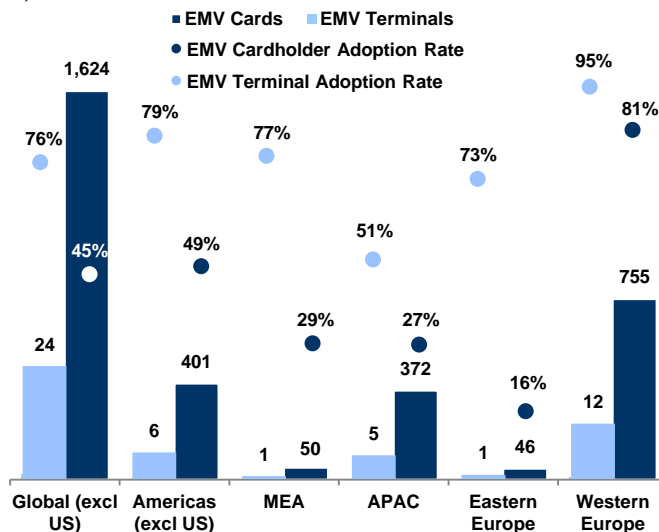
More than 575 million EMV-enabled cards in the U.S. are expected to be in circulation by the end of 2015

While EMV is designed to combat fraud, ironically, it will likely result in an increase in CNP fraud

- In the U.S., EMV's anticipated positive impact on card-present fraud is expected to increase fraud in card-not-present channels as fraudsters shift their focus to the weakest security link in the payments chain
- Available examples from other markets indicate that CNP fraud increased as a percentage of total fraud, post EMV implementation
- In the UK post EMV (during 2007-2012), total fraud was reduced by 27%, but CNP fraud increased as a percentage of total fraud

EMV Adoption by Region ⁽¹⁾

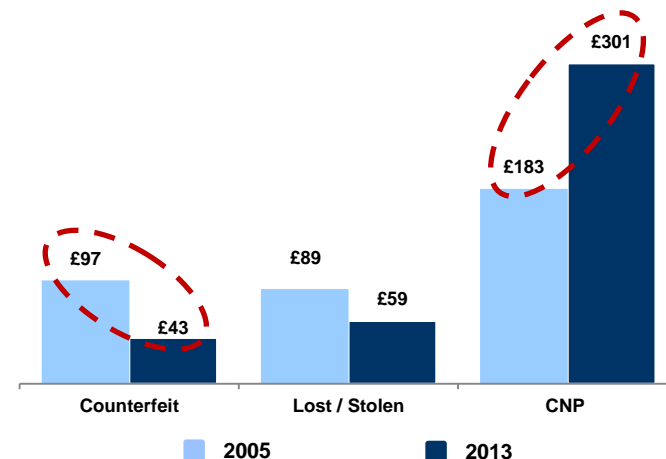
(in mm)



CNP Fraud Losses in UK Post EMV ⁽²⁾

Since the implementation of EMV in the UK, the amount of counterfeit fraud loss has plummeted, while CNP fraud has increased

(in GBP mm)





Selected Industry Trends

EMV Mandates Expected to Increase CNP Fraud (cont.)

EMV will help with card-present fraud, but will likely result in greater CNP fraud

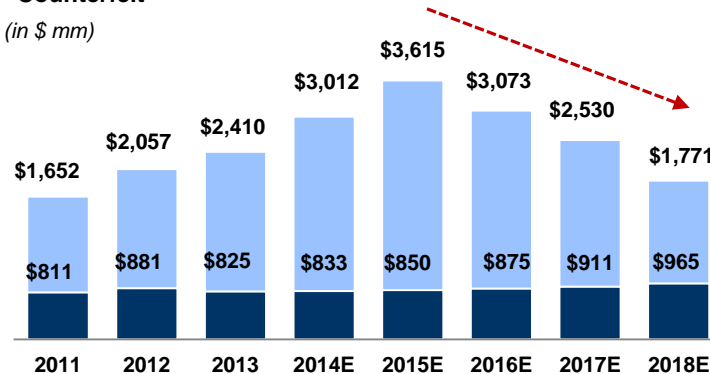
- Card-present fraud losses, which have been growing at a CAGR of 16% from 2011-2014, are expected to decline due to the implementation of EMV in the U.S. in 2015, however, fraud is expected to shift from card-present to card-not-present
- The growth in CNP transactions combined with the expectation of heightened fraud is creating a huge need for better authentication / fraud / security solutions for merchants and issuers
- Consumers want to seamlessly use all payment methods across all channels / devices, and merchants want to accept all payment methods – stopping fraud is obviously a good thing for merchants and issuers, but it cannot come at the expense of adding too much friction to the sales process or merchants and issuers could face lost sales

US Card-Present Fraud Losses (2011 - 2018E) ⁽¹⁾

The expected reduction in CP fraud is due to the implementation of EMV in October 2015 ...

- Lost / Stolen
- Counterfeit

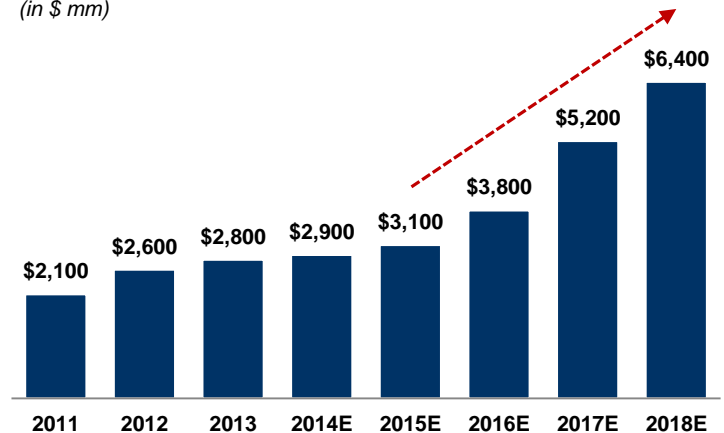
(in \$ mm)



US CNP Credit Card Fraud Losses (2011 - 2018E) ⁽¹⁾

... but the EMV implementation in the US is expected to lead to an increase in CNP fraud

(in \$ mm)





Selected Industry Trends

Who is Liable for Card-Present Fraud?

Depending on the situation, merchants or issuers can be held liable for card fraud; while consumers are typically not responsible for fraud, it can leave victims feeling vulnerable and insecure, thus creating a lack of trust in transaction security infrastructure

Consumers



Merchants



Issuers



Pre-EMV

- Under the Electronic Fund Transfer Act: if loss is reported within 60 days of occurrence, the consumer's liability is limited under federal law
- As a practical matter, consumers are rarely if ever charged
- Merchants are typically not held liable for card fraud when the card is present and a signature is collected
- However, businesses that suffer security breaches can be held liable for significant fraud expenses under certain conditions (e.g. poor security, negligence, etc.)
- For card-not-present transactions, the implementation of 3D-Secure (discussed later) shifts any fraud liability away from merchants to issuers
- Due to operating regulations, the burden of fraud reimbursement typically resides with issuers
- Issuers may look to go after counterparties to recoup losses, but issuers are typically hit the hardest

Post-EMV

- Consumer's limited liability protection will remain in effect after the October 1, 2015 EMV deadline
 - Possible exception if the cardholder acts with negligence, but the burden of proof lies with merchants and issuers ⁽¹⁾
- As a practical matter, consumers probably will not be charged
- Liability for counterfeit card-present transactions will shift to the merchant if they are not EMV-compliant with proper terminals
 - Retailers that upgrade their hardware by the October 2015 deadline will eliminate the potential liability
- EMV does not directly impact rules around card-not-present transactions

The party that does not offer EMV-compliant devices (merchant) or cards (issuer) will face liability for counterfeit card-present transactions

- EMV does not impact rules around card-not-present transactions



Selected Industry Trends

Consumer Protection

Banks catch only 1/3 of all card fraud, thus leaving an enormous opportunity for consumer fraud protection vendors to market their service

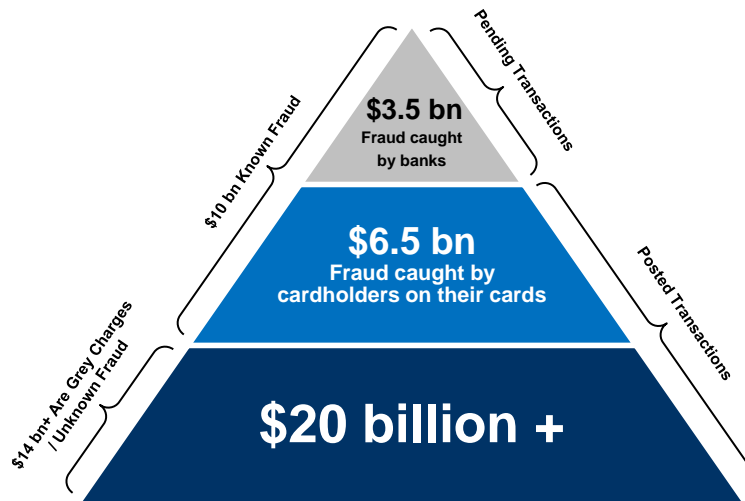
“Grey charges” are deceptive or unknown card charges resulting from misleading sales and billing practices costing American cardholders \$14.3 billion annually

Monitoring and Alerts

- Consumers can protect themselves from fraudulent charges using mobile apps and online fraud protection sites
- Mobile consumer protection apps such as BillGuard consolidates a user's credit and debit cards in one place, providing quick access to their balances, spending, transactions, recurring charges, fees, bill due dates and more
- Apps frequently use visual spending analytics to help users see and control exactly where their money is going at all times
- Self-learning algorithms can be used to solicit and incorporate user inputs to validate fraudulent activity, triggering alerts to all affected cardholders and merchants

Selected Vendors

The following vendors offer online and mobile application access to consumer protection accounts:



III. Overview of Transaction Security Technology Solutions



Overview of Transaction Security Technology Solutions

Merchants / Issuers Adopting Numerous Technologies to Combat Card Fraud

| Technologies | Key Points | Selected Vendors |
|---|---|------------------|
| 1 Consumer Authentication | <ul style="list-style-type: none"> 3-D Secure was developed by the card networks to address challenges around consumer authentication in a card-not-present environment 3-D Secure is a set of protocols for connecting the consumer / cardholder directly to the issuing bank so information can be shared to improve authentication in online transactions | |
| 2 Fraud Screening | <ul style="list-style-type: none"> Merchants / issuers use fraud screening technologies to detect and manage unusual activity based on recognized patterns in an account or transaction activity Reduces chargebacks by preventing fraudulent transactions from occurring in the first place | |
| 3 Digital Identity | <ul style="list-style-type: none"> Dynamic individual identity profiles created with analysis of real-time data points and transactions Often integrated with KYC, Anti-Fraud, AML and screening applications | |
| 4 Tokenization | <ul style="list-style-type: none"> Replaces a cardholder's primary account number with a completely random number called a token, which is stored on a cardholders' device If transaction data is exposed during a breach, no record of the original primary account number is compromised, eliminating the risk of counterfeiting or CNP fraud Token originating from any source other than the assigned cardholder device will not work | |
| 5 Encryption | <ul style="list-style-type: none"> Transforms plain text into a coded form called cipher text; cipher text can only be transformed back to plain text with the proper encryption key Encryption protects unique card and transaction credentials in transit from the POS to authorization to reduce risk of data exposure during a breach Without the unique set of keys to unlock a particular cipher text, the data is unreadable and unusable | |
| 6 Machine Learning / Big Data Analytics | <ul style="list-style-type: none"> Software that captures data from point-of-sale terminals / other retail portals and continually analyzes consumer habits to identify fraudulent activity Geographic location, trends and context are also processed into data-points to model consumer patterns | |
| 7 Biometric Authentication / Mobile ID Solutions | <ul style="list-style-type: none"> Biometric authentication technology implemented to cross-reference user data in real-time to approve transactions and reject unauthorized users Mobile-centric authentication solutions that leverage location and network data | |
| 8 Collaborative Solutions | <ul style="list-style-type: none"> Services that allow card issuing banks and online merchants to work cooperatively to combat fraudulent activity Real-time identification and verification processing through a platform shares by multiple parties | |



Overview of Transaction Security Technology Solutions 1

Consumer
Authentication

Consumer Authentication Through 3-D Secure

3-D Secure represents a set of protocols for connecting the consumer / cardholder directly to the issuing bank so information can be shared to improve authentication in online transactions

- Has been in use for more than 10 years and offered by most card brands; each brand has its own name for 3-D Secure (i.e. Verified by Visa, MasterCard SecureCode, American Express SafeKey)
- 3-D Secure is based on a 3 domain model (hence the 3-D in the name)



- The merchant and acquiring bank initiating the payment and to which funds are paid
- A Merchant Integrator (MI) is used to connect to the Interoperability Domain and share information

- The infrastructure and components provided by the card scheme (debit, credit or other type of payment card) to support the 3-D Secure protocols
- Connects to the MI and ACS

- The financial institutions that issued the card being used
- An ACS (Access Control Server) is a server with registered cardholder account and access information used in authentication



Overview of Transaction Security Technology Solutions ¹

Consumer
Authentication

Consumer Authentication Through 3-D Secure (cont.)

The shift from point-of-sale to card-not-present transactions creates several challenges for authorizing payments and preventing fraud

Traditional Authorization

| | Point of Sale | Card-Not-Present |
|--------------------|---|---|
| Merchant Solutions |  Check Signatures  Check Verification |  Fraud Screening <ul style="list-style-type: none">▪ Not 100% effective▪ Adds consumer friction▪ False positives▪ Adversely impacts “good” order |
| Issuer Solutions |  Verify Zip Code / Merchant Location  Check Purchase History |  Verify CSC / Zip Code  Check Purchase History |

Why do we need 3-D Secure?

- At the point of sale, there are numerous ways to authenticate a transaction, e.g. checking Customer ID or leveraging chip-card technology
- It is more difficult to authenticate card-not-present transactions because credit card information is static, so it can be copied and used by anyone
- This creates fraud and an acceptance gap in card-not-present transactions
- 3-D Secure provides a means of validating the cardholder’s identity in these situations



Overview of Transaction Security Technology Solutions 1

Consumer
Authentication

Why Doesn't Everybody Use 3-D Secure?

Poor Market Perception

- Compatibility issues and intrusive identification requests cause high purchase abandonment
- Merchants have a poor understanding of other underlying benefits of 3-D Secure
- Common market perception that fraud prevention / screening services make 3-D Secure redundant
- Complex integration process as all participants (banks, merchants and service providers) need to be in sync with data passing requirements
- Latency caused by semi-compatible systems, software platforms, etc.

Implementation Complexity

- Multiple brands, carts and payment service providers must be supported to ensure unimpeded performance
- Various requirements must be met for specific processors and gateways
- Merchant back offices have certain data limitations

Lack of Visibility

- The consumer is routed to a separate, distinct platform from the merchant, effectively eliminating merchant control of the customer experience
- Offers no choice over how authentication is carried out

Intrusive Identification Requests

- Pop-up windows and required passwords create latency and poor performance, causing friction in the purchase process
- Customers cannot easily verify if the identification request is legitimate or a malicious site "phishing" for information

Compatibility Issues

- Issuing banks' ACS servers can lag or crash, which can hold up a transaction
- Some devices / browsers aren't compatible with identification requests, causing the protocols to fail
- Authentication information needs to be properly routed through all parties in the authorization flow



Instead of grinding down orders to the lowest common denominator--as can happen with standalone merchant and issuer risk management solutions--Cardinal Consumer Authorization leverages 3-D Secure while reconciling information from both merchants and issuers to seamlessly authenticate a transaction

Cardinal's solution is designed to provide for a better consumer experience (relative to 3-D Secure standalone), thus improving authorization rates

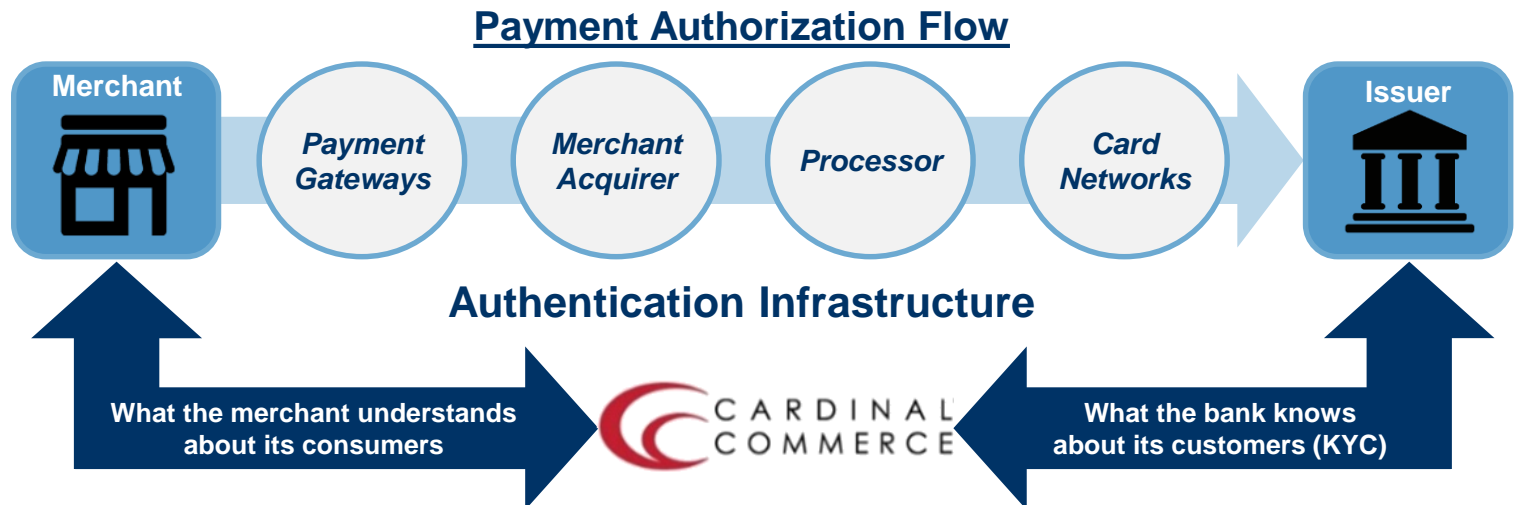
Overview of Transaction Security Technology Solutions 1

Consumer
Authentication

Case Study: CardinalCommerce's Authorization Solution Leveraging 3-D Secure

Leveraging both the benefits of 3-D Secure while addressing the limitations, CardinalCommerce has introduced a unique solution in the marketplace called Cardinal Consumer Authentication (CCA), which is a collaborative approach that leverages 3-D Secure protocols while in real-time integrating both what banks know about their customers and what merchants understand about their customers in order to authenticate cardholders

- CCA compliments the existing authorization infrastructure by directly connecting the consumer to its issuer to intelligently authenticate cardholders
 - Leverages 3-D Secure protocols developed by card networks for card-not-present transactions in order to provide benefits including liability shift and interchange incentives
 - Uses real-time analytics to monitor performance across several factors, including user device, latency, infrastructure anomalies, etc.
 - Provides a 2 X 2 matrix of decisioning between banks and merchants ⁽¹⁾
- Knowledge and connectivity into the payment infrastructure allows authentication information to be seamlessly transmitted back through the traditional authorization pathway



Source: CardinalCommerce.

(1) 2 X 2 matrix of decisioning is discussed further on page 34.

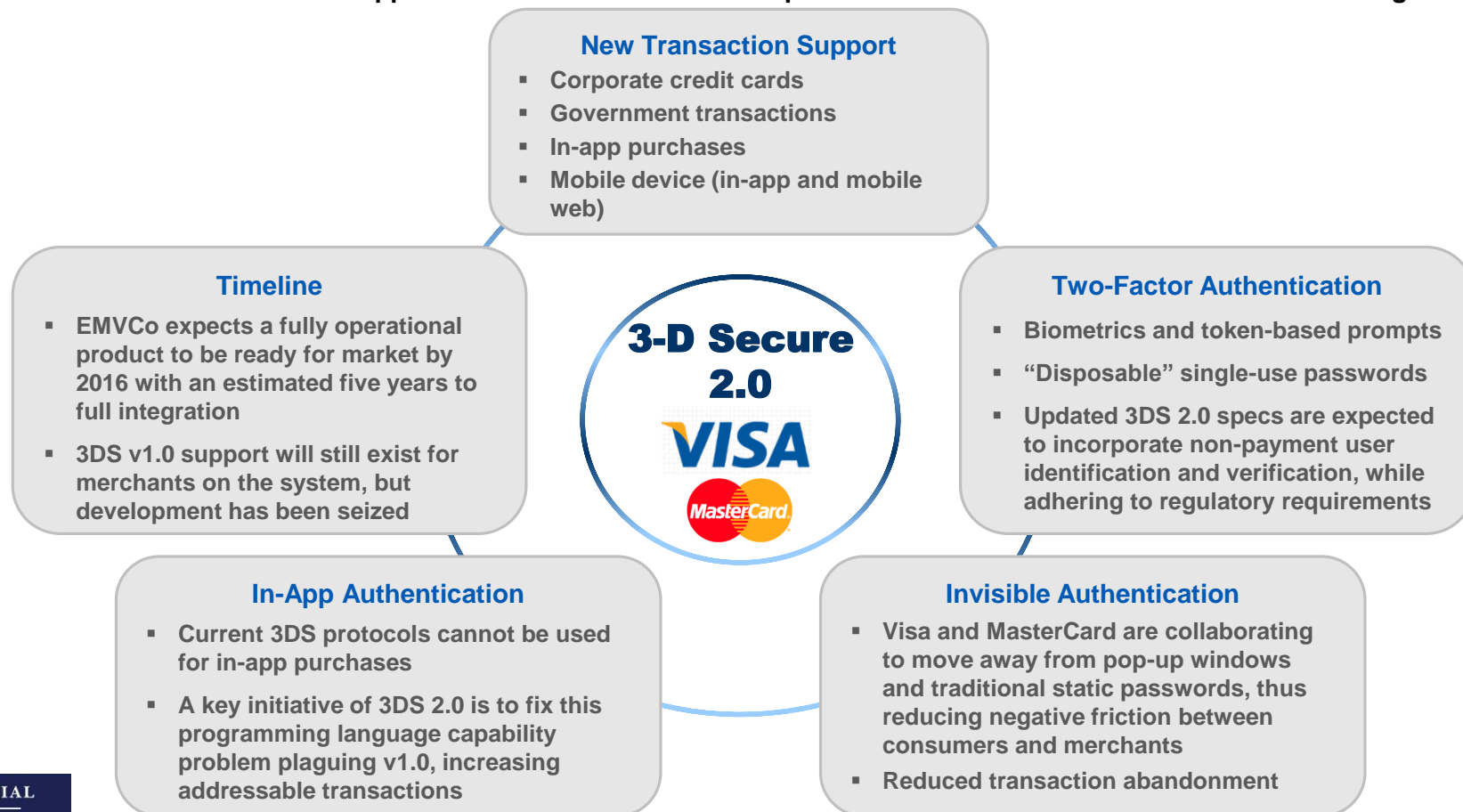


Overview of Transaction Security Technology Solutions ¹

Consumer
Authentication

3-D Secure 2.0

In November 2014, Visa and MasterCard announced the next generation in 3-D Secure with version 2.0, which entails deploying more secure biometric and token-based prompts rather than using static passwords that must be committed to memory; 3-D Secure 2.0 is expected to have more robust mobile support for both mobile web and in-app transactions – an essential improvement as m-commerce volumes continue to grow



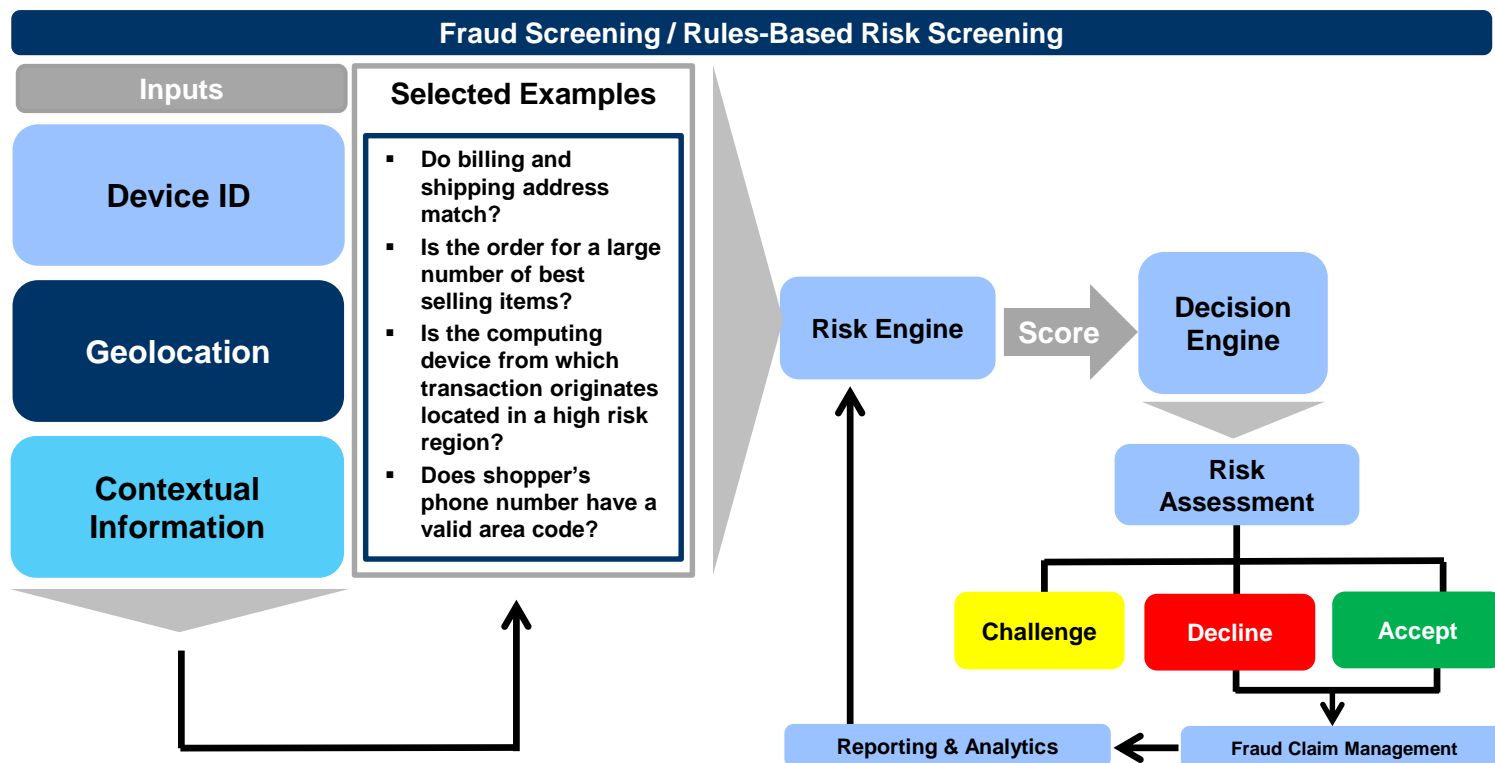


Overview of Transaction Security Technology Solutions 2

Fraud Screening

Fraud Screening is a Popular Tool for Merchants

- Fraud screening platforms generally involve a rules-based risk screening engine designed to calculate risk based on multiple data elements collected from a transaction or over time
- Activities triggered by a numerical score are placed through a decisioning engine to implement appropriate actions based on certain categories to achieve resolution
- Post-purchase transaction management applications generally include reporting / analytics and performance analysis dashboards



Source: Deloitte, First Data.



Overview of Transaction Security Technology Solutions ³

Digital Identities

Digital Identities – KYC, Anti-Fraud and AML

- Dynamic individual identity profiles created, stored and updated with analysis of real-time data points and transactions
- Validate users based on their presented data, past transactions, history of fraud, geographic location and connection between users and merchants
- Often integrated with Know-Your-Customers (KYC), Anti-Fraud, Anti-Money Laundering (AML) and screening applications





Overview of Transaction Security Technology Solutions

4 Tokenization

5 Encryption

Tokenization / Encryption

Key Points

- ✓ To date, encryption, along with strong key management, have been the preferred methods of enforcing data protection applications
- ✓ Tokenization has gained acceptance as an attractive alternative due to its compelling value proposition
- ✓ Rather than protecting cardholder data widely dispersed across the environment, tokenization removes it altogether from any systems and applications that do not specifically require it

Encryption Diagram

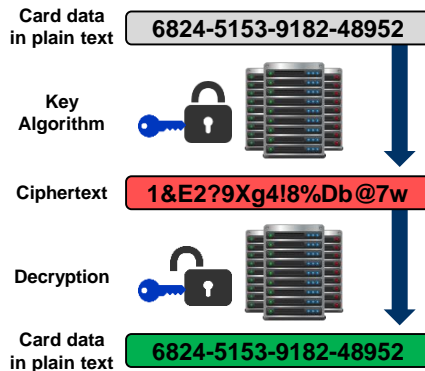
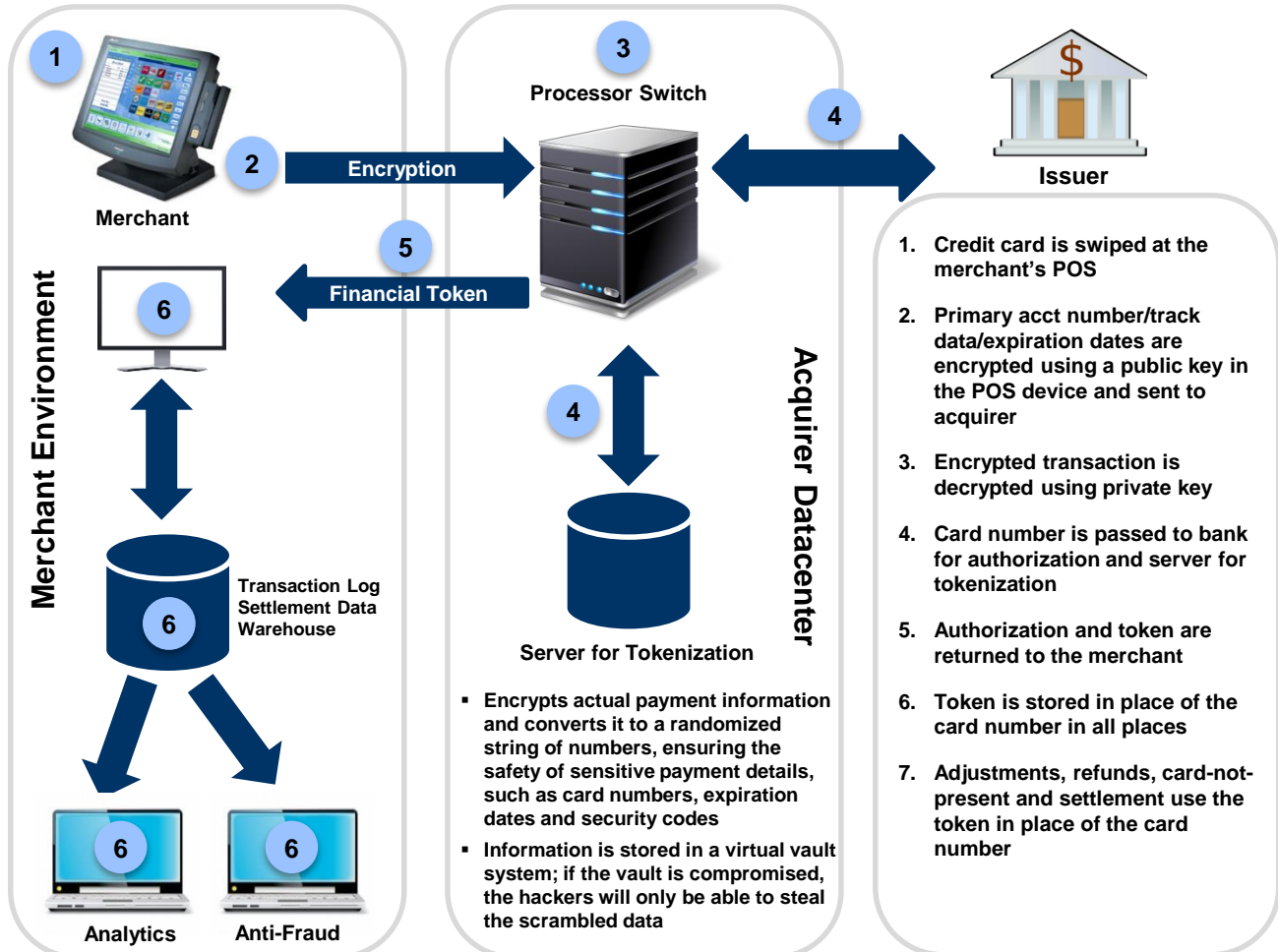


Diagram of Tokenization as a Service

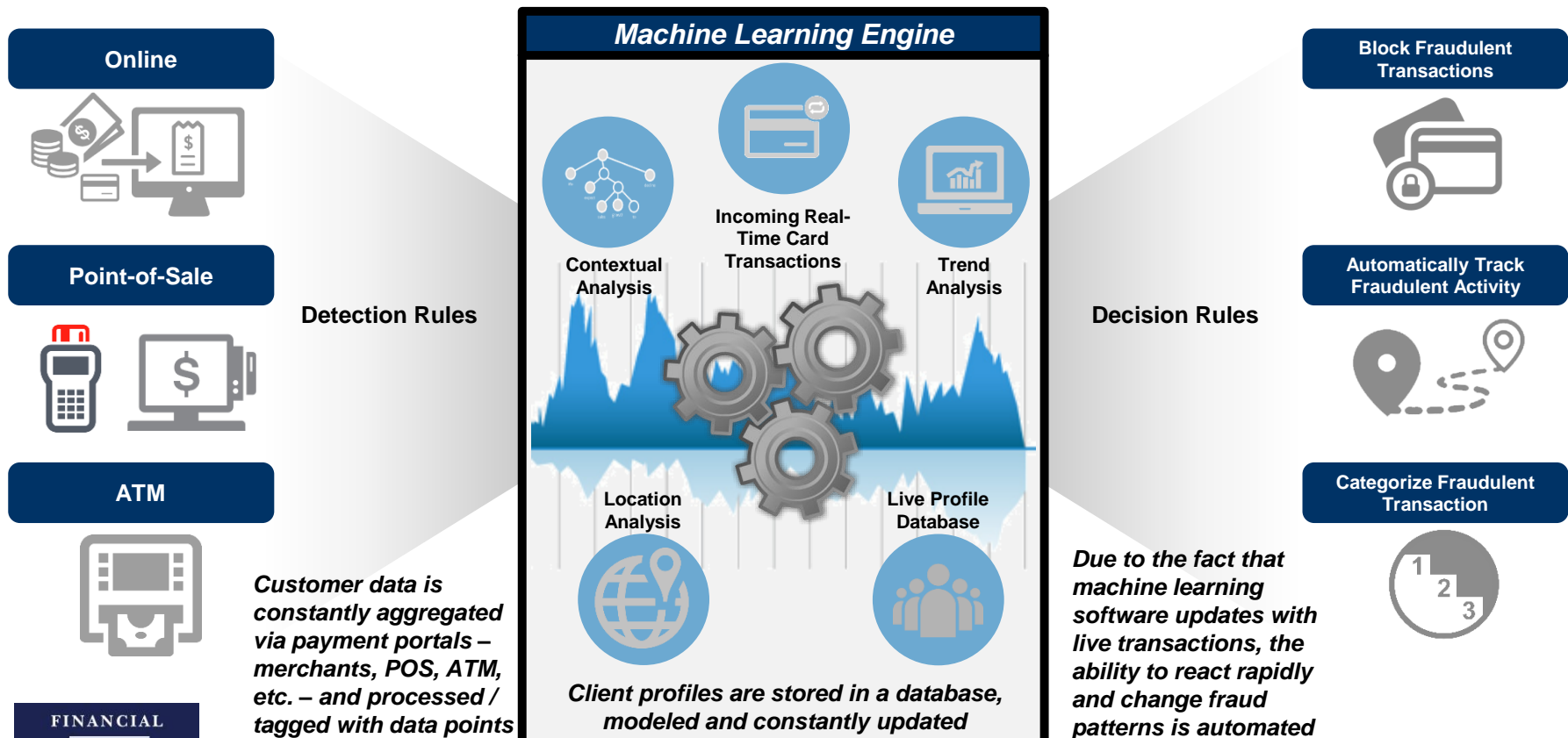




Overview of Transaction Security Technology Solutions 6 Machine Learning / Big Data Analytics

Machine Learning Engines and Big Data Increasingly Used to Combat Fraud

- Machine learning has emerged as a technology that can effectively combat fraudulent transactions
- Rather than segregating specific types of transactions and investigating, these advanced solutions are capable of synthesizing historical and real-time transactions to construct individual progressive models to detect fraudulent patterns ⁽¹⁾





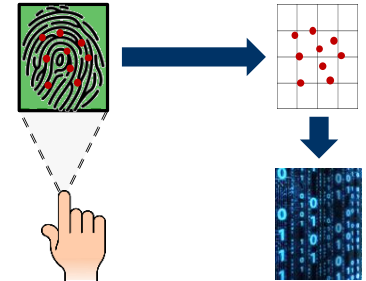
Overview of Transaction Security Technology Solutions 7

Biometric
Authentication /
Mobile ID Solutions

Biometric Authentication / Mobile ID Solutions

Fingerprint Verification

- Authenticate device access and transactions using fingerprint biometrics during push notification transactions
- Mobile and point-of-sale biometric fingerprint authentication can never be lost and is extremely difficult to replicate or intercept because it is scrambled and encrypted after the initial scanning phase



Voice Recognition

- Modern smartphones possess sufficient hardware to receive voice inputs; using matched with app-based voiced recognition technology from biometric authentication solution providers, consumers can verify their identity using “voiceprints”
- Verification in real-time without the need of passwords, tokens or confidential information



Mobile Device Authentication / Identification Solutions

- Authentication solutions that leverage geolocation, network data, hardware types, operating systems, browsers and apps to ID consumers
- Identify devices to match transactions with consumers
- Track consumer habits and convey patterns that distinguish legitimate device operators from fraudsters





Overview of Transaction Security Technology Solutions 8

Collaborative
Fraud Solutions

Collaborative Fraud Solutions

In March 2015, the House of Representative Intelligence Committee introduced the Protecting Cyber Networks Act focusing on collaboration of cyber-threat and fraud data between corporations and government agencies

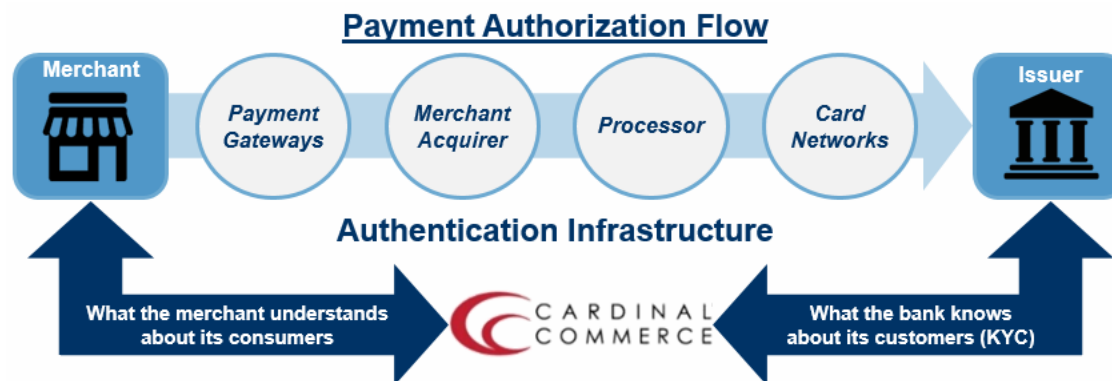
- Shortly after, the National Retail Federation introduced an information sharing platform, the retail-specific Information Sharing and Analysis Center (ISAC), which will provide merchants access to information on threats identified by other retailers, government agencies, law enforcement and other partners in the financial services industry

Certain transaction security vendors are attempting to solve the payment fraud problem through strategic partnerships and / or relationships with multiple market participants

- **Visa and FireEye** announced the launch of Visa Threat Intelligence (Powered by FireEye) in October 2015 to share cyber-threat and market data intelligence; this new service will deliver real-time threat information and in-depth forensic analysis to merchants and issuers to quickly access / act on critical cyber-attacks that could breach their payment systems
- **CardinalCommerce** combines knowledge from card issuers and experience from merchants in real-time in a collaborative way to intelligently authenticate cardholders in real-time
- **Ethoca** provides a range of collaboration-based services that allow card issuers and merchants in an after the fact approach to work together to combat fraudulent e-commerce transactions and increase acceptance on good orders
- **Early Warning's** Common Points of Purchase Service leverages data contributed by card issuers to complement and enhance the Company's existing card fraud monitoring solutions in an after the fact method

Real-Time Collaboration

CardinalCommerce compliment's the existing payment authorization infrastructure by essentially enabling merchants and issuers to collaborate in real time in order to authenticate cardholders





Overview of Transaction Security Technology Solutions 8

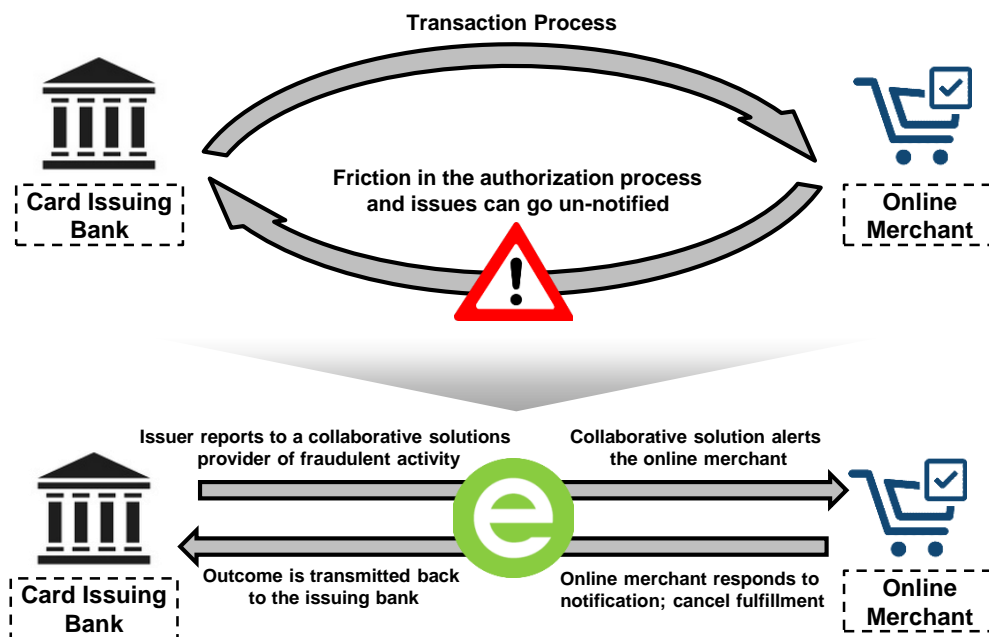
Collaborative
Fraud Solutions

Collaborative Fraud Solutions (cont.)

Collaborative Solutions for Card Issuers and Online Merchants

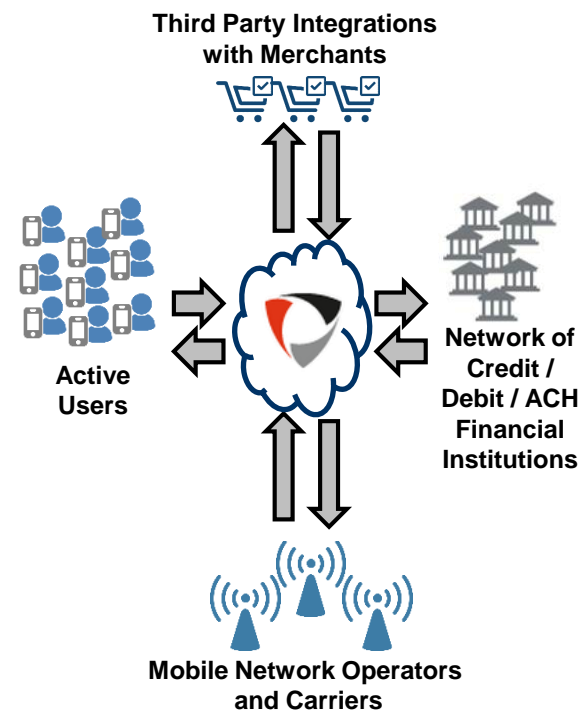
Merchants and issuers encounter fraud on a daily basis that typically has gone unobserved by other parties, causing significant losses and chargebacks

Ethoca seeks to close the information gap between issuers and merchants by establishing a network that filters and notifies all parties in the payment network of fraudulent encounters ⁽¹⁾



Mobile Collaborative Risk Solutions

With access to mobile network operator (MNO) data, Early Warning has partnered with some of the largest banks in the U.S to provide real-time mobile verification services



IV. CEO Interviews



CEO Interviews

Biographies

| | | |
|---|---|--|
| <p>Maddy Aufseeser <i>Tender Armor</i></p> |  | <ul style="list-style-type: none"> ▪ Maddy Aufseeser is the Co-Founder, CEO and Director of Tender Armor ▪ Prior to starting Tender Armor, she was a senior analyst with Aite Group, a lead strategist / product owner for prepaid products at FIS, SVP of Products at First Data and VP of Marketing Operations at First Union ▪ Holds a BSBA in Business Administration from American University |
| <p>Michael Keresman, III <i>CardinalCommerce</i></p> |  | <ul style="list-style-type: none"> ▪ Michael Keresman, III is the Founder, Chairman, President and CEO of CardinalCommerce ▪ Before founding CardinalCommerce, he was one of the earliest employees and Co-Founder at STERIS Corporation, holding several senior management positions from 1988 to 1999 ▪ Graduated from John Carroll University with a BSBA in Finance |
| <p>Michael Reitblat <i>Forter</i></p> |  | <ul style="list-style-type: none"> ▪ Michael Reitblat is the Co-Founder and CEO of Forter ▪ Prior to founding Forter, he was the Vice President of Product of PaNGo Parking, a smart mobile payment parking solution ▪ Holds a Bachelor of Arts degree in Economics and History from Tel Aviv University |
| <p>Yaron Samid <i>BillGuard</i></p> |  | <ul style="list-style-type: none"> ▪ Yaron Samid is the Founder and CEO of BillGuard ▪ Prior to starting BillGuard, he Co-Founded Pando (acquired by Microsoft) and DeskSite; Yaron is also the Founder and Organizer of the Tech Aviv Founders Club ▪ Earned a Bachelors of Science in Marketing from the University of Maryland College Park |
| <p>Nuno Sebastiao <i>Feedzai</i></p> |  | <ul style="list-style-type: none"> ▪ Nuno Sebastiao is the Chairman and CEO of Feedzai ▪ Previously led the development of the European Space Agency Satellite Simulation Infrastructure and also Co-Founded Evolve Space Solutions, a services company in the Aerospace domain ▪ Holds an MBA from the London Business School and a Computer Science & Engineering degree from the University of Coimbra in Portugal |
| <p>Reed Taussig <i>ThreatMetrix</i></p> |  | <ul style="list-style-type: none"> ▪ Reed Taussig is the President and CEO of ThreatMetrix ▪ He has over 30 years of experience in the computer hardware and software field, previously serving as President and CEO of Vormetric, Callidus Software and Inquiry.com ▪ Holds a Bachelor of Arts degree in Economics from the University of Arizona |

Note: Interviews were originally published February 2016.



CEO Interviews

Maddy Aufseeser, Tender Armor



Maddy Aufseeser



“By enrolling in CvvPlus, cardholders know their bank is working to protect them by providing the best possible prevention solution on the market. A win win for cardholders and their bank issuers.”

What are the trends you are seeing in the payments marketplace that led to the creation and launch of CvvPlus?

More and more consumers are experiencing and are worried about their credit and debit cards being compromised and subjected to fraud. Consumer fears stem from rising card-not-present (CNP) fraud incident rates due to fraudsters targeting the CNP payment channel, the countless number of merchant breaches that have occurred in recent years, and the ever growing media attention around cybersecurity. The rise in CNP fraud has become personal for consumers and has resulted from the migration to EMV chip cards and rising ecommerce transactions, making this payment channel the path of least resistance for fraudsters. The CNP fraud category now represents more than 48% of all payment card fraud making it the single largest fraud dollar volume by category and is growing faster than any other fraud type.

As a result of these market conditions, now more so than ever before consumers want to feel protected, have more control over their financial security, and know there are safeguards in place protecting their payment card data when making purchases. Consumer research shows consumers do not want to go through the hassle of contacting the bank when fraud has occurred, continue to worry about ID theft or more erroneous charges on an account, let alone go through the process of reestablishing re-occurring transactions on a replacement card account.

To date, most of the current anti-fraud solutions on the market are transparent to consumers because they are merchant or transaction specific. Nor do current solutions specifically aim to protect the cardholders and bank issuers holistically. CvvPlus is designed to protect consumers when conducting CNP purchases as well as across many other use cases. CvvPlus protects consumers by authenticating the actual cardholder and not just a device. CvvPlus alleviates consumer anxiety because consumers know the solution is in place, thereby reducing the potential for fraud and having to deal with the aftermath when fraud has occurred. CvvPlus can also help re-establish trust between cardholders and their banks. By enrolling in CvvPlus, cardholders know their bank is working to protect them by providing the best possible prevention solution on the market. A win win for cardholders and their bank issuers.



“The heart of the CvvPlus process is a security code that is used in place of the code currently printed on the front or back of the payment card... CvvPlus is different because of the way it is structured and constructed.”

CEO Interviews

Maddy Aufseeser, Tender Armor (cont.)

Please describe CvvPlus and how it is different from other fraud and security solutions in the marketplace.

CvvPlus is a real-time, out-of-band, dual-factor, fraud prevention solution that authenticates cardholders conducting Card-Not-Present (CNP) transactions and more including ecommerce and phone transactions. CvvPlus validates the authorized cardholder conducting the transaction, not just the payment card or a device, making it the perfect complement to any CNP transaction. The heart of the CvvPlus process is a security code that is used in place of the code currently printed on the front or back of the payment card (CVV2, CID, CVC, or CSC). Cardholders provide the CvvPlus code to merchants in the same way as they currently provide the static security code printed on the payment card and the transaction proceeds seamlessly.

CvvPlus is different because of the way it is structured and constructed:

- Supports phone and ecommerce orders, not just ecommerce
- Works on all cards in the market today without reissuing a card or using a special device
- Is transparent to merchants, therefore merchants do not have to adopt the solution or make changes on their websites to support the solution on a purchase
- It authenticates the cardholder not a card or device, so it works to protect cardholders even if their card has been lost/stolen, it guards against account takeovers such as if someone hacks into an online merchant account, and it protects the cardholder even if the device used to make a CNP purchase is stolen
- One CvvPlus code can be used with multiple payment cards. For example, if a cardholder has a checking account with a debit card and a credit card from the same institution they can enroll both cards and get one CvvPlus code to use when making purchases
- CvvPlus is completely contained behind the bank card issuer authorization system security walls and is not dependent on outbound API calls during the transaction authorization process, this approach makes it more secure and helps support PCI compliance.



“67% of consumers stated they would adopt the CvvPlus product, 80% say it is “easy to understand”, 69% say it is “relevant” and “logical”, 74% say it will make them feel safer when shopping online, 70% feel it is believable and trustworthy”

CEO Interviews

Maddy Aufseeser, Tender Armor (cont.)

How do you know that consumers are ready to adopt a solution like this? What behaviors will consumers have to change in order for the product to be a major success?

Consumers want more security now. Extensive publicly available market research (such as studies from Gallop and Lexis Nexus) and independent third party conducted research suggests that not only are consumers worried about credit and debit card fraud they are willing to do something about it.

Research findings state:

- More than half at 52% of cardholders feel online retailers are only “somewhat trustworthy” with the security of their credit, debit, or prepaid account information
- 48% of cardholders “would like more assurance that their payment method/card is more secure and protected when shopping online
- After an online fraud event, more than 40% of credit and debit cardholders either close card accounts, use the card less, or shop less than before
- 67% of consumers stated they would adopt the CvvPlus product
 - 80% say it is “easy to understand”
 - 69% say it is “relevant” and “logical”
 - 74% say it will make them feel safer when shopping online
 - 70% feel it is believable and trustworthy

Consumers do not have to do anything different than what they do today to use CvvPlus, the services just substitutes the code on the card for a code that is delivered to the consumer anyway they want it and at anytime they want it



“CvvPlus has many use cases making it the one solution in the market that can be utilized across a financial institution’s infrastructure and minimizing the need to utilize more than one vendor.”

CEO Interviews

Maddy Aufseeser, Tender Armor (cont.)

Please walk us through the implementation process with card issuers and the consumer onboarding process.

CvvPlus is a SaaS based service that has multiple integration and configuration options for bank card issuers and cardholders making it easy and simple to integrate within a bank's authorization system, even if it resides at a third party processing organization. Integration choices include a plug and play model utilizing a hardware security module or can be integrated through a handful of APIs and stored procedure calls.

Cardholder enrollment is fast and easy. Bank Card Issuers offer the CvvPlus service to cardholders who can enroll via the bank's website or call center in three easy steps. Consumers pick which payments cards to enroll, provide or confirm their mobile phone number or email, and select how they would like to receive their code. Once registered, cardholders can start using the service instantly.

Please discuss other use cases for CvvPlus beyond e-commerce / card-not-present transactions.

CvvPlus has many use cases making it the one solution in the market that can be utilized across a financial institution's infrastructure and minimizing the need to utilize more than one vendor.



Why can't a large issuer or a large processor easily create a similar solution in-house?

CvvPlus appears to be a simple concept, yet behind the scenes there is a comprehensive patent pending PCI compliant secure solution. Our sole focus is dedicating resources and solving for a safe and secure system that works seamlessly within the existing global payment markets framework. Banks and processors would need to dedicate significant resources to develop something similar and as comprehensive. Why would they do so when they could more easily deploy a market ready solution in partnership with CvvPlus.

Are there other products on the horizon for Tender Armor that you can discuss?

Yes though cannot discuss at this time.

Thank you, Maddy.



Michael Keresman, III



“Cardinal Consumer Authentication (CCA), which leverages 3DS, is a collaborative approach, in real-time, in that it can compare what the banks know about their customers (KYC), what the merchants understand about their consumers and tune the combined results for the consumer experience.”

CEO Interviews

Michael Keresman, CardinalCommerce

Please describe CardinalCommerce's business to us.

CardinalCommerce is the global leader in enabling authenticated payments, secure transactions and alternative payment brands. As pioneers and innovators in the payment space, Cardinal helps merchants and banks increase sales, improve margins and enhance the consumer experience.

Why is now the time for 3-D Secure / Consumer Authentication, particularly in the U.S. market?

First, it is important to define 3-D Secure (3DS). It is a series of authentication protocols (i.e. Verified by Visa, MasterCard SecureCode etc.) licensed from EMVCo to arrange a private session between a cardholder and their issuing bank (IB) for the purposes of authenticating or validating that cardholder. 3DS is also a data carrier system to relay the result of that private session back through the payment system infrastructure, so that the IB would know that result prior to authorizing a transaction. Historically, the most common 3DS approach to authenticating the cardholder was a classic challenge response “username and static password;” today, there are other ways gaining prominence such as One-Time-Passwords, risk-based analytics and others.

Key design elements for 3DS are the private session between the cardholder and IB, the carrier system for that data, and the flexibility for the IB to use virtually any authentication method to ensure the cardholder is who they say they are. In short, it is a system to be used by billions of consumers, shopping at millions of merchants to be authenticated by one of the thousands of banks.

3DS, as described, is an approach to authenticate cardholders, but it inherently has limitations that include lack of merchant participation in the authentication process and potentially unnecessary consumer shopping cart friction.

Cardinal Consumer Authentication (CCA), which leverages 3DS, is a collaborative approach, in real-time, in that it can compare what the banks know about their customers (KYC), what the merchants understand about their consumers and tune the combined results for the consumer experience. CCA is right for the U.S. market because the results of this collaborative approach will increase order conversion (higher authorization yield), improve merchant margins (lower interchange, decrease in chargebacks and internal costs) and ensure the best consumer experience. CCA provides the merchant with the all of the benefits of 3DS, guaranteeing transactions by eliminating chargebacks due to fraud.



CEO Interviews

Michael Keresman, CardinalCommerce (cont.)



“CCA is different because Cardinal is the only one in the market that provides this service or anything like it. The market essentially relies on two mutually exclusive parties to help take fraud out of the system.”

How is Cardinal's Consumer Authentication (CCA) service different from other providers in the marketplace?

CCA is different because Cardinal is the only one in the market that provides this service or anything like it. The market essentially relies on two mutually exclusive parties to help take fraud out of the system. Merchants use fraud screening services and issuers use their version of risk mitigation technologies. Each of the parties attempts to assess which orders are “suspicious” and depending on their respective criteria, eliminates those orders. Merchants won't submit their suspicious orders for authorization and issuers will not authorize orders that fall into their criteria of such.

In the POS world, there are many specifics regarding a transaction: the store, POS terminal and the consumer can be identified fairly easily ... but online, not so much. Remote commerce has inherent suspicions that the POS world does not have.

The end result is both sides of the transaction (the merchant and the IB) grind down potential orders to the lowest common denominator of “good” orders, because their respective systems use mutually exclusive information and approaches. Good orders that the issuer might authorize are thwarted by the merchants' fraud screening services, and orders from the merchant's perspective that are “good” are not authorized by the issuer. Only CCA creates a collaborative approach in which there is visibility in how each side would treat the transaction, essentially increasing the authorization yield from the lowest common denominator of “good” orders to the highest common denominator of “good” orders. Yet, and importantly, both sides still have veto power when the order is very suspicious. It may be easiest to understand this as a classic 2 X 2 matrix; yes/yes, yes/no, no/yes and no/no. In the yes/no and no/yes the respective “yes” side can decide to accept the transaction, whereas without this approach those orders would most likely be declined or not authorized.

Both the merchants and issuers have a vested interest in ensuring “good” orders are not thwarted. Sometimes the merchant has the better vantage point in knowing what is good and other times the issuer does. CCA, more or less, creates a real-time arbitrage of determining the quality of an order with this collaborative approach.

Why can't acquirers, networks and issuers solve authentication / fraud problems themselves?

The acquirers, networks and issuers are connected to each other through the authorization stream (authorize, capture and settle transactions) after the order begins to be processed. In the POS world, the authentication happens at the cash register, the card is verified and the consumer, if necessary, is authenticated prior to “swiping” the card. For remote transactions, there is not a way to validate the card (i.e. card swipe), nor authenticate the consumer, prior to requesting an authorization, without Consumer Authentication.

Simply put, the vast and complex card processing system was designed to authorize, capture and settle payments for the face-to-face, or POS, world. The merchant is responsible in the POS world to authenticate the consumer is who he says he is. The merchant needed to figure out how to authenticate consumers for Card-Not-Present (CNP) commerce.

That is where Cardinal comes in. With CCA, this challenge is successfully addressed by arranging a private session with the consumer's funding source or IB, BEFORE there is a request to authorize the payment. There are literally billions of consumers, millions of merchants and thousands of issuing banks, and the permutations and combinations of merchant/bank processors, software/hardware systems and connectivity is almost beyond comprehension. Cardinal leverages 3DS, enables over 100 payment brands, harmonizing transactions through this maze.



CEO Interviews

Michael Keresman, CardinalCommerce (cont.)



“In every country in which EMV has been implemented, there was lower fraud at POS, but that fraud quickly leaped to the less secure channels, such as remote commerce... CCA is the perfect complement to EMV, providing protection for the remote channels as EMV provides for POS commerce.”

Why is the incumbent payments system ill-equipped to handle omni-channel commerce?

Each distribution channel is designed to attract the most consumers in the best possible way to sell more goods or services, as they should be. Payments are forced to fit into those distribution channels and each channel has limitations and advantages. For example, POS transactions have positive validation that the card is authentic, while in remote commerce this creates a challenge. Wallets such as PayPal are easy to use online but not easy in the conventional POS world. Similarly, the merchant order management system and payment infrastructure was designed only for POS transactions. Remote commerce (i.e., e-commerce, mobile commerce, etc.) were more or less forced to fit the traditional payment systems and generally are only connected at the “back-end,” rather than through the entire order management-payment supply chain front-end.

For example, there are retailers that have difficulty accepting their own private label card online, new payment brands such as PayPal don't quite fit the existing set of order management-financial supply chain sets of railroad tracks and even PIN debit, while accepted in stores, has challenges in remote commerce. Fraudsters can also exacerbate the matter by buying online with someone else's account, and return merchandise to the store for a refund or product exchange. In short, the payment system was designed for POS sales and doesn't have channel ubiquity, nor is it very flexible to handle omni-channel commerce.

With Cardinal Centinel, all of those disparate payment brands, methods or approaches are harmonized via the centralized Cardinal SafeCloud TM technology. Centinel, our Universal Merchant Platform, is able to digest the information from virtually any connected device, and translate, format and route that transaction in a digestible data package for the merchant's existing financial service supply chain. This, in effect, helps FutureProof a merchant's payment needs. New devices, payment methods or approaches once added to Centinel give the merchant, through Centinel's Super APITM, a seamless harmonization of change.

How do you see the overall market (and Cardinal) being impacted by the upcoming EMV deadline?

Adoption of EMV (chip-enabled) credit cards in the U.S. is imminent, with the first deadline in October 2015. EMV will do quite a bit to remedy fraud, especially counterfeit card fraud in the POS environments. As indicated by EMV conversions in all other markets, this change will cause a significant increase in CNP fraud rates.

Said another way, in every country in which EMV has been implemented, there was lower fraud at POS, but that fraud quickly leaped to the less secure channels, such as remote commerce. This is because EMV doesn't address remote commerce because connected devices don't have the expensive 'chip' card readers the stores will have.

Cardinal Consumer Authentication (CCA) is the perfect complement to EMV, providing protection for the remote channels as EMV provides for POS commerce. Fraudsters will go after the easier targets. Online merchants will want to protect their business from the greater increase in fraud attempts. This is also especially true for merchants that only sell online or in remote channels. As the crooks will be more thwarted by EMV at the POS, they won't quit, rather they will seek the less secure channels.



CEO Interviews

Michael Keresman, CardinalCommerce (cont.)



“Cardinal is uniquely positioned in the marketplace to provide authentication services, connections and transaction harmonization in a way no other provider can.”

What’s the biggest problem facing (e-commerce) merchants today as it relates to their payments needs?

Merchants face many challenges today. They have to balance sales with managing the acceptance cost of doing business. A large aspect of acceptance cost is the cost associated with fraud, which includes many factors such as chargebacks, fees, manual review, and missing out on “good” orders.

All merchants will experience fraud. When they have their fraud systems “too tight,” they give up good orders. If their fraud systems are “too loose,” their fraud rate and the cost of fraud skyrocket.

What is 3-D Secure 2.0? How will 2.0, the next generation of authentication, affect the market acceptance?

As in most technologies, previous versions of 3DS and 3DS 2.0 will co-exist in the marketplace. To understand this complexity, there are approximately 30 protocols today with the current version of 3DS. 3DS 2.0 will have at least that many, and likely more. So a merchant or bank will have the complexity more than doubled.

3DS 2.0 is designed for smaller devices and a friendly consumer experience. There will be far more data attributes built within the data field in order to eliminate steps, reduce latency and be able to grade, risk-assess and rate transactions. For example, the data message will carry a scoring mechanism based on the device initiating the transaction, the goods or services bought, and the risk tolerance of the issuing bank.

The prime purpose of 2.0 is to improve the consumer experience, especially for the smaller devices. In order to achieve that objective, the complexity and sophistication will need to be absorbed or managed by those organizations responsible for processing transactions.

Where do you see the largest opportunity for Cardinal over the next few years?

Cardinal is uniquely positioned in the marketplace to provide authentication services, connections and transaction harmonization in a way no other provider can. Cardinal has a vast number of connections through the entire financial transaction ecosystem. These connections can be leveraged by merchants, banks, payment brands and service providers, to help them achieve their respective strategic objectives ... today.

For example, our connections to merchants and banks are capable of creating a “closed loop” within an open loop system. Banks or organizations that both acquire and issue for a given transaction would be able to assess, grade, add loyalty and rate that transaction, in proprietary way. Similarly, a bank and merchant processor could create a “community closed loop” approach for a series of banks, credit unions, regions or the like.

Ultimately, this direct approach of having the consumer and issuer connected in real-time provides the best safety, security and order assurance. Issuers will have a higher authorization rate, merchants will have more orders, there will be less fraud and the consumer gets to buy what they want through virtually any distribution channel with a fast, simple and easy-to-use process.



CEO Interviews

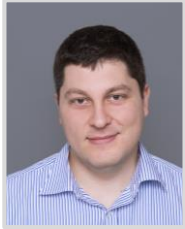
Michael Keresman, CardinalCommerce (cont.)

What are the biggest challenges facing Cardinal today?

The payments ecosystem moves quickly. We have a challenge to get to the right decision makers at the right time. Often the decisions for which way an organization sets a priority for new technology is at the “C” suite level. Cardinal has the technology platforms, innovations and know-how to address the strategic trends and needs of the market, and we are probably best suited for strategic relationships to be able to leverage all that we can do to support that relationship.

Thank you, Mike.





Michael Reitblat



“Instant, automated approve/decline decisions, for every single transaction on an e-commerce site - covered by our chargeback guarantee. We call it ‘Decision as a Service’.”

CEO Interviews

Michael Reitblat, Forter

Please describe Forter's business to us.

In today's world of growing fraud attacks, we want to completely remove the fear of fraud from e-commerce and help retailers capture more sales.

Although the technology behind it is complex, the product itself is very simple. Instant, automated approve/decline decisions, for every single transaction on an e-commerce site - covered by our chargeback guarantee. We call it 'Decision as a Service'.

We can't eliminate fraud altogether, but we can create a completely fraud-free environment for the retailer through which they can make decisions solely based on what's good for their business. This can be achieved by shifting all of the fraud-related liabilities, damages and operations to us. We handle all of their online transactions and give them real-time yes/no answers. For everything we say "yes" to, if anything goes wrong, we take the hit financially.

Who does Forter serve in the payments value chain?

Highly accurate fraud prevention benefits the whole payments chain, ultimately, but Forter mainly serves the retailer and the customer. Customers benefit because buying online becomes easier and smoother – checkout is faster, there are no demands for extra information, no enforced delays in confirmation and fulfillment which are caused by manual reviews of transactions for fraud, and which cause frustration and delay for customers. And false positives, when customers are unfairly rejected through being mistaken as fraudsters, all but disappear. It's a much better customer experience.

Retailers benefit because a better customer experience leads to happier customers, and more sales. That's great for revenue, and for the way customers feel about the site. And that's increasingly crucial - when the buyer is becoming more and more the king, and fraud is rising, consumers will be tighter and less forgiving toward retailers.



“As soon as we go live, the merchant starts receiving real-time, guaranteed approve/decline decisions for every order, which streamlines the checkout process and enables them to accept more orders.”

CEO Interviews

Michael Reitblat, Forter (cont.)

How do merchants integrate Forter into their transaction flow? How does using Forter impact the checkout process for merchants and their customers?

There are two things that the merchant needs to do, and the rest is all on our side. The first on the merchant side is copying and pasting a JavaScript snippet into the e-commerce website and the second is the API integration - though we will provide a tailored version for their needs and are available to guide at all times.

Other than that, what happens on our end is training the model on many months of historical data, so that it is adjusted to the retailer's unique risk profile right from the start, and extensive testing to ensure everything is working as it should.

As soon as we go live, the merchant starts receiving real-time, guaranteed approve/decline decisions for every order, which streamlines the checkout process and enables them to accept more orders.

With traditional fraud prevention, customers sometimes experienced delays in order confirmation and fulfillment due to manual reviews. With Forter, that stops. Customers are also used to being interrupted at checkout by requests for more information, or even receiving phone calls asking for more proof of identity. With Forter, all that becomes a thing of the past – with real-time decisions for every transaction, fraud prevention stops adding friction and delay to the online shopping process.



“Our solution covers all three kinds of card not present transactions: e-commerce, mobile commerce, and phone orders. And it works with PayPal, Google Wallet, etc. We even have extensions for popular platforms such as Magento.”

CEO Interviews

Michael Reitblat, Forter (cont.)

Do Forter’s fraud solution work across all verticals or is it better suited for specific verticals? Does Forter serve all sizes of merchants?

Forter’s Decision as a Service makes the most sense for large companies - in any and all verticals. At scale, where enterprises have increasing numbers of transactions and growth, you start to see that managing fraud manually is simply impractical - you’d need a huge and expensive team of reviewers, or be willing to make your customers wait a long time for confirmation, slowing fulfillment and creating a poor customer experience and the likelihood of lost sales.

During particularly busy times you might have to swallow both of those disadvantages - at Christmas you could have a large team working flat out, and still approve transactions too slowly, driving customers into buying from your competitors instead. Automation is the obvious solution. It works in real-time, all the time, no matter what time of night it is or how busy the season.

As for the type of companies we’re interested in... Well, e-commerce merchants, of all kinds. There’s no retailer who doesn’t have a fraud problem - fraudsters will seize any opportunity. And you have to consider the full spectrum of the fraud impact; companies stand to lose just as much to overly conservative risk policies as they do to successful fraud. So, if chargebacks are low and successful fraud at a minimum, you have to ask if that’s because you’re turning away a lot of legitimate business along with the fraudulent attempts.

Long-term, that policy isn’t going to serve you well. It reduces sales in the present and in the future, since once rejected a customer isn’t likely to return. By contrast Forter’s system always aims to approve - we think of transactions as ‘innocent until proven guilty’, so to speak! And it’s reflected in our pricing model - we charge only for approved transactions. As a result merchants are able to accept more transactions, safe in the knowledge that they’re covered by our chargeback guarantee.

Our solution covers all three kinds of card not present transactions: e-commerce, mobile commerce, and phone orders. And it works with PayPal, Google Wallet, etc. We even have extensions for popular platforms such as Magento. Our aim is to enable a truly excellent customer experience through instant, accurate fraud prevention, no matter what vertical, payment method, platform or currency is involved.

That said, of course particular verticals benefit most obviously from a fully automated, entirely real-time, guaranteed solution. If you value instant gratification, for example, the real-time aspect is hugely important - think of businesses which depend on fast delivery, or digital goods where download is instant. Similarly, if an excellent customer experience is totally essential to the kind of service you want to provide, as with luxury goods, then the frictionless aspect is key, so that you don’t bother customers by demanding more information from them, or building delay into the shopping process.



“In terms of expertise – a merchant could create something similar to what Forter has, if they were willing to invest tremendous resources, highly trained and highly intelligent manpower and years of experience into it. But there’s no point. A retailer’s focus is on retail – on sales, and revenue, and growing their business.”

CEO Interviews

Michael Reitblat, Forter (cont.)

Why do merchants need Forter—why can’t they replicate what Forter provides through in-house solutions?

Firstly, it’s a question of expertise. Secondly, there’s the network effect.

In terms of expertise – a merchant could create something similar to what Forter has, if they were willing to invest tremendous resources, highly trained and highly intelligent manpower and years of experience into it. But there’s no point. A retailer’s focus is on retail – on sales, and revenue, and growing their business. Fraud prevention is a distraction from that.

Retailers shouldn’t have to be experts in fraud prevention - it’s a distraction, and staying ahead of today’s clever fraudsters takes tremendous expertise and effort. With Forter’s Decision as a Service, they have peace of mind that their fraud is being handled by experts and a system that is designed to optimize customer experience, and maximize sales.

We want to restore the balance. We think that retailers should be retailers, and fraud professionals should be fraud professionals. Everyone needs to focus on their strength, which can eliminate the internal tension born of engaging in business activities that are riskier – by simply “outsourcing” it to someone whose strength it is.

Secondly, the network effect. We receive information from many merchants, across countries, segments, and industries. All of that goes into our system, informing the decisions and training the machine. We only have to see an attack once to be able to recognize it and block it for all our retailers. And because as a SaaS we update a number of times a day (continuous deployment) all our merchants benefit almost instantly from what is learned.

More than that, there are only a limited number of bad actors. Get good enough at recognizing who they are, how they act - over time, if you’re seeing the data from many sources, you’ll build up knowledge and profiles for virtually all of them.



***“Then there’s
Forter - we use
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in real-time, and
full automation.”***

CEO Interviews

Michael Reitblat, Forter (cont.)

How is Forter different from other fraud solution providers?

We’re the only fully automated solution out there.

The easiest way to explain this is to think about how online fraud prevention has evolved. There are legacy fraud prevention companies, who rely on traditional fraud prevention methods like inflexible rules engines and manual review, and provide risk scores that leave the responsibility and liability with the retailer.

Then there are companies which run according to a similar model, but use more advanced technology - machine learning as well as, or instead of rules engines. Then there are companies who are able to offer decisions instead of scores, and can take care of the fraud for a retailer and offer a chargeback guarantee.

Then there’s Forter - we use highly sophisticated technology that’s updated many times a day, we offer decisions for every transaction in real-time, and full automation. It’s not outsourcing manual reviews, it’s abolishing them completely. That’s the only way you can be truly real-time, for truly excellent customer experience, and truly scalable, so that that excellent experience remains even in the busiest holiday sales season of a huge retailer. Quite simply, no one else is able to offer that.



“We research transaction patterns, payment trends, the fraudster underground - and all of that knowledge gets fed into the system. The machine learns from each transaction, and it’s guided by our researchers and data scientists.”

CEO Interviews

Michael Reitblat, Forter (cont.)

Machine learning is a buzzword that gets thrown around a lot in the industry, but what distinguishes Forter’s machine learning engine from other competitors?

That’s very true, everyone wants to say that they have machine learning. It’s becoming like a basic necessity for entry. And you can see why - last year Forrester published a paper entitled “Stop billions in fraud losses with machine learning” pointing out the advantages of this shift in technology. Legacy models simply can’t keep up with the wealth of data, the flood of customers and the tsunami of online fraud, with fast-developing, creative new fraud techniques. It’s like saying you have “big data” - there’s so much information now that you have to have it, because otherwise you can’t keep up.

But it’s not about how much data you have or whether you’re using machine learning - it’s what you do with what you’ve got.

We invest, hugely, in research, and we’ve created a surgically assembled team. Instead of hiring analysts who manually review exceptions or only software engineers who develop data algorithms based on past activities and assumptions, our fraud analysts teach the system what they know. And, since each of these scientists are trained to look at data patterns differently, each is reviewing data using a unique lens. Those learnings update Forter’s fraud engine five to seven times a day.

We research transaction patterns, payment trends, the fraudster underground - and all of that knowledge gets fed into the system. The machine learns from each transaction, and it’s guided by our researchers and data scientists.

A lot of this comes down to experience: We’ve been dealing with the problem in various incarnations for more than 15 years. We started in military intelligence, catching not fraudsters but terrorists or criminal organizations moving money for weapons deals and the like.

We got very good at tracing malicious intent within activities that otherwise appear legitimate, and we adopted that practice to online fraud prevention in a different company called Fraud Sciences, which was acquired by PayPal. Through PayPal, we gained another level of education.

It’s that experience, and that research, that makes the difference - in combination with machine learning.



“Removing friction is even more important for mobile, too - and that’s also something that needs to be taken into account, otherwise conversion rates suffer accordingly.”

CEO Interviews

Michael Reitblat, Forter (cont.)

How does Forter manage the risk around providing a chargeback guarantee?

Accuracy. We’re really, really good at detecting what’s fraud and what’s not.

Beyond that, though, it’s a part of our business model for a reason. We are focused on growth - we only get paid for approved transactions, after all. To do that, we have to be willing to test, to really walk the walk of “innocent unless proven guilty”. So we’re never aiming for zero chargebacks. That would mean we’re too risk-averse, at risk of false positives. But, through developing and maintaining and improving a highly accurate system, we can keep chargebacks low even while ensuring approvals are high.

How does the increasing shift towards mobile commerce alter the fraud / security landscape?

Until recently, mobile has been treated as the “little brother” of e-commerce. When it comes to fraud prevention, that’s had an impact, with merchants simply using their e-commerce norms to deal with mobile. Obviously, that’s not as effective as it could be. Customers behave differently on mobile to the way they do on a computer, fraudsters have different techniques available to them, and some of the data available is different as well. If you don’t optimize for mobile, you’ll let through bad transactions and block good ones.

Removing friction is even more important for mobile, too - and that’s also something that needs to be taken into account, otherwise conversion rates suffer accordingly.

It’s only beginning to happen, but merchants are going to need to optimize their fraud and security provision for mobile just like they realised they need to do for their website more generally. The difference is, there’s no ‘mobilegeddon’ to prepare for - retailers need to recognize the challenge independently, and take the initiative to deal with it.

How do you plan on using the proceeds from your recent round of financing?

Advance Forter’s Vision - The funds will help advance Forter’s vision of combating and eliminating e-commerce fraud. For retailers and merchants, this is a huge and unsolved market opportunity as \$200 billion in good sales are blocked or declined annually and an additional \$70 billion is lost to fraudsters.

Enable Forter’s Product Innovation - The funds will enable continued development of Forter’s award-winning global fraud prevention platform. Only Forter provides fully automated, real-time Decision as a Service™ antifraud, with instant approve/decline decisions backed by a 100% chargeback guarantee. We stay ahead of the fraudsters and on top of consumer trends through constant research and innovation.

Expand Forter’s U.S. Expansion Efforts - The new funding will be a driving force behind Forter’s continued rapid growth and overall expansion throughout the U.S. Helping completely remove the fear of fraud from e-commerce will enable retailers to capture more sales.



“We have so many different pieces of our identity floating around; every time we interact with someone, there is a piece of that identity that we expose. When those entities are compromised, the consequences become even worse over time, because more and more information is now out there.”

CEO Interviews

Michael Reitblat, Forter (cont.)

Where is Forter headed over the next 5 years—what additional products and services does the Company intend to add?

5 years is a long time in e-commerce and payments - just think about how much has changed in the last 5 years. We intend to remain agile, to target the pain points that really matter as technology and user behavior and needs develop.

The essence of the answer, though, is that the core of our product has so many applications. What we do is provide actionable decisions based on our knowledge about an online identity.

We have so many different pieces of our identity floating around; every time we interact with someone, there is a piece of that identity that we expose. When those entities are compromised, the consequences become even worse over time, because more and more information is now out there.

So the answer is to become more sophisticated about how you identify people online. The things we do and the way we conduct ourselves is key, and something that can't be faked. We need to stop looking at identity and start looking at behavior. There are various ways to identify not just if a person has legitimate access to a payment card but their intentions for using it as well. How users connect to each other, across platforms, how they behave in all areas of their online life...

It's a risky world out there, and people will always try to compromise your identity for their benefit. Those people are well-trained and highly motivated, and there are a lot of ways they'll try to benefit - that's why our technology and approach has such potential to apply more broadly. These criminals are really creative. If there's a weakness, they'll try to leverage it. So there are so many ways that our approach can combat them - in e-commerce, in the payments world, and in cybersecurity more generally.



CEO Interviews

Michael Reitblat, Forter (cont.)

Are there other areas of transaction security that you think are ripe for innovation?

Vulnerabilities are evolving all the time: new methods, techniques, weak points. And, at the same time, consumer expectations are getting higher all the time. They expect to live in a world where everything is at their fingertips, just as so much information really is available to us through the phones in our pockets.

So the challenge is stopping the criminals - and don't underestimate them, they're highly creative, they're using technology, and they're not constrained by rules and processes the way legitimate entities are - while at the same time providing a great service for consumers. The trick is knowing where the criminals are going to be, not where they are - and where customers are going to want you to be tomorrow, not what they wanted yesterday.

This is something that applies absolutely across the board - every kind of transaction, every platform where people interact online, and omnichannel as well. We live in interesting times, and that's both fascinating and daunting. It's a massive challenge, but also a huge opportunity. It's a great time to be an innovator.

Thank you, Michael.



CEO Interviews

Yaron Samid, BillGuard



Yaron Samid



“BillGuard is disrupting the \$3 billion identity theft protection industry with a mobile app that crowdsources the collective knowledge of millions of vigilant consumers and your phone’s geo-location to detect unauthorized use of your identity.”

Please describe BillGuard’s business to us.

BillGuard is disrupting the \$3 billion identity theft protection industry with a mobile app that crowdsources the collective knowledge of millions of vigilant consumers and your phone’s geo-location to detect unauthorized use of your identity. 85% of identity theft results in fraudulent transactions on existing financial accounts – credit cards, debit cards and bank accounts, with banks catching less than half of it. BillGuard is the only identity theft protection solution to address existing account fraud and it does so at 1/4th the cost of today’s inferior solutions, including LifeLock. BillGuard was named the top Finance App of 2014 by Google Play after passing 1M downloads in just its first year.

Where did the idea to start BillGuard come from?

After Google’ing an unrecognized charge on my credit card bill and seeing countless posts and tweets by other cardholders who’d been defrauded by the same charge, I set out, with a world-class team of big-data scientists and machine learning experts, to build a brain that could harness human knowledge of wrongful charges in the same way that anti-spam technology weeds out bad emails. Since then, BillGuard has helped cardholders detect over \$70 million in fraud, grey charges and billing errors that the banks missed.

How are you able to get consumers’ transaction data?

Through our partner Yodlee, the banking standard SDK for account aggregation.

What are some of the key challenges that BillGuard must overcome for greater user adoption?

Customer acquisition cost (CAC) is traditionally high for identity theft protection solutions. We are working on pioneering a mobile freemium model to greatly reduce CAC, but also must secure large distribution partner deals.

What makes BillGuard different from other personal financial management and consumer protection apps out there in the marketplace?

BillGuard utilizes patent-pending crowdsourcing technology and your phone’s geo-location to detect unauthorized use of your identity and payment cards.

How do you see the shift to EMV in the U.S. later this year impacting card fraud and BillGuard’s business?

We see it shifting fraud online where the scale of financial impact can be far greater. This is evident in Europe where EMV has been a standard for years and card fraud is at an all time high. The need for consumers to be even more vigilant in monitoring their financial accounts for suspicious activity only heightens, positioning BillGuard well for a market-leading role in consumer identity and financial protection.



CEO Interviews

Yaron Samid, BillGuard (cont.)

What additional products or services do you plan on adding to the BillGuard app?

Credit tracking – scores, reports, and key factor analysis.

How big is BillGuard's overall market opportunity?

The combination of identity theft protection and credit tracking – two multi-billion dollar markets that BillGuard is in a unique position to converge and take significant market share.

Are there other areas of transaction security that you think are ripe for innovation?

Mobile wallet security is greatly lacking and ripe for innovation. BillGuard will be partnering with a leading mobile wallet provider in the next 12 months.

Thank you, Yaron.



Nuno Sebastiao



“Feedzai was founded... with one powerful mission: make commerce safe for business customers and create a better experience for their consumers through artificially intelligent machine learning.”

CEO Interviews

Nuno Sebastiao, Feedzai

Please describe Feedzai’s business to us.

Feedzai was founded by data scientists and aerospace engineers with one powerful mission: make commerce safe for business customers and create a better experience for their consumers through artificially intelligent machine learning. The mightiest companies in the world — including payment processors, banks and retailers — use Feedzai’s anti-fraud technology to keep commerce moving safely.

How exactly is Feedzai applying machine learning and big data analysis to combat fraud?

Our software itself recognizes what’s happening in the real world, how it’s different from what happened yesterday, and adjusts its responses accordingly. Feedzai’s approach:

- **Using untapped data:** Nearly all businesses have dormant or data in silos. Feedzai has built from the ground up a platform that ingests more kinds of data faster than anything else that is available for the financial services industry. This speed advantage translates into better analytics capabilities. For example, dormant data such as 3 years of historical transactions can be transformed into predictive forward-looking insights about what is likely to happen next.
- **Clicks not code:** By abstracting the underlying data and technology complexities, we allow every fraud and risk analyst to do the work of advance data scientists. Furthermore, Feedzai was built by data scientists for data scientists. For all users, Feedzai’s tools make handling big data possible via intuitive graphical interfaces without users having to learn a new programming language.
- **Cloud or data centers:** Feedzai’s machine learning technology can be “on-premise” installed in data centers, or accessed as a service via an API. Other solutions provide one or the other, while Feedzai’s data- and channel-agnostic architecture is a response to the blurring of the consumer experience between on- and off-line worlds.



CEO Interviews

Nuno Sebastiao, Feedzai (cont.)



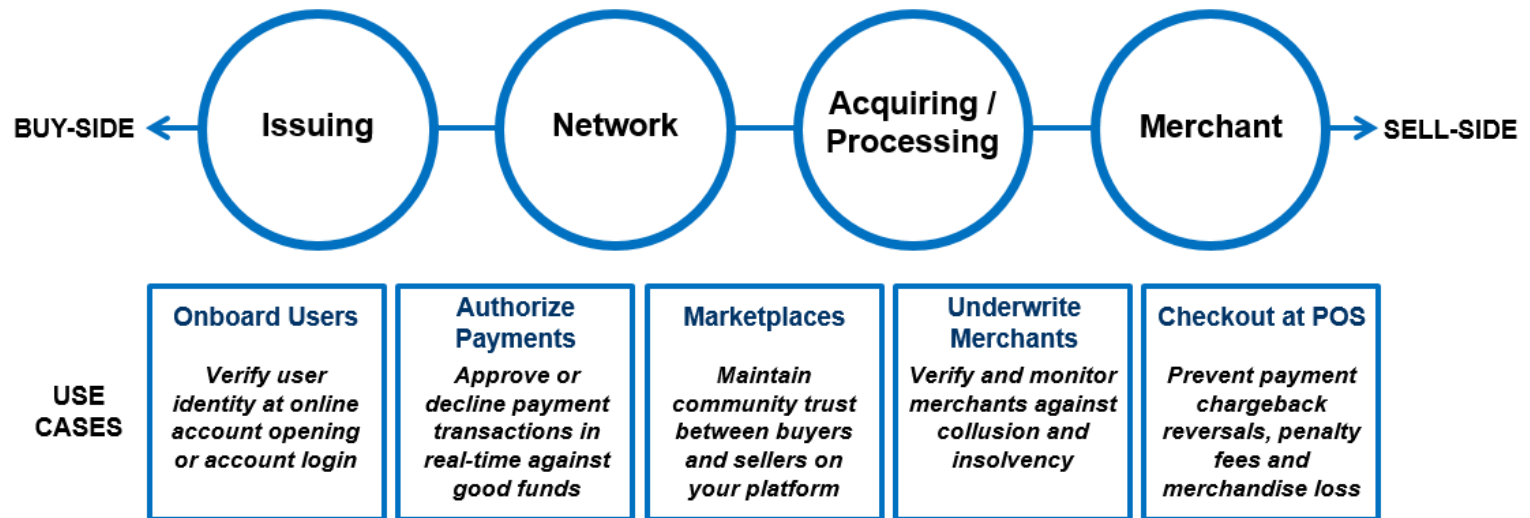
“The modern payments value chain is long and complex, with data flowing back and forth continuously. This data is living and ever-changing but locked in silos.”

Who are you serving in the payments ecosystem and how does your service differ for each?

The modern payments value chain is long and complex, with data flowing back and forth continuously. This data is living and ever-changing but locked in silos. To unlock the power of the data, we effectively manage risk using artificial intelligence. We've built a common machine learning platform for anyone that handles payments. Examples of the flexibility of the Feedzai platform:

- **Onboard users:** Verify user identity at online account opening or account login.
- **Authorize payments:** Approve or decline payment transactions in real-time against good funds.
- **Marketplaces:** Maintain community trust between buyers and sellers on your platform.
- **Underwrite merchants:** Verify and monitor merchants against collusion and insolvency.
- **Checkout at POS:** Prevent payment chargeback reversals, penalty fees, merchandise loss.

Feedzai Fits Along Payment Value Chain





“Many of the modern techniques and technologies weren’t available even 5 years ago. Much of the existing infrastructure was built when commerce was not operating in a state of ‘real-time and always-on.’”

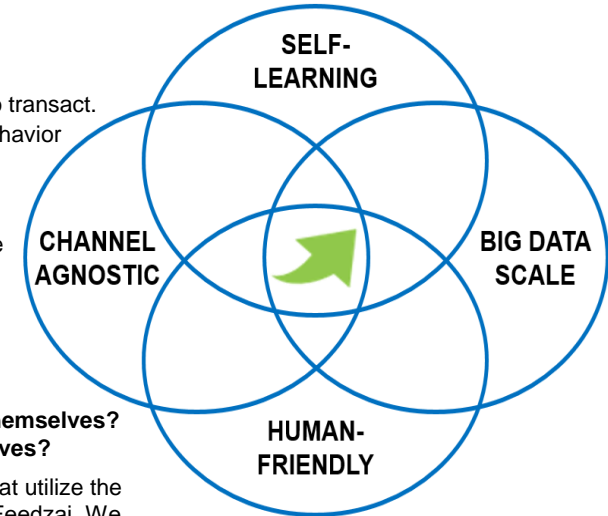
CEO Interviews

Nuno Sebastiao, Feedzai (cont.)

How is Feedzai differentiated vs other competitors in the marketplace?

In terms of capabilities, Feedzai hits a sweet spot:

- **Omnichannel:** works in-store, online, mobile – anywhere customers choose to transact. Other competitors, for instance, only work online and cannot connect offline behavior to get a 360 degree view
- **Data science:** beyond rules, uses artificially intelligent machine learning
- **Big data scale:** real-time streaming engine based on modern data architecture
- **Whitebox scoring:** semantic layer translates underlying machine logic into human-readable text and explanations



Why can't the larger processors and issuers in the payments space effectively harness the power of big data and machine learning engines to combat fraud themselves? What are the key challenges for organizations trying to do what you do themselves?

Imagine if large processors and issuers could start all over and design risk systems that utilize the best of what modern technology and science could offer? That's what we're doing at Feedzai. We took a clean-slate approach. We built both a platform and a company that overcomes the traditional challenges:

- **Legacy infrastructure:** Many of the modern techniques and technologies weren't available even 5 years ago. Much of the existing infrastructure was built when commerce was not operating in a state of "real-time and always-on."
- **Talent acquisition:** If you're a rising data scientist or developer, working for a startup is very attractive.
- **Fear of disruption:** Time and time again, we've seen the innovator's dilemma play out in the payments industry. For example, Visa could not create PayPal, PayPal could not create Square, and so forth.
- **Decreasing cycle times:** Fraudsters are more agile and iterating at a "fail fast" pace, while many incumbent processors, issuers and solutions providers are still operating in a "waterfall" world.

How does Feedzai interact with payment-related security technologies such as EMV, 3-D Secure and Tokenization?

The best security strategy is a multilayer approach because no single solution or tool works for all environments, situations or customers. For example, large e-commerce merchants use on average 8 tools. These solutions were not designed to work together and often conflict. On the other hand, our clients want a consistent experience for their customers regardless of when or where they choose to transact. So as tools proliferate, our clients tell us that they need a "super brain" to manage their growing multilayer security approach that is designed to keep customers happy and safe. Thus, Feedzai is used to manage and preserve this "customer experience" regardless of which technology is used, whether it be EMV, tokenization, biometrics, or whatever is next.



“Most of the data in the world has been created within the last 2 years and as this dataverse continues to grow at an unprecedented rate, Feedzai will be right there and continue to enable businesses to accurately analyze this information...”

CEO Interviews

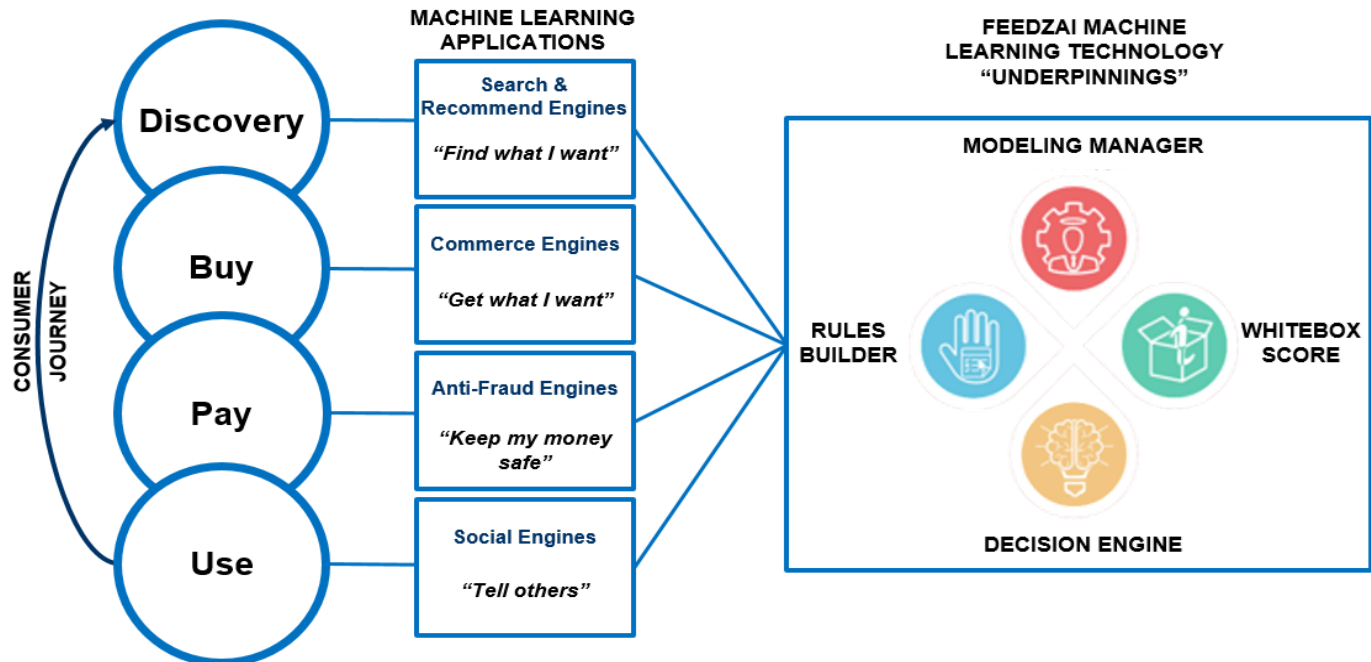
Nuno Sebastiao, Feedzai (cont.)

How do you plan on using the proceeds from your recent round of financing?

We are scaling sales and operations to keep up with demand, including expanding geographies and use cases.

Where do you see Feedzai in five years?

Currently, Feedzai's machine learning platform is transforming the management of risk and fraud into a real-time decision science. At the same time, most of the data in the world has been created within the last 2 years and as this dataverse continues to grow at an unprecedented rate, Feedzai will be right there and continue to enable businesses to accurately analyze this information to keep their customers and transactions safe at any place or moment in time. Our vision for the near future is to make the Feedzai Score the de facto standard for risk management. For our longer term roadmap, we have an expanded set of use cases that enable clients to drive top-line revenue. This is exciting because we're fulfilling a vision where Feedzai is part of the complete consumer journey, from the initial search / discovery phase, to the buy and pay phases and finally through the utilization stage.





CEO Interviews

Nuno Sebastiao, Feedzai (cont.)

Are there other areas of transaction security that you think are ripe for innovation?

We see that the use of artificial intelligence will be even more prominent, being able to even understand more the context of transactions that people do. This will in turn enable more innovation that is intelligence-based or that requires a heavy dose of science and engineering to unlock its potential such as biometrics, cryptocurrencies and behavioral analytics.

Thank you, Nuno.



Reed Taussig

ThreatMetrix

“ThreatMetrix using its Digital Identity Network is leading the way to help merchants, card brands and acquiring banks greatly increase their acceptance rates of cross border e-commerce transactions, which in turn leads to higher revenues and improved customer satisfaction for every participant in the buying chain.”

FINANCIAL
TECHNOLOGY
PARTNERS

CEO Interviews

Reed Taussig, ThreatMetrix

Please describe ThreatMetrix's business to us.

ThreatMetrix is a global leader for customer authentication using fully anonymized digital identities derived from the ThreatMetrix Digital Identity Network.

ThreatMetrix services three principal markets which are the global e-commerce, financial services and media industries for the purpose of securing online commerce in the areas of new account origination, payments and account takeover.

ThreatMetrix supports more than 4,000 customers, 20,000 websites and over 1 billion transactions per month across its network. ThreatMetrix benefits its customers by significantly reducing customer friction across the online channel, which in turn leads to higher revenue and reduces online fraud often by as much as 75%.

What are the key industry trends driving the business today?

The key industry trends that business face in the online channel vary by industry.

For enterprise banks, the single most common initiative ThreatMetrix sees is their desire to reduce customer friction across the online channel. In order to keep transactions secure, banks deploy different versions of two factor authentication, an SMS message or a phone call using knowledge based authentication for example, to their customers. This very act interrupts the flow of the transaction, inconveniences the customer and is expensive to execute. Using ThreatMetrix, our customers can passively authenticate their online consumers with no direct customer involvement and at a fraction of the cost of other two factor techniques. It is the ThreatMetrix Digital Identity Network that manages over 300 million tokenized digital identities that makes this possible.

With respect to e-commerce, there are several challenges and opportunities that global online retailers face today. The first is the changeover to EMV chip based credit cards. The European retail community saw a dramatic shift of credit card fraud from POS to CNP due to the introduction of chip based cards. The US will see the same result. This comes at a time when CNP transactions themselves are growing at more than 20% a year due to the benefits that both consumers and sellers gain from doing business online.

The second major opportunity for e-commerce companies is to find ways to increase the acceptance rates of cross border e-commerce. It is generally accepted that 30% or more of all cross border e-commerce transactions are denied by either the card brand, the acquiring bank or the merchant themselves. Yet it is also generally recognized that the vast majority of these denied transactions are in fact valid customer purchases. We all live in a 24 X 7 globally connected economy where consumers are going to bypass state boundaries in order to find the best products and services at the best price and terms they want to acquire.

ThreatMetrix using its Digital Identity Network is leading the way to help merchants, card brands and acquiring banks greatly increase their acceptance rates of cross border e-commerce transactions, which in turn leads to higher revenues and improved customer satisfaction for every participant in the buying chain.



CEO Interviews

Reed Taussig, ThreatMetrix (cont.)

ThreatMetrix

“ThreatMetrix Digital Identity Network is a platform of fully integrated products designed to authenticate good customers and / or recognize bad actors across a wide variety of circumstances.”

How does ThreatMetrix integrate with its customers' login / checkout transaction flow?

ThreatMetrix is exclusively a SaaS offering that is easily integrated into a customer's web based application either through direct communications with ThreatMetrix or indirectly through the CDN vendors' page acceleration products. Customers can access the ThreatMetrix portal to view real-time results or as is typically the case, access ThreatMetrix data through an industry standard API.

Customers typically complete a full integration of ThreatMetrix in one to four weeks depending on the complexity of information they desire.

What key technologies does the Company leverage to provide its products / services?

The ThreatMetrix Digital Identity Network is a platform of fully integrated products designed to authenticate good customers and / or recognize bad actors across a wide variety of circumstances. We have created a multi-layered family of fully integrated products that operate as follows:

Layer 1 of the ThreatMetrix platform is dedicated to device identification, mobile authentication and malware protection. ThreatMetrix profiles more than 4 billion devices per month across its customer base. Of these, approximately 60% originate in North America and 40% originate from elsewhere around the world. In addition, more than 30% of the 4 billion devices ThreatMetrix sees every month are mobile devices that are used either in conjunction with a vendor supplied application or as a web browser.

In order to identify these devices, ThreatMetrix deploys several technologies that are used to identify good returning devices and to identify device anomalies. These technologies include packet level inspection, IP location, proxy detection, TOR detection, VPN detection, server-side malware detection for both fixed and mobile devices, fuzzy matching algorithms to identify cloaked devices to name a few of the capabilities we provide.

Layer 2 of the ThreatMetrix solution incorporates the concept of globally shared anonymized digital identities. ThreatMetrix customers will recognize this capability as ThreatMetrix Persona ID.

In the world of ThreatMetrix, a Persona is made up of the transactional markers you as a consumer use to conduct business across the Internet. Most people have several Persona's that when combined create a digital identity. For example, as president and CEO of ThreatMetrix I have a business Persona that is comprised of the devices I primarily use for business purposes along with my business email address, office bill to and ship to address, business credit cards used for travel and my mobile phone number.

In addition, all of us also have one or more "Private Persona's" that often incorporate other devices, an iPad for example, a home email address, personal credit cards and shipping address and of course a mobile phone. Each of these digital markers that define a public and personal Persona are linked by ThreatMetrix to create a digital identity.

For ThreatMetrix customers the presence of these digital identities is invaluable. If for example a bank is informed that one of their customers email addresses is now being used on five different devices on three different continents simultaneously, that bank can safely assume that its' customer's credentials have been hacked and the bank should now regard that customers account as a high risk account.



CEO Interviews

Reed Taussig, ThreatMetrix (cont.)

ThreatMetrix

“Persona ID, used to create ThreatMetrix digital identities, is a powerful tool to identify both fraudsters and good customers before that online provider provides access to their services...”

Alternatively, in the case of a new account application where I have never seen that customer before ThreatMetrix customers using Persona ID can passively profile and evaluate that consumer's digital identity to make a determination if they want to extend that person credit or access to their site without direct customer participation. ThreatMetrix knows that good customers have good profiles that consist of a reasonable and expected number and type of credentials. So a customer that has been associated with 40 or more devices, 30 separate email addresses and 25 credit cards can be considered to be a bad actor whereas a customer that operates across let's say three devices, an acceptable number of credit cards and email addresses can probably be considered a good customer.

Persona ID, used to create ThreatMetrix digital identities, is a powerful tool to identify both fraudsters and good customers before that online provider provides access to their services, credit or in the case of social networking sites, their other valuable customers.

Layer 3 of the ThreatMetrix solution provides ThreatMetrix customers with the ability to validate consumer behavior based on the actual experiences of all ThreatMetrix customers who may have interacted with that given consumer. We call this capability ThreatMetrix Trust Tags and they are possible due to our fully privatized shared global intelligence.

For example, if I am online retailer of baseball tickets, it would be useful for me to know if the consumer who is attempting to purchase a ticket as a card-not-present “CNP” transaction was successful with another CNP transaction at one or more of ThreatMetrix's 4,000 global customers using the same the same or similar credentials. If in fact this consumer did use these same credentials to purchase another product of similar value within the last 30 days at another ThreatMetrix customer, my confidence that this consumer is an authentic customer and not a fraudster is going to increase.

ThreatMetrix Trust Tags are used by a wide variety of ThreatMetrix customers across the financial services, e-commerce and media markets to passively authenticate and approve good customers as well as to recognize bad actors based on the actual behavior of those individuals across the ThreatMetrix customer base.

Layer 4 of the ThreatMetrix solution incorporates visual forensics providing our customers the ability to review, approve, reject, research and manage their transaction data in the ThreatMetrix system.

The 4 integrated layers of the ThreatMetrix technology are designed to provide customers with a completely passive, tokenized, real-time system to help them recognize good returning customers and to identify fraudsters.



CEO Interviews

Reed Taussig, ThreatMetrix (cont.)

ThreatMetrix

“Over the past eight years ThreatMetrix has invested more than 300 man years of engineering resources into the development of its products. Between now and the end of 2016, we will invest an additional 120 man years into the product.”

Do ThreatMetrix’s solutions work across all verticals or are they better suited for specific verticals? Does ThreatMetrix serve all sizes of merchants / organizations?

ThreatMetrix makes available to all of its customers our policy engine. This means that customers are able to configure their own risk profiles based on their particular business dynamics. No two customers are alike. A bank or credit card brand that is extending credit online operates under a very different risk profile than does a social networking company.

The ThreatMetrix solution is designed to provide customers the ability to configure the system to conform to their own business rules and risk profiles. This is reflective of our customer mix, which is 40% e-commerce, 40% financial services and 20% media.

ThreatMetrix supports customers that execute less than 1,000 transactions per day as well as customers that execute up to 1,000 transactions per second. The ThreatMetrix platform is designed to be flexible and scalable.

Why do merchants / organizations need ThreatMetrix —why can’t they replicate what the Company provides through in-house solutions?

Over the past eight years ThreatMetrix has invested more than 300 man years of engineering resources into the development of its products. Between now and the end of 2016, we will invest an additional 120 man years into the product. In addition, because we are a software vendor, we gather valuable feedback, suggestions and ideas from all of our customers. The fact is that most commercial enterprises do not have the in house engineering resources to dedicate to the development of a ThreatMetrix-like application nor would it be cost effective to build and maintain an in-house solution. We are specialists in what we do and we develop products across multiple scenarios to suit the needs of multiple business types.

More importantly an in-house developed system will not have the advantage of shared global intelligence. The benefits of shared global intelligence that track the behavior of hundreds of millions of digital identities across more than 1 billion transactions per month on the ThreatMetrix network cannot be replicated by using an in-house derived system.

How is ThreatMetrix different from other fraud /security solution providers?

ThreatMetrix is the only vendor in the market that combines mobile recognition, device identification, malware detection, tokenized digital identities and behavioral analytics into a single digital identity platform. Our differential advantage as a vendor and the principal benefits that we provide our customers are captured in that statement. Most other vendors offer a portion of the ThreatMetrix solution, device identification or malware detection for example, as stand-alone products. This forces the customer to integrate multiple vendors, which increases cost and complexity. But no other vendor in the market can provide the shared global intelligence that ThreatMetrix has created on top of its Digital Identity Network.



CEO Interviews

Reed Taussig, ThreatMetrix (cont.)

ThreatMetrix

“There is an old adage in the software industry which says that features become products; products become platforms; and platforms become companies. Those vendors in the industry who are delivering single purpose point products will either be acquired by larger companies or they will become non-competitive in the industry.”

Given the fragmented nature of fraud / security vendor marketplace, many companies partner and integrate with one another – can you discuss ThreatMetrix's views on partnering and do you expect consolidation to occur among fraud / security vendors?

ThreatMetrix maintains a very active partner program. Leading partners include CyberSource, Accertify, First Data, FIS, Web Root, TransUnion and many others. The complexity and breadth of customer requirements spanning payments, online origination and account protection applications requires that ThreatMetrix partner with leading providers in order to provide customers with the best solutions available in the market.

With respect to vendor consolidation within the category, this will of course happen as it has happened across every software category in the industry over time. There is an old adage in the software industry which says that features become products; products become platforms; and platforms become companies. Those vendors in the industry who are delivering single purpose point products will either be acquired by larger companies or they will become non-competitive in the industry. ThreatMetrix itself has been an active acquirer of technology that we felt was important to round out our own offering.

How does the increasing shift towards mobile commerce alter the fraud / security landscape?

In general, mobile platforms, particularly when coupled with well-designed vendor supplied applications, provide a much lower security risk to both merchants and consumers than do traditional desk top solutions. But, by the same token, mobile solutions do introduce new challenges into the customer authentication process particularly as it relates to the true location and identity of the customer. I can for example purchase a prepaid phone for cash with no sustaining service plan under any name that I wish to use. I can then use that phone to make purchases with a stolen credit card under the same name and appear to be a perfectly legitimate customer. This is a good example of where global shared intelligence of digital identities really proves its value.

The other contributing factor to a mobile world is that it is mobile, it is always on your person and it encourages the rapid growth of cross border e-commerce. We live in a global economy. In 2014 there were over 190 million people who travelled to or from the United States for both business and personal reasons. It is a certainty that the vast majority of these people carried with them a mobile phone that is fully capable of transacting online commerce. The implications for new revenue opportunities and payment acceptance around this statistic are immense.



CEO Interviews

Reed Taussig, ThreatMetrix (cont.)

ThreatMetrix

“The rapidly evolving global and mobile world that we live in will generate rapidly increasing demand for private, passive and fully tokenized authentication systems that can be put into place without creating undue customer friction and can be done so at a reasonable cost.”

In the payments space specifically, how does ThreatMetrix interact with payment-related security technologies such as EMV, 3-D Secure and Tokenization?

The introduction of EMV cards in the United States will lead to a shift from in-store credit card fraud to online credit card fraud in a similar manner as has been already demonstrated in Europe. This will increase the demand for ThreatMetrix services which is good for our business.

With respect to 3-D Secure, ThreatMetrix is already working with several of the major card brands to provide passive two-factor authentication for the purpose of reducing the historical online friction associated with 3-D Secure solutions so as to improve overall adoption of 3-D Secure offerings. This is a positive move for the industry in that 3-D Secure solutions are an effective way to reduce CNP fraud.

With respect to tokenization ThreatMetrix embraced this concept with actual products delivered several years ago. The end result is the ThreatMetrix Digital Identity Network. Privacy across the internet is governed by law and the consequences of breaching a person's confidential information will continue to be more stringently enforced as time goes on.

Where is ThreatMetrix headed over the next 5 years—what additional products and services does the Company intend to add?

I would rather not comment on our product roadmap for competitive reasons. I will say that ThreatMetrix is engaged in a global business across several existing and new vertical markets and that we believe that the company will continue to rapidly grow for the foreseeable future.

Are there other areas of transaction security that you think are ripe for innovation?

Online security is only about authenticating the actual identity of the person who is executing a transaction. Nothing else really matters. The rapidly evolving global and mobile world that we live in, (and I refer to mobile both in terms of mobile devices as well as the mobility of the workforce itself), will generate rapidly increasing demand for private, passive and fully tokenized authentication systems that can be put into place without creating undue customer friction and can be done so at a reasonable cost. Shared global intelligence is the most effective tool available to all companies that offer online services and products to both consumers and employees in order to safely establish true identities.

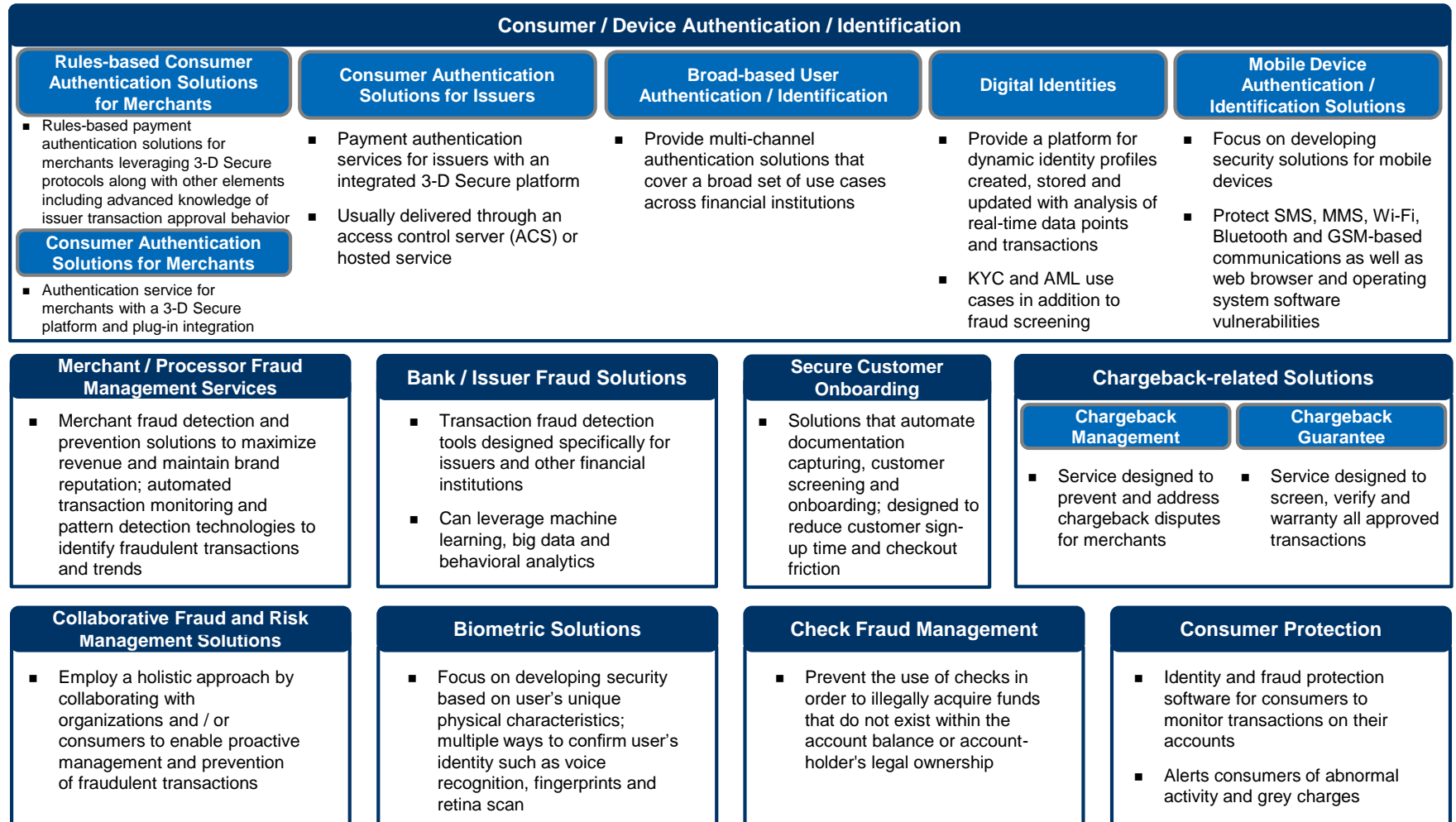
Thank you, Reed.

V. Competitive Landscape



Competitive Landscape

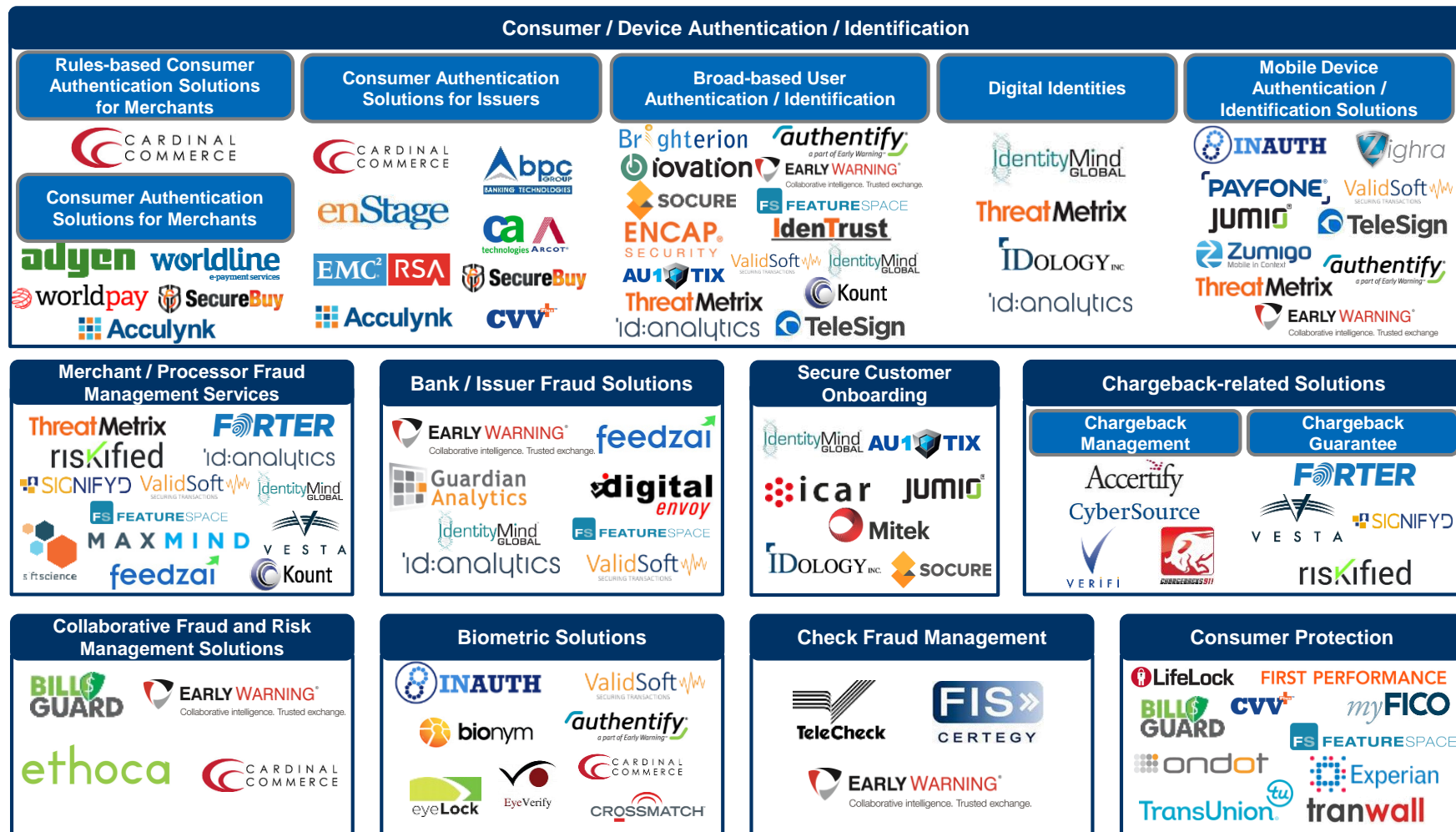
Transaction Security Ecosystem





Competitive Landscape

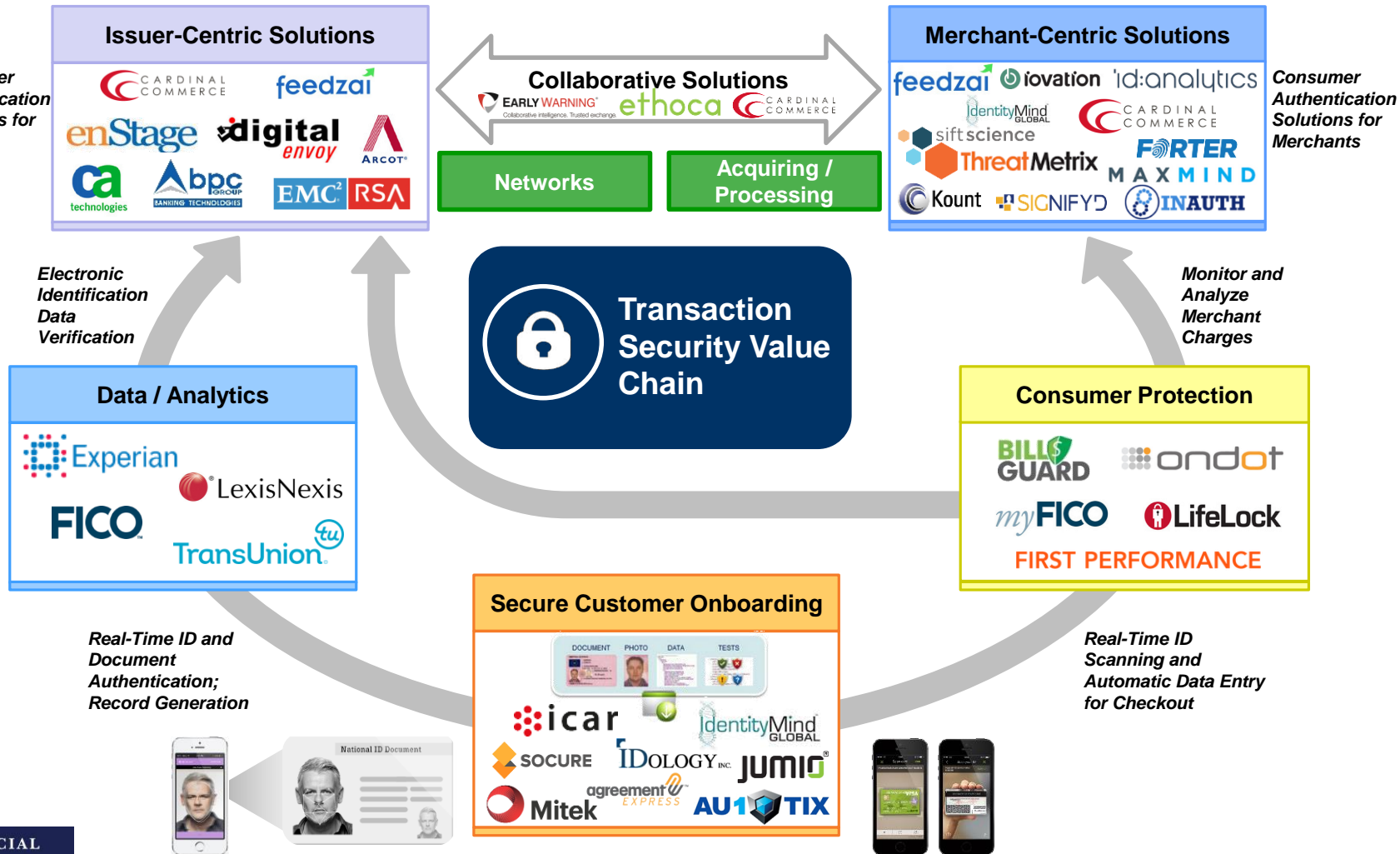
Transaction Security Ecosystem and Representative Companies





Competitive Landscape

Transaction Security Value Chain



Note: The companies in each category are selected examples.

VI. Selected Company Profiles



Selected Company Profiles

Company Profile: Acculynk



Landscape Category(s)

Consumer Authentication
Solutions for Merchants

Consumer Authentication
Solutions for Issuers

Company Overview

CEO: Ashish Bahl

Headquarters: Atlanta, GA

Founded: 1999

- [Acculynk](#) provides online transaction security solutions with a suite of software services backed by a patented authentication and encryption framework that provides security for issuers, EFT networks, merchants and payment processors
- The Company also offers secure authentication services across various electronic and mobile channels from Internet PIN debit to online banking to the mobile wallet reaching across all payment methods, transaction types, and devices to authenticate the consumer
- Acculynk has gateway partnerships with 10 EFT networks to process transactions and 6 large payment processors; also certified with PULSE, First Data and MasterCard, among others

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 09/01/12 | na | M&A | Acquired Affinity Payments |
| 08/17/12 | \$9 | Financing | Secured financing from Discover Financial Services |
| 02/19/10 | <1 | M&A | Acquired Twitpay |
| 11/07/08 | 12 | Financing | Secured financing from Oak Investment Partners |
| 03/07/08 | <1 | M&A | Acquired ATM Direct |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview

Internet PIN Debit – After debit card number entry at the point of checkout, a patented PIN pad appears for users to validate a transaction; after a completed transaction, the PIN is scrambled for security

Payzur for PIN P2P – Allows financial institution customers to send funds simply by authenticating the mobile- or web-initiated transaction with their bank issued PIN

PaySecure Alternative Debit Gateway– Global e-commerce debit gateway; China UnionPay's 3 billion cardholders and 250 million RuPay users in India can shop at US merchants with PaySecure; also supporting dynamic least cost routing

Payzur Direct to Debit – A B2P debit payout solution that enables sender businesses to initiate payouts directly through debit networks, eliminating ACH and checks

Authentication Services – Offers authentication solutions for mobile, home banking, credit cards and ATM transactions





Selected Company Profiles

Company Profile: AU10TIX

Landscape Category(s)

Broad-based User
Authentication /
Identification

Secure Customer
Onboarding



Company Overview

- Managing Director:** Ron Atzmon
- Headquarters:** Nicosia, Cyprus
- AU10TIX provides a complete range of technology solutions for secure customer onboarding
 - AU10TIX fully automates the entire process of ID auto-recognition, usability-screening, content extraction, and multi-factor authentication
 - Solutions speed-up onboarding and increase effective volume handling capacity, while enhancing fraud protection and KYC compliance even beyond market standards
 - AU10TIX technology incorporates advanced machine learning and risk analytics with speed, success rates and ability to handle borderline image qualities superior to conventional template matching
 - The Company is a subsidiary of ICTS International, a Netherland-based aviation security company

Clients & Partners



Products & Services Overview

ONLINE SOLUTIONS: BOS

- Handles ID document images from mobile devices, office scanners, etc.
- 100% data entry free
- Complete process incl. auto-classification, usability screening, content extraction, multi-factor authentication
- Only solutions with image tampering forensic
- Superior handling of borderline quality images
- 10" seconds processing speed
- Immediate, detailed exceptions report
- Deep US & Global coverage
- API or dashboard
- Optional mobile SDK
- Optional VAS such as address verification & normalization



MULTI-FACTOR AUTHENTICATION



POS SOLUTIONS: FDI

- Handles physical ID documents
- Stand-alone or networked
- Uses professional 3-illumination scanners or office scanners
- Enables auto-population of electronic forms, helping improve transaction success and increase workflow
- Offers integration with inputs from chip, magnetic stripe, barcode, signature pads and biometric readers





Selected Company Profiles

Company Profile: Authentify



a part of Early Warning

acquired by



EARLY WARNING

Collaborative intelligence. Trusted exchange.

Landscape Category(s)

Broad-based User
Authentication /
Identification

Mobile Device
Authentication /
Identification Solutions

Biometric Solutions

Company Overview

CEO: Peter G. Tapling

Headquarters: Chicago, IL

Founded: 1999

- Authentify provides intuitive and consistent multi-factor authentication services for protecting user accounts or key information from unauthorized access
 - Services enable organizations that need strong security to quickly and cost-effectively add 2-factor or 3-factor authentication layers to user logon, transaction verifications or critical changes such as adding a payee to an e-pay or wire account
- Solutions include transaction verification, remote user access, token issuance, password reset, risk management, SMS password delivery and telephone data services
- The Company was acquired by Early Warning in April 2015

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|-----------------------------------|
| 04/07/15 | na | M&A | Acquired by Early Warning |
| 03/07/11 | na | M&A | Acquired Hawk and Seal |
| 06/25/01 | \$9 | Financing | Secured financing from JMI Equity |
| 05/01/00 | 4 | Financing | Secured financing from JMI Equity |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview



Authentify xFA – Takes advantage of a smartphone's sensors, processing power and data channels to offer flexible authentication



Two-Factor Authentication for VPN – Ensure secure access from anywhere or anytime; users seeking to log on are authenticated via an out-of-band channel using a second device.



Authentify 2CHK – Protect your customers from man-in-the-middle and man-in-the-browser attacks; offers a secure communication channel to customers via their phones, or a secure second channel to the user's desktop



Identify and Access Management – Safeguard user accounts or key information from unauthorized access



Password Reset – The password reset application combines true out-of-band safeguards with real-time delivery to produce the most secure and convenient method of resetting account access



Two-Factor Authentication – Phone-based two-factor authentication that works with any phone from anywhere



Transaction Verification – Authenticate legitimate online account activities against sophisticated attacks and fraud



Selected Company Profiles

Company Profile: BillGuard

BILLGUARD

acquired by

PROSPER

Landscape Category(s)

Consumer Protection

Collaborative Fraud and
Risk Management
Solutions

Company Overview

CEO: Yaron Samid

Headquarters: New York City, NY

Founded: 2010

- [BillGuard](#) provides personal finance security from unwanted charges including hidden fees, billing errors, scams and fraud on credit card bills
- The Company's specialties are personal finance security, credit monitoring, market data analytics, and surveillance
- Has partnerships with world-class identity-theft and fraud analytics firms such as Experian and CSID to boost security for added protection

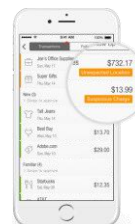
Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 09/24/15 | na | M&A | Acquired by Prosper Marketplace |
| 08/10/14 | \$3 | Financing | Secured financing from undisclosed investors |
| 10/18/11 | 10 | Financing | Secured financing from Bessemer Venture Partners, IA Ventures, Innovation Endeavors, Khosla Ventures and The Founders Fund |
| 02/02/11 | 3 | Financing | Secured financing from Bessemer Venture Partners and IA Ventures |

Products & Services Overview

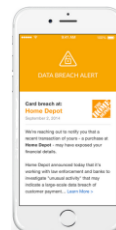


BillGuard uses crowdsourcing to detect fraud and overspending patterns that banks and consumers regularly miss and has become the world's #1 transaction monitoring app



Track

- Tracks charges, showing consumers where they've shopped
- Alerts the cardholder when a card is used away from normal patterns
- Allow consumers to manage all of their accounts in one place



Protect

- Sends suspicious charge alerts and provides details on merchants when they do not recognize a charge
- BillGuard has also found and returned over \$60 mm in wrongful charges



Save

- Track spending patterns to search for coupons that can lower monthly bills
- The platform also introduces consumers to new products and services that are complementary to their spending habits



Selected Company Profiles

Company Profile: Brighterion



Landscape Category(s)

Broad-based User
Authentication /
Identification

Company Overview

CEO: Akli Adjaoute
Headquarters: San Francisco, CA
Founded: 2000

- [Brighterion](#) offers products for real-time fraud prevention, predictive intelligence, risk management, AML / KYC compliance, and homeland security intelligence
- The Company has a broad portfolio of artificial intelligence and machine learning technologies which provides real-time intelligence and insight from all data sources, regardless of type and complexity
- Brighterion's product offerings are used by large financial institutions and government agencies around the world

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 09/13/02 | na | Financing | Secured financing from undisclosed investors |
| 04/30/00 | \$2 | Financing | Secured financing from Cherry Creek Investments and Sturm Group |

Products & Services Overview

*Prevent

A real-time multi-layer fraud prevention solution powered by Smart-Agent technology, including device ID and behavioral / cross-channel analysis

*Predict

A big data analytics engine that allows users to extract insights from enterprise data and new data from various sources – allows businesses to quickly identify marketing strategies out of insights derived from customer characteristics, attitudes and behaviors

*Protect

An adaptive risk analysis software that analyzes, in real-time, large volumes of data, communications and activity patterns to infer actionable intelligence

*Comply

An anti-monitoring module that uses artificial intelligence to detect and report money laundering activity and other suspicious behavior

*Supervise

A web case management software that aggregates and process information into a user-friendly dashboard

*Monitor

A trend modeling software that automatically detects shifts in data and applies necessary real-time corrections based on market conditions

Select Industries Served

- Financial services
- Mobile payments
- Cyber / Homeland Security
- Internet
- Marketing/Social Networking
- Healthcare
- Tech / Software



Selected Company Profiles

Company Profile: CardinalCommerce



acquired by



Landscape Category(s)

Rules-based Consumer Authentication Solutions for Merchants

Consumer Authentication Solutions for Issuers

Collaborative Fraud and Risk Management Solutions

Biometric Solutions

Company Overview

CEO: Mike Keresman

Headquarters: Mentor, OH

Founded: 1999

- [CardinalCommerce](#) is a global leader for enabling authentication and alternative payments and securing transactions in the card-not-present world, driving increased sales, improving margins and eliminating fraud
- Offers Cardinal Consumer Authentication, a rules-based authentication solution leveraging the traditional 3-D Secure rails to offer a more intelligent authentication method; also provides access to 100+ secure payment methods and solutions, mobile banking technology, as well as various turnkey solutions customized for global brands
- The Company possesses strong IP advantages, holding 50 issued patents and has more than 100 pending

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 12/14/12 | na | Financing | Secured financing from Primus Capital |
| 08/02/10 | \$4 | Financing | Secured financing from undisclosed investors |
| 04/23/07 | 1 | Financing | Secured financing from undisclosed investors |
| 01/13/05 | na | M&A | Acquires iBIZ Software |
| 09/30/04 | 3 | Financing | Secured financing from undisclosed investors |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview

Authentication



- 3-D Secure protocols deployed to enhance security for merchants and consumers
- Rules-based consumer authentication solution; merchants can deploy protection from chargebacks for their card-not-present transactions while reducing interchange

Alt. Payments



- Offers 100+ secure payment methods and solutions for omni-channel business, including e-commerce, m-commerce and in-store options
- Alternative payment solutions include hosted checkout, loyalty & gifting, alternative payments and universal wallets

Mobile



- Cardinal MAX is a hosted mobile payment platform enabling businesses to process mobile payments and collect recurring charges in a secure manner
- Also a PCI certified platform for banks and other financial institutions to adopt

Big Data



- Big Data solutions provided through an online portal for real-time data analytics and transaction details
- Customer info is protected through PCI / DSS compliant connection

Solution Design



- CardinalCommerce's team of payment specialists work with businesses to design tailored solutions
- Allows companies to extract the most value out of Consumer Authentication, Alternative Payments, Tokenization, etc.



Selected Company Profiles

Company Profile: Digital Envoy



Landscape Category(s)

Bank / Issuer Fraud Solutions

Company Overview

- CEO:** Bill Caplin
- Headquarters:** Norcross, GA
- Founded:** 1999
- [Digital Envoy](#) provides online advertising / geo-location solutions through its Digital Element brand as well as online fraud & identity theft solutions through its Digital Resolve brand
 - Additionally, the Company patented and introduced geolocation technology and remains the main supplier of this technology to the online advertising industry
 - The Company was acquired by Landmark Communications in 2007 and became part of Dominion Enterprises, which is wholly-owned by Landmark

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 06/29/07 | na | M&A | Acquired by Landmark Communications |
| 03/05/07 | na | M&A | Acquired Cydelity |
| 06/23/01 | \$11 | Financing | Secured financing from Frontier Capital, AOL Time Warner Ventures, Crossbow Ventures and others |
| 03/07/00 | 1 | Financing | Secured financing from Angel investors |

Products & Services Overview



Login Authentication

Fraud Analyst provides a number of options to authenticate users including a built-in challenge response system, out-of-band authentication, e-mail notifications and tokens

Behavior Monitoring

Fraud Analyst's analysis engine tracks user activity in real-time to undercover fraudulent activity

Identity Verification

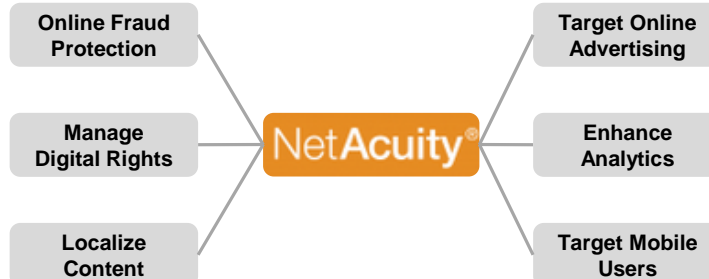
The customizable, rules-based engine analyzes customer-supplied information using IP intelligence to verify and protect their identity

Research & Reporting

Offers insight and actionable info for all online touch points and user sessions, allowing companies to take an active role in fraud prevention



Digital Elements's NetAcuity geolocation and IP intelligence technology is used across industries for a range of applications from content localization and ad targeting to fraud prevention





Selected Company Profiles

Company Profile: Early Warning



EARLY WARNING®

Collaborative intelligence. Trusted exchange.

Company Overview

CEO: Paul Finch

Headquarters: Scottsdale, AZ

Founded: 1995

- [Early Warning Services](#) ("Early Warning") provides fraud protection services for financial institutions, payment processors and retail merchants
- The Company's solutions for financial institutions include deposit fraud prevention, consumer lending fraud prevention, internal fraud prevention and fraud prevention for brokerages and mutual fund companies
- Early Warning is owned by Bank of America, BB&T, Capital One, JPMorgan Chase and Wells Fargo

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 10/07/13 | \$10 | Financing | Invested \$10 mm in Payfone |
| 04/28/11 | na | Financing | Secured financing from Capital One |
| 07/31/08 | na | M&A | First Data sells its 18% stake in Early Warning Services |
| 05/22/06 | na | M&A | Acquired by Bank of America, BB&T, JP Morgan Chase, Wachovia and Wells Fargo |

Products & Services Overview

Authentication Solutions



Identity Solutions – Improve account openings while reducing fraud with accurate, comprehensive and customizable identity solutions



Mobile Solutions – Deterministic mobile authentication solutions to optimize banking apps, browsers, mobile payments, contact centers and more

Payment Solutions



Deposit Payment Solutions – Mitigate deposit payment fraud with advance notification of high-risk deposits and high-risk payments from DDA accounts



Card Payment and Lending Solutions – Identify potential common points of purchase compromises faster and more accurately to reduce the risk of card data exposure

Regulatory Solutions



Mobile Number Verification – Verify the accuracy of consumer mobile phone numbers to reduce the risk of violating TCPA rules and regulations



Asset Search and Verification Service – Efficient Solution for Government Asset Inquiries



Internal Fraud Prevention Service – Applicant screening solution for Financial Service Organizations

Landscape Category(s)

Broad-based User Authentication / Identification

Mobile Device Authentication / Identification Solutions

Bank / Issuer Fraud Solutions

Collaborative Fraud and Risk Management Solutions

Check Fraud Management



Selected Company Profiles

Company Profile: Encap Security

Landscape Category(s)

Broad-based User
Authentication /
Identification



Company Overview

- CEO:** Thomas Bostrøm Jørgensen
- Headquarters:** Oslo, Norway
- Founded:** 2005
- [Encap Security](#) is a supplier of software-based authentication solutions for the financial services industry, delivering secure and frictionless user experience
 - The Company's solutions are based on its proprietary mobile device fingerprinting technology, eliminating the need for hardware-based fobs
 - Its Smarter Authentication Platform seamlessly integrates into customer's infrastructure and supports a range of authentication methods across all applications, channels and devices
 - Based in Oslo, Norway, and Palo Alto, USA, Encap Security brings deep experience in financial services security; major international banking institutions use its patented solution

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 06/11/13 | \$4 | Financing | Secured financing from Alliance Venture and ProVenture |
| 01/28/12 | 1 | Financing | Secured financing from Alliance Venture |
| 02/16/09 | 1 | Financing | Secured financing from Alliance Venture |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview

Multi-factor Authentication for connected smart devices

Encap offers strong multi-factor authentication for mobile, web, IVR, call-center and in-branch applications; the technology is scalable and flexible, offering a range of authentication methods to create a solution that is best suited to the context

App Defender

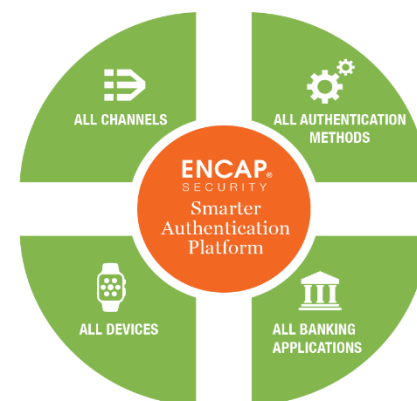
Encap App Defender is a fully integrated integrity solution that offers application protection beyond what the operating system offers; the software protects an application's integrity and shields it from attacks by malware

Risk Engine Integration

The Company collects context information and risk data from a customer's smart device and feeds it to a bank's risk-engine based on specific events – this can be used to make risk-based decisions that can both improve security and enhance the user experience

Smarter Authentication

Platform is extensible to incorporate current and future authentication technologies, flexible to secure any app on any device, and proven at internet scale with highly demanding banking deployment scenarios





Selected Company Profiles

Company Profile: Ethoca

Landscape Category(s)

Collaborative Fraud and Risk Management Solutions



Company Overview

CEO: Andre Edelbrock
Headquarters: Toronto, ON, Canada
Founded: 2005

- [Ethoca](#) provides a range of collaboration-based services that allow card issuers and merchants to work together to combat fraudulent e-commerce transactions and increase acceptance on good orders
- The Company receives data from card issuers on fraudulent accounts, which it transfers to merchants as alerts in real time; merchants are then able to stop fulfillment of goods and services, refund the customer and avoid impending chargebacks
- Merchants also send Ethoca orders they have rejected due to suspicion of fraud; Ethoca then transmits these to its card issuers to confirm whether the order is in fact fraud, or a good transaction (false positive) that the merchant can recover

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 07/16/15 | \$45 | Financing | Secured financing from Spectrum Equity Management |
| 11/21/12 | \$1 | Financing | Secured financing from Difference Capital Funding |

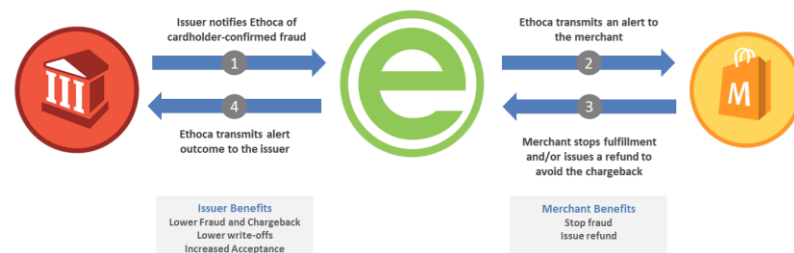
Products & Services Overview

Ethoca Alerts for Card Issuing Banks and Online Merchants

- An innovative platform that helps card issuers and merchants identify fraudulent activity / transactions and alerts all parties in real-time
- The Company's "direct-from-source" card issuer data is used by merchants to stop a transaction or fulfillment related to fraudulent accounts
- Significantly reduces the time it takes for merchants to be alerted of confirmed fraud (historically 3-6 week delay)

Advantages

- ✓ Brand protection
- ✓ Avoid financial loss by ceasing fulfillment
- ✓ Avoid chargebacks
- ✓ Improve productivity
- ✓ Improve fraud screening
- ✓ Improve cardholder / customer experience





Selected Company Profiles

Company Profile: Experian



Landscape Category(s)

Consumer Protection

Company Overview

| | |
|--|-----------------|
| CEO: | Brian Cassin |
| Headquarters: | Dublin, Ireland |
| Founded: | 1996 |
| Ticker: | LSE: EXPN |
| <ul style="list-style-type: none">▪ Experian is a publicly traded company that provides information, analytical tools and marketing services to aid their clients in managing their commercial and financial decisions▪ The Company helps businesses manage credit risk, prevent fraud, target marketing offers and automate decision making▪ Experian offers services to both business and individuals; operates in four segments: Credit Services, Decision Analytics, Marketing Services, and Consumer Services▪ The Company is publicly traded on the London Stock Exchange | |

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|------|---|
| 11/06/13 | \$850 | M&A | Acquired Passport Health Communications |
| 08/01/13 | 324 | M&A | Acquired 41 st Parameter |
| 04/03/13 | na | M&A | Acquired Decisioning Solutions |
| 08/23/12 | 1,487 | M&A | Acquired Serasa Experian S.A. |

Products & Services Overview

Business Services

- Assists with customer acquisition strategies
 - Uses specialized research and analytic tools to identify prospective customers
- Helps manage customer relationships to maximize revenue opportunities
- Aids in mitigating risk due to fraudulent activity
- Improves debt recovery strategies and helps reduce costs and maximize resources
- Provides consulting services to help mitigate business risks as well as provides clients with strategic credit risk management insights
- Helps companies address and comply with regulations and internal policies

Personal Services

- Experian helps individuals check their credit report and credit score
- The Company also aids individuals in protecting themselves from identity theft



Identity surveillance captures early signs of identity theft with email and text alerts



Internet scans daily for suspicious use of social security, debit and credit card numbers



Identity theft resolution agents help investigate and resolve identity theft



Selected Company Profiles

Company Profile: Featurespace



Landscape Category(s)

Broad-based User
Authentication /
Identification

Merchant / Processor
Fraud Management
Services

Consumer Protection

Bank / Issuer Fraud
Solutions

Company Overview

CEO: Martina King

Headquarters: Cambridge, UK

First deployed system: 2008

- Featurespace is a machine learning analytics software company based in the UK, focused on profiling online and offline customer activity in real-time and predicting future individual behavior
- The Company generates personalized analytics that drive applications, such as fraud detection and estimation of customer lifetime value
- Featurespace predominantly serves the financial services, insurance and gaming industries

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 06/10/14 | \$5 | Financing | Secured financing from Imperial Innovations Group, NESTA |
| 06/12/12 | 2 | Financing | Secured financing from Cambridge Capital, Imperial Innovations Group, NESTA, The Cambridge Angels |
| 12/29/10 | 2 | Financing | Secured financing from undisclosed investors |

Products & Services Overview

ARIC Fraud Manager

- Protect all customers by blocking new fraud attacks at the moment they occur
- Accept more good business by reducing false positives by over 70%
- Zero model degradation



Real-time
Risk Score



False
positive
ratio



Improved
fraud analyst
efficiency



Reduction
in genuine
declined



Fast,
simple
deployment

ARIC Automated Marketing

- Predict churn faster
- Use behavior to understand churn and target individual customers

ARIC Responsible Gambling

- Operators and lotteries use Featurespace
- US and UK opening through legislative changes
- Chosen by Responsible Gambling Trust to conduct the world's largest harm minimisation study



Real-time player
health score



Monitor each
individual player



Send targeted
communications



Fast, simple
deployment



Partners





Selected Company Profiles

Company Profile: Feedzai



Landscape Category(s)

Bank / Issuer Fraud Solutions

Merchant / Processor Fraud Management Services

Company Overview

CEO: Nuno Sebastiao

Headquarters: San Mateo, CA

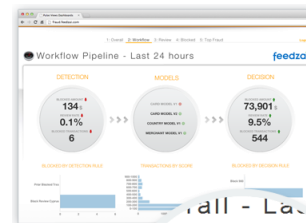
Founded: 2008

- Feedzai uses machine-based learning to prevent fraud across all channels
- The Company's fraud engine gathers data on customers, merchants, locations and POS devices – allowing it to create baselines for behavior for each individual consumer
 - When a behavior strays from the historical baseline (such as a consumer who has never done mobile transactions suddenly doing so), the fraud engine flags the transaction

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 05/19/15 | \$18 | Financing | Secured Series B from Oak HC/FT, Sapphire Ventures and Espirito Santo Ventures |
| 05/16/14 | 4 | Financing | Secured financing from Oxy Capital |
| 02/19/13 | 2 | Financing | Secured Series A from Sapphire Ventures and Data Collective |
| 05/23/11 | 2 | Financing | Secured financing from EDP Ventures, Espirito Santo Ventures and Novabase |

Products & Services Overview



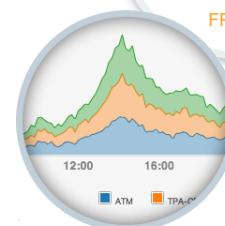
Feedzai's machine learning software detects fraud ~30% faster than traditional methods, with 80% or higher detection rates (false positive rate of less than 1%)

DETECTION RATE

The system is capable of analyzing large volumes of data on customers, habits and transaction trends to identify risk in real-time and simultaneously block / cancel transactions before any loss or damage occurs

Offers big data solutions to acquires, issuers, payment processors and retailers:

- API plug-in into Feedzai's machine learning algorithm to generate risk scores
- Data adapter to convert data into any format
- Multiple deployment options including on-site, cloud or hybrid





Selected Company Profiles

Company Profile: Forter



Landscape Category(s)

Merchant / Processor
Fraud Management
Services

Chargeback Guarantee

Company Overview

CEO: Michael Reitblat

Headquarters: Tel Aviv, Israel

Founded: 2013

- [Forter](#), based in Tel Aviv, provides solutions that aim to prevent e-commerce fraud
- The Company uses data from several sources, including publicly available information and social networks to verify transactions in real-time
- Forter provides a chargeback guarantee on any fraudulent transactions that do get through its system
- Solution set allows a merchant to track consumer's real-time interaction on its website – including click analysis, hit maps and flow analysis
- Forter is backed by Sequoia Capital and New Enterprise Associates

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 04/21/16 | \$32 | Financing | Secured financing from NEA, Sequoia Capital and Scale Venture Partners |
| 11/11/14 | 15 | Financing | Secured financing from NEA and Sequoia Capital |
| 03/25/14 | 3 | Financing | Secured financing from Sequoia Capital |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview



1

Elastic Identity

Forter's platform leverages "soft verification," which includes real-time data from social networks, demographics and purchasing power analytics to create another layer of protection

2

Cyber Intelligence

Offers insight into the cyber-space and enables e-commerce fraud protection services using advance cyber intelligence

3

Behavior Analysis

Utilizes real-time behavior sensors, data points and tracking techniques to analyze consumer habits and identify key fraudulent patterns



Selected Company Profiles

Company Profile: Guardian Analytics



Landscape Category(s)

Bank / Issuer Fraud Solutions

Company Overview

- CEO:** Tom Tiernan
- Headquarters:** Mountain View, CA
- Founded:** 2005
- Guardian Analytics is a SaaS provider of user-based behavioral fraud prevention solutions for banking fraud, information loss and identify theft
 - Helps customers detect unauthorized access and anomalous activity in Webmail, customer and partner portals, EHRs, payments systems, online and mobile banking channels, and other systems that warrant a high level of security
 - Provides robust analytics platform that addresses the widespread need for more effective approach to detecting suspicious activity leading to financial losses
 - The Company serves banks, credit unions, HR / corporate payments, healthcare and payroll processors

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 06/21/11 | \$14 | Financing | Secured financing from Undisclosed Investors |
| 03/01/11 | 11 | Financing | Secured financing from Split Rock Partners, Foundation Capital & Sutter Hill |
| 05/24/10 | 9 | Financing | Secured financing from Sutter Hill and Foundation Capital |
| 10/01/07 | 5 | Financing | Secured financing from Foundation Capital |

Products & Services Overview



Uses behavioral analytics to monitor online banking users and sessions for unusual activity and anomalous transactions



Delivers fraud protection capabilities with enterprise forensic tools to banks, employers, asset managers and health care providers



An anomaly detection solution for the ACH payment channel – the software has the capabilities to detect suspicious batches of information, transactions and modified line items



Analyzes wire transactions in real-time to prevent fraudulent wires without slowing delivery of other payments



A purpose built anomaly detection solution designed for the mobile channel; FraudMAP Mobile automatically monitors every mobile banking session from login to logout





Selected Company Profiles

Company Profile: ID Analytics

'id:analytics™

a subsidiary of



Landscape Category(s)

Broad-based User
Authentication /
Identification

Bank / Issuer Fraud
Solutions

Merchant / Processor
Fraud Management
Solutions

Company Overview

CEO: Larry McIntosh

Headquarters: San Diego, CA

Founded: 2002

- [ID Analytics](#)' solutions provide credit and identity risk management services to enterprises and consumers in the alternative payments, automotive, cable, credit card, e-commerce, government, alternative lending and telecom markets
- Enables clients to evaluate the identity information presented by potential new customers, which helps reduce friction during onboarding and can reduce operational costs
- Credit solutions enable lenders to use predictive information to help improve approval and pricing decisions

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 03/14/12 | na | M&A | Acquired by LifeLock |
| 05/16/07 | \$20 | Financing | Secured financing from Canaan Partners, Investor Growth Capital, Mission Ventures and Trinity Ventures |
| 02/10/06 | 5 | Financing | Secured financing from Canaan Partners, Mission ventures and Trinity Ventures |
| 06/28/02 | 10 | Financing | Secured financing from Canaan Partners and Trinity Ventures |

Products & Services Overview

Identity Verification and Authentication

- Identity assessment solution evaluates information presented by new customers with a seamless onboarding process (reducing operational costs)
- Identify potential risk due to misrepresentation or manipulation

Credit Risk Solutions and Risk Analytics

- By utilizing traditional credit data with powerful alternative insights from the wireless, banking and subprime markets, ID Analytics allows enterprises to make more accurate credit decisions across the customer lifecycle

Fraud Risk Management

- Help businesses evaluate applications and account changes
- Leverage the Company's proprietary data from a wide range of industries, including more than 3.3 million client-reported fraud events

Payment

- Examine the identities and devices behind CNP transactions to determine high-risk scenarios
- Increase conversion while controlling fraud losses

Industries

| | |
|----------------------|---------------------------|
| Alternative Payments | Government |
| Automotive | Non-Traditional Lending |
| Cable | Retail Banking Risk Mgmt. |
| Credit Card | Satellite |
| E-Commerce | Telecommunications |



Selected Company Profiles

Company Profile: IdentityMind Global



Landscape Category(s)

Broad-based User
Authentication /
Identification

Merchant / Processor
Fraud Management
Services

Bank / Issuer Fraud
Solutions

Digital Identities

Secure Customer
Onboarding

Company Overview

CEO: Garrett Gafke

Headquarters: Palo Alto, CA

Founded: 2013

- IdentityMind provides an on-demand platform offering next generation risk management and anti-fraud services for the digital financial ecosystem, including banks, payment processors and gateways, money transmitters, payment service providers and online merchants
- The Company's fraud prevention and risk management platform evaluates digital commerce transactions (e.g. payments, KYC, money transfers, account creation) in real-time to identify good and bad actors in the ecosystem
- Platform's core technology recognizes internet entities (users, merchants and affiliates) through their proprietary patent-pending electronic DNA (eDNA™) software and builds a risk reputation consolidating behavior across the IdentityMind network of clients and partners

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 03/16/15 | \$8 | Financing | Secured financing from Benhamou Global Ventures, Cybernaut, Lakewood & Company, Mozido, SBT Venture Capital |

Products & Services Overview

Online Fraud Prevention



- An e-commerce fraud prevention platform for payment transactions and user account activities
- Implements a three step automated process, starting with identity evaluation, followed by a decision rule engine to detect risky activity, then integrates with third party data to eliminate false positives
- Serves payment service providers, online merchants, mobile commerce and financial institutions

Merchant Risk



- Evaluates merchant account applications during the on-boarding / underwriting process
- Assesses risk based on proprietary and third party security tests including KYC, account origination and reputation
- Verifies consistency of owner / business data and track accounts over time

Anti-Money Laundering

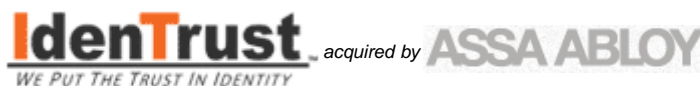


- Offers a turn-key anti-money laundering platform enabling banks, money services businesses and remittance companies to meet U.S. and international regulations
- Enables Bitcoin and virtual currency companies to meet compliance regulations, FinCEN and worldwide
- Offers transaction monitoring, risk based CIP (KYC and KYCC), Proprietary Sanctions Screening, and case management



Selected Company Profiles

Company Profile: IdenTrust



Landscape Category(s)

Broad-based User
Authentication /
Identification

Company Overview

- CEO:** Karen J. Wendel
- Headquarters:** San Francisco, CA
- Founded:** 1999
- Established in 1999, [IdenTrust](#) provides digital identity authentication solutions to financial institutions, corporations and government agencies internationally
 - The Company was originally founded by a consortium of financial institutions including Citigroup, ABN AMRO and Bankers Trust; In 2014, the Company was acquired by ASSA ABLOY, the largest global supplier of intelligent lock and security solutions
 - Serves the Department of Defense, the General Services Administration and over twenty of the world's largest financial institutions; in the UK, IdenTrust secures more than six billion payment transactions annually

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 01/17/14 | na | M&A | Acquired by ASSA ABLOY |
| 09/25/13 | na | M&A | Acquired by Parallax Capital Partners and StepStone |
| 04/27/11 | \$20 | M&A | Polaris Software acquired an 85% stake |
| 07/26/05 | 20 | Financing | Secured financing led by Enterprise Partners Venture and Rho Ventures |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview

Banks

- Provides banking community with a Visa equivalent identity allowing for reduced expenses in identity authentication, technology investment, legal and regulatory compliance
- Offers vast solutions for digital signatures, multifactor authentication and signing of payment files



Corporate

- By utilizing a single digital identity, IdenTrust simplifies the process of online fraud protection, whether it be eSignatures, accessing online corporate bank accounts or authorizing payments
- All are done through using the same IdenTrust credential

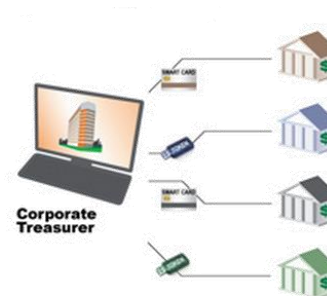


Government

- IdenTrust offers a vast majority of identity programs for government, Federal Agency's and Department of Defense



Current



With IdenTrust





Selected Company Profiles

Company Profile: InAuth



Landscape Category(s)

Broad-based User
Authentication /
Identification

Mobile Device
Authentication /
Identification Solutions

Company Overview

CEO: Lisa Stanton
Headquarters: Venice, CA
Founded: 2011

- [InAuth](#) offers device fingerprinting solutions for mobile and browser security, providing fraud and root detection and malware protection
- The Company was founded in 2011; works with four of the ten largest banks in the US and acquired its first UK client in 2014
- InAuth aims to address complex challenges facing organizations where large scale solutions for protecting sensitive information is critical, but where conventional identity proofing and authentication solutions are insufficient in meeting customer needs
- Partnered with Accertify as a service provider to offer its device fingerprinting solution

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 03/09/15 | \$23 | Financing | Secured series A financing from Bain Capital Ventures |

Products & Services Overview



Advanced Mobile Security

- Gathers information from mobile devices to establish a GUID that is used to uniquely identify mobile device
- Detects criminal tools such as location spoofing and IP address proxy apps
- Ensures location data is trustworthy
- Leverages scanning and analysis of a mobile device to protect against rooted / jail broken mobile devices



Advanced Browser Security

- InAuth Browser Intelligence dramatically reduces false positives for unfamiliar devices by associating device history level with on-going trust
- Laptop and desktop browser fingerprinting
- Uses more attributes, and does more intelligently to maximize both differentiation and stability
- Mobile browser intelligence and fraud detection



Risk and Decision Engine

- Provides capability to automate and streamline fraud management operations
- InAuth Risk Engine calculates the probability of risk / identity match as well as score consumer transaction
- Uses InAuth MME data, customer data and is open for third party data feeds



Selected Company Profiles

Company Profile: Iovation



Landscape Category(s)

Broad-based User
Authentication /
Identification

Merchant / Processor
Fraud Management
Solutions

Company Overview

CEO: Greg Pierson

Headquarters: Portland, OR

Founded: 2004

- Founded in 2004, [iovation](#) protects online businesses and their end users against fraud and abuse, and identifies trustworthy customers through a combination of advanced device identification, shared device reputation, device-based authentication and real-time risk evaluation.
- The Company provides its fraud and abuse protection solutions across many industries including retail, financial services, telecommunications, social networking, logistics, dating, gaming and gambling
- The Company maintains a device database of over 2.5 billion devices, which is used to protect 12 million transactions and stop an average of 200,000 fraudulent activities every day

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 03/27/08 | \$15 | Financing | Secured financing from European Founders Fund, Intel Capital, Sapphire Ventures |
| 04/10/07 | na | Financing | Secured financing from First Round Capital |

Products & Services Overview

1

Risk

Enables merchants to establish fraud risk and accurately separate the fraudsters from good customers; the solution uses geolocation and IP address mismatches and velocity risks

2

Trust

Solution reduces review queues and accelerates revenue by taking into account the length of time devices have been seen and number of related devices and accounts

3

Authentication

The Company's API can be used to register a device with an account independent of any other data sources. Iovation's account specific recognition adapts with the changes a customer's device will experience

4

Insights

The Company's service delivers insights on IP addresses and gives visibility into any known fraud or suspicious activity associated with an IP address through Iovation's knowledge base

5

Mobile

Provides mobile-traffic centric fraud protection – assigns a unique ID to every mobile device that visits a merchant's site and recognizes them when they return



Selected Company Profiles

Company Profile: Jumio

Landscape Category(s)

Broad-based User
Authentication /
Identification

Secure Customer
Onboarding



Company Overview

CEO: Stephen Stuat

Headquarters: Palo Alto, CA

Founded: 2010

- [Jumio](#) is an identity management and security company that develops image recognition technology solutions for web and mobile phones
- The Company verifies credentials of web and mobile transactions using “computer vision” technology to reduce friction in the customer sign-up and checkout process
- Jumio offers solutions for the following industries: finance, retail, travel, property sharing, gaming, telecommunication and others
- Clients using Jumio include: United Airlines, Airbnb, Gyft.com, Entropay, EasyJet and Payward

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 12/30/11 | \$29 | Financing | Secured financing from Andreessen Horowitz and Citi Ventures |
| 02/28/11 | 7 | Financing | Secured financing from Eduardo Saverin and other undisclosed investors |
| 09/07/10 | 1 | Financing | Secured financing from Felix Investments |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview



BAMCHECKOUT[®]

- A mobile app for online checkout – allows customers to use the camera on their phones to scan credit cards and ID's at checkout
- Customer data is auto-populated into the checkout fields, increasing conversion rates
- PCI Level 1 compliant and certified



FASTFILL[®]

- Turns a customer's smartphone into an ID data extraction tool
- Saves customers up to 60 seconds per data entry
- Reduces shopping cart abandonment and friction in registration processes



NETVERIFY[®]

- Real-time ID scanning and verification on websites and mobile applications helping reduce risk and minimize fraud for online transactions
- Designed to save time and costs associated with KYC requirements
- Customers receive real-time feedback on whether or not a document is accepted or rejected



Selected Company Profiles

Company Profile: Kount



Landscape Category(s)

Broad-based User
Authentication /
Identification

Merchant / Processor
Fraud Management
Solutions

Company Overview

CEO: Bradley Wiskirchen

Headquarters: Boise, ID

Founded: 2007

- [Kount](#) provides fraud and risk management solutions, detecting and preventing e-commerce credit card fraud for card-not-present merchants; founded in 2007
- Offers a turnkey fraud solution for merchants and retailers through Kount Complete, which analyzes user and transaction data to develop a fraud score for decisioning, and Kount SMB, an enterprise solution available through a network of payment providers and gateway service providers
- Active across multiple verticals, including retail, gaming and telecommunications
- In March 2015, the Company announced a strategic partnership with Ethoca to help e-commerce merchants increase their overall acceptance levels
- Integrated partners include Braintree (PayPal), Chase Paymentech, LexisNexis, Planet Payment and Magento

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 12/16/15 | \$80 | Financing | Secured financing from CVC Capital Partners |

Products & Services Overview

Online Businesses



- Helps online businesses simplify fraud detection and dramatically improve bottom line profitability
- Uses artificial intelligence, IP proxy detection and geo-location, global order linking and transaction & custom scoring

Online Payment Processors & Gateways



- Provides a comprehensive fraud prevention suite for online payment processors, payment gateways, hosted payment pages and e-commerce platforms to offer their merchants

High Volume Login, Account Creation



- Enables merchants to identify fraudulent behavior at the login in real-time, before fraudsters can gain entry into your network
- Prevents fraudsters from creating a new account or applying for services and prevents password sharing while complying with licensing obligations



Selected Company Profiles

Company Profile: LifeLock

Landscape Category(s)

Consumer Protection



Company Overview

CEO: Todd Davis
Headquarters: Tempe, AZ
Founded: 2005
Ticker: NYSE: LOCK

- LifeLock specializes in identity theft and provides various solutions to its users that protect their identity and personal information, as well as prevents users' identity from being stolen
- The Company charges \$10 dollars a month for its standard identity theft protection that detects fraudulent applications for some forms of credit and non-credit related services
- LifeLock is publicly traded on the New York Stock Exchange

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 12/12/13 | \$43 | M&A | Acquired Lemon |
| 03/14/12 | 100 | Financing | Secured financing from Bessemer Venture Partners, Cross Creek, Goldman Sachs, Industry Ventures, Institutional Venture, Keating Capital, Kleiner Perkins Caufield & Byers, Symantec |
| 03/14/12 | na | M&A | Acquired ID Analytics |
| 08/05/09 | 20 | Financing | Secured financing from Symantec Corporation |

Products & Services Overview

LifeLock Identity Alert System

LifeLock sends alerts through their patented system via text, phone, or email and also has Identity Restoration Specialists to provide any extra assistance

Black Market Website Surveillance

LifeLock searches common black market websites and will notify you if your data is found

Lost Wallet Protection

LifeLock will help you cancel or replace credit cards, driver's licenses, social security cards, insurance cards, as well as other personal cards

Address Change Verification

LifeLock will notify you if there are changes in address requests linked to your identity to stop identity thieves from diverting mail containing important financial information

Identity Restoration Support

If your identity is compromised, LifeLock will provide a Identity Restoration Specialist to personally handle your case and restore your identity

\$1 Million Total Service Guarantee

LifeLock will spend up to \$1mm to hire necessary lawyers, accountants and investigators to help your recovery if you become a victim of identity theft while a LifeLock member



Selected Company Profiles

Company Profile: MaxMind

Landscape Category(s)

Merchant / Processor
Fraud Management
Services



Company Overview

CEO: Thomas Mather

Headquarters: Waltham, MA

Founded: 2002

- Founded in 2002, [MaxMind](#) is an industry-leading provider of IP intelligence and online fraud detection tools
- Offers fraud detection, advertisement serving, traffic analytic, and content customization solutions
- Provides security offering through the minFraud brand, which determines the likelihood that a transaction is fraudulent based on various factors, including if the online transaction comes from a high risk IP address, high risk email or device or an anonymizing proxy
- MaxMind minFraud services over 7,000 online businesses and screens over 50 million e-commerce transactions and account registrations a month
- MaxMind GeoIP is used for content personalization, ad targeting, traffic analysis, digital rights management amongst many other uses
- Partners include CDGcommerce, TeleSign and Alpha Payments Cloud
- The Company has no history of financing

Products & Services Overview

1

minFraud

Reduces chargebacks by identifying risky orders to be held for further review; used to identify fraud in online e-commerce transactions, affiliate referrals, surveys, and account logins

2

GeoIP2 Databases

Provides locally maintained databases for high volume, low latency environments; open Source APIs are available for most popular languages

3

GeoIP2 Precision Services

Offers IP intelligence data, updated weekly, available through a choice of an easy to use API or batch file upload interface while also providing a riskScore associated with an IP address by detecting anonymous and open proxies

4

Proxy Detection

Provides a proxyScore to help identify IP addresses that are considered high risk – customers can implement a Device Tracking Add-on in order receive more accurate scores

5

Open Source Data

Enables customers to add geolocation to a customer's application using MaxMind's open source data and APIs



Selected Company Profiles

Company Profile: Mitek Systems

Landscape Category(s)

Secure Customer Onboarding



Company Overview

CEO: James DeBello
Headquarters: San Diego, CA
Founded: 1983
Ticker: NASDAQ: MITK

- [Mitek](#) is an innovator of mobile capture and identity solutions for customer acquisition and onboarding
- The Company's patented mobile photo technology automatically captures images of financial and personal documents and then extracts relevant data
- Mitek's solution reduces friction for mobile check deposit, account opening, bill payment, insurance quoting and many other cases

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 05/26/15 | \$11 | M&A | Acquired ID Checker |
| 05/09/11 | 15 | Financing | Secured financing from Philadelphia Financial Management and Weintraub Capital Management |
| 10/01/10 | 1 | Financing | Secured financing from undisclosed investors |
| 05/21/04 | 3 | Financing | Secured financing from Laurus Capital Management |

Products & Services Overview



Remote Deposit Capture

- Mobile remote deposit capture solution for retail and commercial banking, brokerages and prepaid card providers

Commercial Mobile Deposit Capture

- Delivers faster check payment processing for businesses

Photo Fill

- Enables users to pre-fill form data quickly and accurately with ID scanning and ID verification

Photo Verify

- Combines auto capture tech with advanced computer vision to find and decode an encrypted security feature hidden on a driver license

Mobile Photo Payments

- Enables consumers to use Mitek's mobile imaging technology to take photos of bills, checks, debit cards and credit cards

Mobile Photo Bill Pay

- Enables a bank customer or credit union member to easily and securely pay a bill with the snap of a smartphone or tablet camera

Mobile Photo Balance Transfer

- Gives financial institutions a mobile approach to acquire new credit card customers and balances



Selected Company Profiles

Company Profile: Ondot Systems



Landscape Category(s)

Consumer Protection

Company Overview

President: Bharghavan Vaduvur

Headquarters: San Jose, CA

Founded: 2011

- [Ondot Systems](#) provides a mobile card service platform that delivers real-time insights allowing customers to actively view activity on plastic and virtual cards, receive notifications quickly, and customize their payment cards to best fit their needs
- The Company delivers value-added products to manage all aspects of payment cards and transactions by letting consumers proactively control their cards and finances
- Ondot Systems' services enable financial institutions to provide differentiated debit, pre-paid and credit card services to customers and also lower fraud and operating costs

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 04/24/14 | \$18 | Financing | Secured financing from undisclosed investors |

Products & Services Overview



CardAlerts

Consumers can set transaction alert preferences



Self Service

Consumers have the ability to view detailed information and perform common tasks relating to their cards, accounts and transactions on-the-go



mConsole

Provides product managers and support personnel



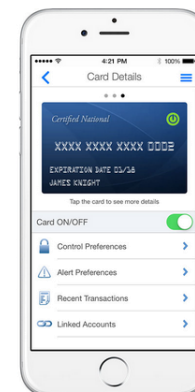
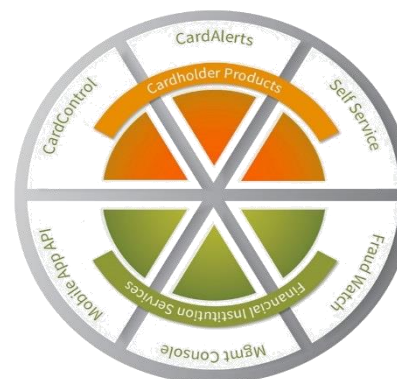
Fraud Watch

Risk managers can enroll their card portfolio and create control rules instantly to monitor for potential fraud



CardControl

Allows consumers to switch cards on and off as well as set card usage preferences





Selected Company Profiles

Company Profile: Payfone



Landscape Category(s)

Mobile Device
Authentication /
Identification Solutions

Company Overview

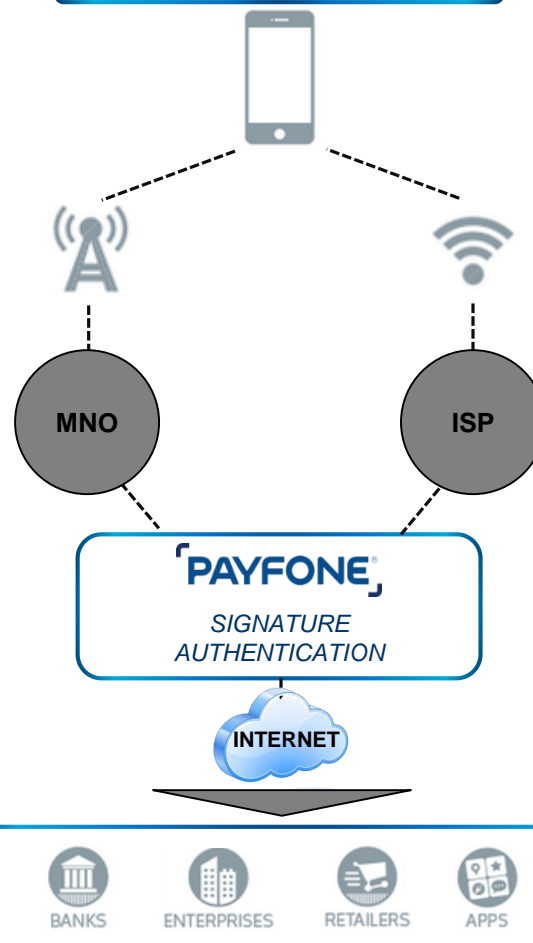
- CEO:** Rodger Desai
- Headquarters:** New York, NY
- Founded:** 2008
- [Payfone](#) is a leading provider of secure mobile authentication
 - Offers services through the Identity Certainty platform, which operates by assigning a unique mobile ID to each device based on information such as phone number, SIM card data and account number to authenticate and identify subscribers over time
 - The platform has over 300 million mobile identities under management and is connected to all of the big four mobile providers

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 10/13/15 | na | Financing | Secured financing from IDology |
| 10/28/13 | \$10 | Financing | Secured financing from Early Warning Services |
| 04/12/11 | 19 | Financing | Secured financing from AMEX; Verizon; Opus; BlackBerry Partners RRE Ventures; Rogers Venture |
| 08/02/10 | 11 | Financing | Secured financing from BlackBerry Partners; Opus Capital Group; RRE Ventures |
| 03/09/10 | 6 | Financing | Secured financing from Opus Capital Group |

Payfone Identity Certainty Platform

Mobile Browser / Mobile App





Selected Company Profiles

Company Profile: Ravelin

Landscape Category(s)

Merchant / Processor
Fraud Management
Services



Company Overview

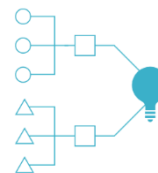
CEO: Martin Sweeney
Headquarters: London, UK
Founded: 2014

- [Ravelin](#) brings machine learning intelligence to augment its fraud prevention services – the more data it handles, the smarter its data analytics become
- The Company's solutions create robust rules based on thousands of real-world fraud signals
- Builds up picture of user activity in real time, whenever it becomes too risky/exceeds thresholds, they notify merchants
- Currently, Ravelin is primarily focused on Europe, but plans on expanding into the US and Asia in the near future

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 09/29/15 | \$2 | Financing | Secured Financing from Amadeus Capital Partners Limited, Passion Capital and Playfair Capital |
| 03/12/15 | na | Financing | Secured financing from Passion Capital |

Solution Overview



Real World Data

- Ravelin accesses historical data to detect signals and patterns in bad transactions for your business
- Sorts through thousands of signals to suggest rules and policies to prevent future recurrences of fraud



Rules Integration

- Ravelin will integrate with existing rules, automatically suggest new ones based on fraud patterns and continually flag potential bad transactions for review



Real Time Transactions

- Ravelin instantly profiles fraudulent transactions providing a meaningful defense for merchants that need little to no time to review transactions



Peak-Time Fraud

- Ravelin scales to provide the same level of protection whatever the volume, allowing you to zero in on the bad transactions it flags while maintaining approval rates



Selected Company Profiles

Company Profile: Riskified

riskified

Company Overview

CEO: Eido Gal

Headquarters: Tel Aviv, Israel

Founded: 2012

- [Riskified](#) is a leading e-commerce fraud management solution trusted by hundreds of brands including Ssense, Vestiaire Collective, Burton, Farfetch, viagogo and Leica
- The Company has a dedicated team of data scientists and utilizes machine learning algorithms, behavioral analytics, device fingerprinting and other fraud detection methodologies to accurately analyze and approve e-commerce orders
- With full chargeback insurance on approved orders and pay-for-performance model, Riskified is an economical and scalable solution that helps merchants fight fraud and improve their top- and bottom-line sales

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 02/28/14 | \$8 | Financing | Secured financing from Genesis Partners, Entrée Capital, Founder Collective, Leumi, Kreos Capital |
| 07/09/13 | 2 | Financing | Secured financing from Genesis Partners, Formation 8, Founder Collective, Entrée Capital, The Accelerator Group, T5 Capital |

Products & Services Overview



Full Chargeback Insurance

All approved orders are 100% covered by the Company's insurance in case of fraud



Guaranteed Higher Approval Rates

Boost domestic and cross-borders sales with higher approval rates across markets



Better Customer Experience - Guaranteed

Provides instant decisions and a frictionless order review process

Merchant-Controlled Service

- Online merchants have full control over which transactions are submitted for review, and pay only for transactions that are approved and guaranteed by Riskified
- While some retailers utilize Riskified on top of their existing fraud systems to reduce false declines and drive top-line sales, many merchants choose to submit all incoming orders to Riskified – replacing other fraud tools and eliminating the need for manual fraud review

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Landscape Category(s)

Merchant / Processor
Fraud Management
Services

Chargeback Guarantee



Selected Company Profiles

Company Profile: SecureBuy



Landscape Category(s)

Consumer Authentication
Solutions for Merchants

Consumer Authentication
Solutions for Issuers

Merchant / Processor
Fraud Management
Services

Company Overview

CEO: Ernie Coward

Headquarters: Ridgeline, MS

Founded: 2002

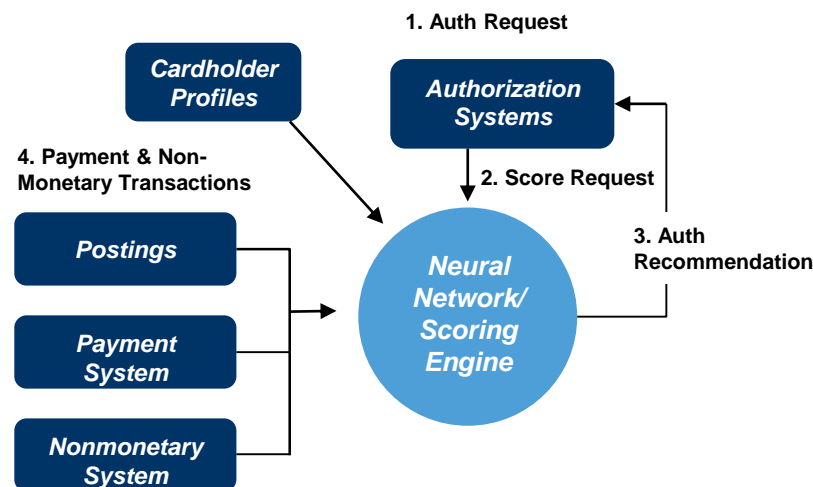
- Previously known as SignatureLink, [SecureBuy](#) provides e-commerce cybersecurity and payment fraud prevention; founded in 2002
- Primarily provides credit and debit card fraud prevention solution through its Phoenix FM brand, which is powered by a revamped FICO Falcon engine; offers transaction based scoring, adaptive models and global cardholder profiles to detect card-not-present fraud
- Also partnered with payment processor Moneris to integrate with its merchant accounts, payment gateway and end-to-end processing capability
- The SecureBuy Board of Advisors includes executives from Target Corporation, Chase Merchant Services and Moneris Solutions
- The Company has no history of financing

Products & Services Overview



Phoenix Fraud Manager, powered with FICO for e-Commerce

Fraud Detection System



- Consortium Model
- Transaction Based Scoring
- Enterprise Detection
- Adaptive Models
- Global Profiles



Selected Company Profiles

Company Profile: Sift Science

Landscape Category(s)

Merchant / Processor
Fraud Management
Services



Company Overview

- CEO:** Jason Tan
- Headquarters:** San Francisco, CA
- Founded:** 2011
- [Sift Science](#) prevents fraud for digital businesses by fusing human intelligence with real-time machine learning
 - The Company utilizes large-scale machine learning to recognize fraud patterns, including specific page navigation sequences, IP ranges, email address patterns, graph connectivity structures, browser configurations, writing styles and over 5,000 other signals
 - The Company claims to create less than 7% false alarms versus the industry average of 50-80%
 - Selected clients include Uber, match.com, twitter, airbnb, Instacart, Jackthreads, DigitalOcean, and Hotel Tonight

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 05/14/14 | \$18 | Financing | Secured financing from Spark Capital, Union Square Ventures, First Round Capital and Max Levchin |
| 03/19/13 | 6 | Financing | Secured financing from Union Square Ventures, Rich Barton, Chris Dixon and undisclosed investors |

FINANCIAL
TECHNOLOGY
PARTNERS

Products & Services Overview

Sift Science Console

■ Allows you to manually sift through data quickly



Key
Attributes

Shows a customizable set of features & signals such as amount of transactions made by user, users per device, users per billing address etc.

98

Sift Score

Represents how suspicious an order is; a score of 100 is almost always a case of fraud



Map

Identify when a user has multiple billing, shipping and IP addresses shown on a map diagram



Network

Discover links between customers and other users through social media network data

■ Provide feedback to train & improve the accuracy of your model



LABELED
BAD USER
by freds on 2014-06-22



LABELED
OK NOT BAD
by freds on 2014-06-22

■ Detects payment fraud and fake accounts

Current customers include:



Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.



Selected Company Profiles

Company Profile: Signifyd



Landscape Category(s)

Merchant / Processor
Fraud Management
Services

Chargeback Guarantee

Company Overview

CEO: Rajesh Ramanand

Headquarters: Palo Alto, CA

Founded: 2011

- [Signifyd](#) helps e-commerce businesses sell confidently while protecting them from fraud
- The Company offers its solution by analyzing multiple data sources to determine the validity of a transaction amongst over 100 or more indicators
- The Company was founded by a team of risk experts from PayPal to address the complexity of payment validation and help online merchants mitigate risk
- Signifyd's SaaS sits on top of existing payment structures
- Can use Shopify, Magento or Bigcommerce with Signifyd plugins or the Signifyd API to integrate manually

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 06/22/15 | \$7 | Financing | Secured financing from Lucas Venture Group, Allegis Capital, IA Ventures, QED Investors & Tekton Ventures |
| 04/26/14 | 4 | Financing | Secured financing from Andreessen Horowitz, Data Collective, IA Ventures, QED Ventures, Resolute VC & Tekton Ventures |

Products & Services Overview

Analyzes Multiple Data Sources



Device Fingerprint



IP Geo-Location Data



Proxy Detection



Social Graph



Customer History



Issuing Bank Data



Transaction Velocity



Cross Merchant
Blacklists



Search Engine



Public Records

Guarantee Payments

Guarantees payments even if there is fraud – users can request for all transactions, international order or specific cases to be processed and reviewed by Signifyd

Dashboard

Displays the Case Queue with case-by-case analysis, summary & alerts



Selected Company Profiles

Company Profile: Socure



Landscape Category(s)

Broad-based User
Authentication /
Identification

Secure Customer
Onboarding

Company Overview

CEO: Sunil Madhu

Headquarters: New York, NY

Founded: 2008

- [Socure](#) combines social data across major social networks, data from offline identity verification sources and open internet data to assess if a customer is fake or real during a transaction
- Enterprises use Socure to reduce fraud rates, increase acceptance rates and lower compliance and manual review costs
- The Company provides APIs that enable enterprises to verify the authenticity of new user, verify an existing user's identity for fraud risk or to evaluate risk levels for each side of a financial transaction

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 08/26/15 | \$3 | Financing | Secured financing from Flint Capital, ff Venture Capital, Founder Collective & Two Sigma Ventures |
| 08/25/14 | 4 | Financing | Secured financing from AlphaPrime Ventures & Empire Angels |

Products & Services Overview

Social Biometrics™

*Real-time identity verification using
online and social data*

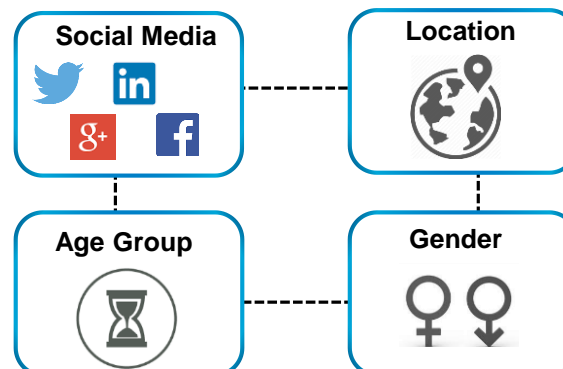
*Integrate APIs into company
workflow*

*Verify existing
user's identity*

*Evaluate risk
levels*

*JSON/REST API
scores users*

*Reporting & Analytics
Management Dashboard
by category*





Selected Company Profiles

Company Profile: TeleSign



Landscape Category(s)

Broad-based User
Authentication /
Identification

Mobile Device
Authentication /
Identification Solutions

Company Overview

CEO: Steve Jilings

Headquarters: Marina del Ray, CA

Founded: 2005

- [TeleSign](#) is a leading provider of mobile identity solutions for account security, verifying users through device number, type and behavior
- TeleSign uses a 2-step verification process also known as two factor verification (2FA)
- The Company's customer base includes 20 of the top 25 largest web and mobile apps in the world, as well as 9 of the top 10 in the United States

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 04/29/14 | \$40 | Financing | Secured financing from Adams Street Partners, March Capital Partners and Summit Partners |
| 02/12/13 | na | M&A | Acquired Routu Telecommunications |
| 06/25/12 | 29 | Financing | Secured financing from Summit Partners and other undisclosed investors |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview

Account Security Solutions

Account Registration



- New users provide a valid phone number
- Real-time lookup of device data to determine reputation score
- Verification code is sent and must be input by user

Account Access & Usage



- Phone-based verification and 2FA using a one-time passcode
- Once a user has a verified phone number, a login attempt from an unknown location can be verified by push notification or SMS using 2FA

Account Recovery



- Authenticates users during account recovery by prompting the user to enter the one-time passcode sent to their phone
- Post-breach, a text will be sent to alert the user to reset their password

Other Products

Mobile App-Based Authentication

SMS & Voice Verification

PhoneID Fraud Prevention

Customers include:





Selected Company Profiles

Company Profile: Tender Armor

Landscape Category(s)

Consumer Authentication
Solutions for Issuers

Consumer Protection



Company Overview

CEO: Maddy Aufseeser






Headquarters: Fort Lauderdale, FL

Founded: 2015






- [Tender Armor](#), doing business as CvvPlus, provides a real-time, out-of-band, dual-factor fraud prevention solution, focused mainly on card not present transactions
- CvvPlus provides users with a daily security code to be used for online and phone purchases which are tested real-time in the system to make sure the security code is correct
 - If the test fails, then a notification is sent to the user and the user is easily able to lock the card
- CvvPlus enables a single solution that can be used across multiple bank platforms
 - This solution helps both the card issuer and the cardholder prevent fraud and potential chargebacks
- There are a variety of options for how the user can receive their daily code, such as through the Company's mobile application
 - Users can also look on their bank's website or app to find the CvvPlus security code

Products & Services Overview

Features

-  Cardholder authentication, no special device or card
-  Fully developed, ready to install now with a handful of APIs and PCI compliant
-  Available for issuing authorization platforms globally
-  Merchant compatible and seamless integration
-  Price advantaged compared with other fraud preventive and detection solutions

Benefits

-  Slash card-not-present charge-off losses
-  Reduce administrative expenses
-  Minimize payment card reissues, works on all cards in market
-  Cut cardholder attrition and maintain card usage
-  Avoid costly reputational damage



Selected Company Profiles

Company Profile: ThreatMetrix



Landscape Category(s)

Broad-based User
Authentication /
Identification

Merchant / Processor
Fraud Management
Solutions

Mobile Device
Authentication /
Identification Solutions

Company Overview

CEO: Reed Taussig

Headquarters: San Jose, CA

Founded: 2005

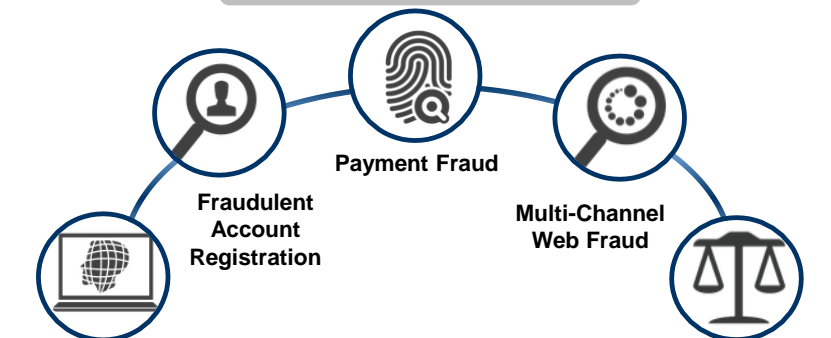
- ThreatMetrix provides transaction fraud prevention and context based authentication solutions for financial services, online banking, e-commerce, insurance, healthcare, social networks, government and major enterprises
- The Company protects access to user accounts and workforce applications, ensures payment security and prevents fraudulent account activity
- The Company's Global Trust Intelligence Network analyzes over 1 billion monthly transactions and protects more than 250 million active user accounts across 4,000 customers and 20,000 websites

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 03/24/14 | \$20 | Financing | Secured financing from Adam Street Partners and existing investors |
| 03/27/12 | 18 | Financing | Secured financing from August Capital and existing investors |
| 10/05/10 | 12 | Financing | Secured financing from Tenaya Capital, US Venture Partners, CM Capital and Technology Venture Partners |

Products & Services Overview

Advanced Fraud Prevention



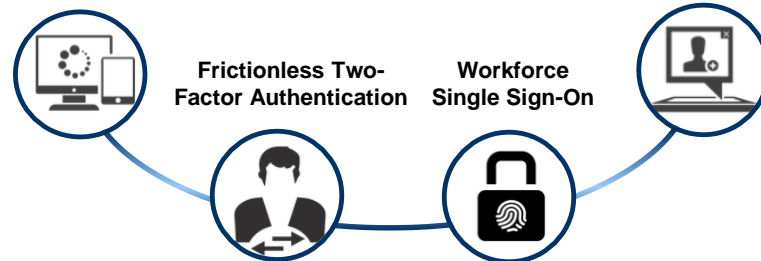
Account Takeover

TrustDefender™ Cybercrime Protection Platform

Remote Workforce Access

OFAC Compliance

Customer Single Sign-On



Context Based Authentication



Selected Company Profiles

Company Profile: TransUnion

Landscape Category(s)

Consumer Protection



Company Overview

- CEO:** James Peck
- Headquarters:** Chicago, IL
- Founded:** 1968
- Ticker:** NYSE: TRU
- [TransUnion](#) is a leading global risk and information solutions provider that enables businesses to optimize their risk-based decisioning and to drive better financial outcomes
 - The Company enables consumers to view their credit profiles and access analytical tools that help them manage personal data and take preventative measures against identity theft
 - There are 3 operational segments within TransUnion including, U.S. information services, international and consumer interactive segments
 - TransUnion is publicly traded on the New York Stock Exchange

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|------|--------------------------|
| 12/10/15 | \$44 | M&A | Acquired Trustev |
| 06/25/15 | 665 | IPO | Completed its IPO |
| 12/02/14 | na | M&A | Acquired Drivers History |
| 11/03/14 | na | M&A | Acquired L2C |
| 08/15/13 | 154 | M&A | Acquired TLO |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview

U.S. Information Services

- The U.S. information services segment offers consumer reports, risk scores, analytical services, as well as online data, marketing, and decision services
- These services can be used to acquire new customers, assess consumer ability to pay for services, identify cross-selling opportunities, measure and manage debt portfolio risk, collect debt, verify consumer identities and investigate potential fraud



International

- TransUnion's international segment provides online data services, marketing services, credit reports, analytics, decision services, as well as consumer services, allowing individuals to manage their finances
- The international segment mainly assists consumers with financial services, insurance, automotive, collections and communications industries



Consumer Interactive

- The consumer interactive segment delivers solutions including, credit reports and scores, credit monitoring, fraud protection and resolution, and financial management solutions enabling customers to manage their finances and take preventive measures against identity theft
- This segments products are offered online and on mobile devices





Selected Company Profiles

Company Profile: Tranwall

Landscape Category(s)

Consumer Protection

tranwall

Company Overview

CEO: Aurelien Duarte

Headquarters: Hong Kong

Founded: 2011

- [Tranwall](#) develops and deploys payment card control technology for consumer / retail usage; focused on creating software that addresses existing and emerging threats in the global payments market
- The Company offers two main products Tranwall Transaction Control (Tranwall TC) and TranWallet, both of which are designed to work with the current card ecosystem
 - Cardholder self-service reduces fraud and administrative costs
 - Issuers improve their bottom line while increasing customer satisfaction and reducing checkout friction
- Tranwall is a Hong Kong headquartered company with development teams based in South Africa
- The Company has no history of financing

Products & Services Overview

Tranwall Transaction Control

- Tranwall TC enables issuing banks to provide cardholders with an extra layer of security with a rule-based engine that approves or declines transactions in real-time
- Operates with existing cards and new issuance; available for Visa, MasterCard, Amex, Diners, JCB, CUP, Discover and private-label cards



TranWallet

- Allows cardholders to use their mobile phones to control which card transactions can be allowed or rejected
- The mobile app is available for iPhone and Android platforms
- With TranWallet, users can set transaction limitations on ATM withdrawals, certain online purchases, foreign transactions, telephone orders and in-store purchases



Partners





Selected Company Profiles

Company Profile: ValidSoft



Landscape Category(s)

Broad-based User
Authentication /
Identification

Mobile Device
Authentication /
Identification Solutions

Merchant / Processor
Fraud Management
Services

Bank / Issuer Fraud
Solutions

Biometric Solutions

Company Overview

CEO: Paul Burmester

Headquarters: London, United Kingdom

Founded: 2003

- ValidSoft secures transactions with services that are simple for the user but provide the highest levels of independently certified security
 - Offers multi-layer, multi-factor, context based authentication solutions incorporating its proprietary voice biometrics engine, device trust and Out of Band (OOB) authentication
 - Protects online, mobile, telephone, card based transactions and call centers; ValidSoft removes the need for passwords and PINs
- In February 2013, the Company launched its Device Trust solution with a major UK retail bank along with its partner FICO; the Device Trust solution invisibly validates real-time transactions based on device characteristics and other invisible attributes
- In March 2010, ValidSoft was acquired by Elephant Talk Communications, a global provider of mobile proprietary network architecture platforms for the telecommunications industry

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 03/17/10 | \$17 | M&A | Acquired by Elephant Talk Communications |
| 03/31/07 | 4 | Financing | Secured financing from current shareholders |
| 03/31/08 | 2 | Financing | Secured financing from HP, Pentland and NCB Ventures |

Products & Services Overview

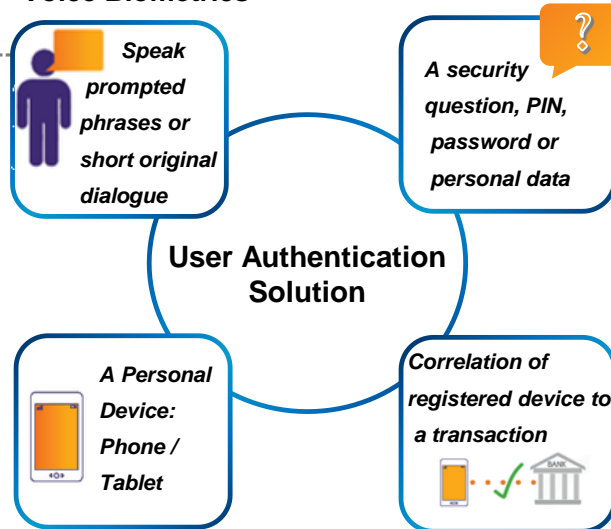
Securing Transactions

Financial Services
Banking
Payments
Remittances
HCE / Tokenization

Government
Tax
Benefits
Digital Identity
Data Access
Healthcare / Med.

Enterprise
Corporate Access
Remote Access / BYOD
Password Reset
E-commerce
Call Centers

Voice Biometrics



Device Trust



Selected Company Profiles

Company Profile: Verifi

Landscape Category(s)

Chargeback Management



Company Overview

CEO: Matt Katz

Headquarters: Los Angeles, CA

Founded: 2005

- [Verifi](#) is a provider of global electronic payment and risk management solutions for card-not-present merchants; the Company offers a customizable payment and real-time reporting platform
- The Company processes tens of thousands of chargebacks per month (1 million annually) and successfully recovers, on average, over 50% of disputed charges
- Verifi processes over \$20 billion in sales transactions annually and currently serves more than 5,500 accounts globally
- The Company estimates that for every \$100 in chargebacks, the true cost is \$308 in wasted time, fees and additional losses of goods or services
- Verifi uses a pay-for-performance pricing model and offers comprehensive omnichannel coverage including all card brands
- The Company has no history of financing

Products & Services Overview

Cardholder Dispute Resolution Network™ (CDRN)

CDRN For Merchants & Issuers

Chargeback Process



Issuer sends to CDRN

Verifi cuts the current process time to less than 1/3

Chargeback Representation

Chargeback revenue recovery

Intelligence Suite

Turn-key risk management platform – customizable with these features:

- Payments Intelligence
- Customer Intelligence
- Rules Engine
- Mobile Intelligence
- Device/IP intelligence
- Insights
- Reporting/Analytics
- Experts

Decline Salvage

Recapture declined card transactions

Global Payment Gateway

Payments protection through one global platform



Selected Company Profiles

Company Profile: Vesta



Company Overview

CEO: Doug Fieldhouse

Headquarters: Atlanta, GA

Founded: 2003

- [Vesta](#) is a pioneer and innovator in enabling secure electronic payments across multiple industries for consumers globally
- The Company offers a single source, zero-fraud payments service for merchants selling digital goods and services; Vesta's service provides complete protection from fraudulent transactions, thus removing all chargebacks, fines and fees
- Vesta processes over \$6 billion in transaction volume annually for products and services via operation centers in the United States, Ireland and China

Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 10/07/14 | \$6 | M&A | Acquired Hanglt |
| 02/20/07 | 3 | M&A | Acquired Lightbridge Telecom Decisioning Services Business |
| 12/07/06 | na | M&A | Acquired Point & Pay |
| 11/12/03 | 20 | Financing | Secured financing from Oak Investment Partners |

Source: Company website, FT Partners proprietary database, Capital IQ, Crunchbase.

Products & Services Overview

Secure Payments

To mitigate the risk of card-not-present transactions (CNP)



vGuaranteed Payments

- ❖ Single point payment system
- ❖ No chargebacks, decline fees or fines
- ❖ Data Encryption
- ❖ Web & IVR Channel Hosting and management

vAdvanced Payments

- ❖ Single point payment system
- ❖ No chargebacks, decline fees or fines
- ❖ Data Encryption
- ❖ Web & IVR Channel Hosting and management
- ❖ Mobile app / mobile web channel hosting
- ❖ Channel Performance Optimization

vUnified Payments

- ❖ Single point payment system
- ❖ No chargebacks, decline fees or fines
- ❖ Data Encryption
- ❖ Web & IVR Channel Hosting and management
- ❖ Mobile app / mobile web channel hosting
- ❖ Channel Performance Optimization
- ❖ Retail POS channel hosting and management
- ❖ Omni-Channel view
- ❖ Universal tokenization
- ❖ Reporting

Landscape Category(s)

Chargeback Guarantee

Merchant / Processor
Fraud Management
Solutions



Selected Company Profiles

Company Profile: Zumigo



Landscape Category(s)

Mobile Device
Authentication /
Identification Solutions

Company Overview

CEO: Chirag Bakshi
Headquarters: San Jose, CA
Founded: 2008

- [Zumigo](#) provides mobile-centric authentication solutions that leverage location, identity and network data; the Company's API's can be integrated into websites, mobile applications, transactional networks and core banking systems
- The Company enables banks merchants to authenticate in-store and online transactions with location and identity data
- In March 2015, Zumigo launched the industry's first ever location-based merchant payments validation service to prevent online credit card fraud, Zumigo Assure Payments
- Zumigo currently has a presence in the US and India, but plans on expanding into Europe



Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 08/22/14 | \$6 | Financing | Secured financing from Intel Capital and Aligned Partners |


Products & Services Overview

Security

Zumigo Assure




-  **Zumigo Assure Radius:**
 - Checks that the location of consumer is where the ATM or merchant transaction is occurring
 - Locates consumer's mobile phone through operator networks
-  **Zumigo Assure Identity:**
 - Validates the mobile device and its owner by cross-checking and verifying with the contractual data with the mobile operator

Zumigo Assure Authentication:

-  Identifies device with multi-factor authentication leveraging the network

Offers

Zumigo Reach

-  Zumigo Reach will only target customers near the business – based on a customizable proximity
-  Determines loyal customers and makes special offers when they are nearby the place of business
-  Runs on phone's network, not through a mobile app










VII. Financing and M&A Transactions



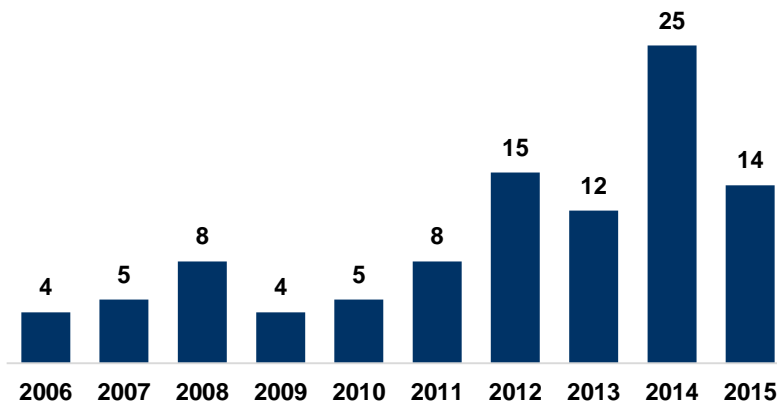
Financing and M&A Transactions

Transaction Summary

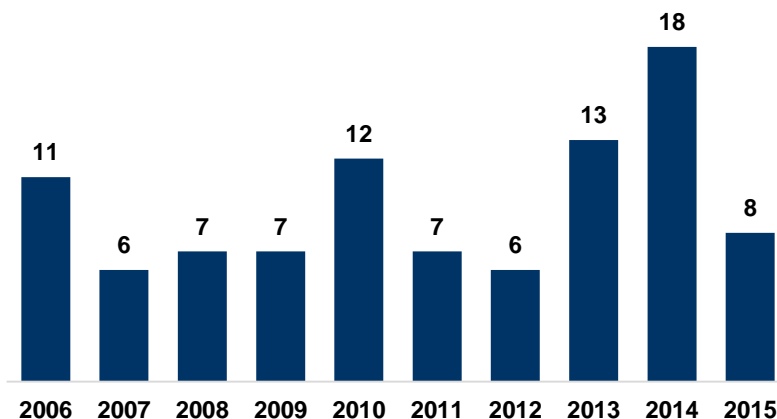
Most Active Transaction Security Investors (Since 2006)

| Rank | Investor | # of Deals |
|------|---|------------|
| 1 |  BESSEMER VENTURE PARTNERS | 6 |
| 2 |  KPCB | 5 |
| 3 |  intel capital | 5 |
| 4 |  IA VENTURES | 4 |
| 5 |  FOUNDER COLLECTIVE | 3 |
| 6 |  CM CAPITAL | 3 |
| 7 | ANDREESSEN HOROWITZ | 2 |
| 8 |  Felicis Ventures | 2 |
| 9 |  JAFCO | 2 |
| 10 |  First Round | 2 |

Number of Financing Transactions



Number of M&A Transactions





Financing and M&A Transactions

Transaction Security Financings

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|--|--------------------------------|--|---------------|-------------------------|
| 11/18/16 | Trust Stamp Secures Financing from Second Century Ventures | Trust Stamp | Second Century Ventures | na | Details |
| 11/15/16 | Procurify Secures \$7 mm in Series A Financing Led by Runa Capital | Procurify | Runa Capital; Point Nine Capital; Business Development Bank of Canada; Nexus Venture Partners | \$7 | Details |
| 11/15/16 | eOriginal Secures \$26.5 mm in Financing Led by LLR Partners | eOriginal, Inc | LLR Partners | 26 | Details |
| 11/15/16 | Apvera Secures \$1.2 mm in Financing Led by ACP and Spring Seeds Capital | Apvera | ACP; SPRING SEEDS Capital; Nest Ventures, LLC; Muru-D; Central Exchange | 1 | Details |
| 10/25/16 | Gimv Acquires 40% Stake in MEGA International | MEGA International | GIMV | na | Details |
| 10/24/16 | Veridu Secures Financing from Global Risk Technologies | Veridu | Global Risk Technologies | na | Details |
| 10/19/16 | Feedzai Secures Financing from Citi Ventures | Feedzai | Citi Ventures | na | Details |
| 10/18/16 | SecureKey Technologies Secures Approximately \$20.6 mm in Financing | SecureKey Technologies | Bank of Montreal; CIBC; Desjardins; Royal Bank of Canada (RBC); TD Bank Financial Group; Scotiabank | 20 | Details |
| 10/17/16 | Ravelin Secures Approximately \$3.7 mm in Financing Led by Playfair Capital | Ravelin | Playfair Capital; Amadeus Capital Partners Limited; Passion Capital; Undisclosed Investors | 3 | Details |
| 09/29/16 | Kyriba Secures \$23 mm in Series D Financing Led by Bpifrance | Kyriba | Undisclosed Investors; Bpifrance; HSBC Holdings plc; Daher Capital | 23 | Details |
| 09/28/16 | Trunomi Secures \$3 mm in Seed Financing Led by Saturn Asset Management and Fintonia | Trunomi | Saturn Asset Management; Fintonia; WorldQuant; Undisclosed Investors | 3 | Details |
| 09/02/16 | Signifyd Secures \$19 mm in Financing | Signifyd | Menlo Ventures; Triplepoint Capital; American Express Ventures | 19 | Details |
| 08/30/16 | Jumio Secures \$15 mm in Financing from Centana Growth Partners and Millennium Technology Value Partners | Jumio | Centana Growth Partners; Millennium Technology Value Partners | 15 | Details |
| 08/18/16 | Identity Theft Guard Solutions Secures \$27.5 mm in Financing | Identity Theft Guard Solutions | Peloton Equity; BlueCross BlueShield Venture Partners; Sandbox Industries; Trident Capital Cybersecurity | 27 | Details |
| 08/11/16 | Pindrop Security Secures \$6 mm in Financing | Pindrop Security | Undisclosed Investors | 6 | Details |
| 08/09/16 | Fintecsystems Secures Series A Financing Led by Littlerock and Ventech | Fintecsystems | Littlerock; Ventech; MenschDanke Capital; Heilemann Ventures | na | Details |
| 08/03/16 | Privitar Secures Approximately \$4 mm in Financing from Illuminate Financial Management | Privitar | Illuminate Financial; 24Haymarket; IQ Capital Partners | 4 | Details |
| 07/28/16 | NXT-ID Secures \$4.5 mm in Financing | NXT-ID | Undisclosed Investors | 4 | Details |
| 07/22/16 | Promon Secures Financing from VASCO | Promon | VASCO Data Security | na | Details |
| 07/15/16 | SayPay Technologies Secures Approximately \$0.03 mm in Financing from TechFounders | SayPay Technologies | TechFounders | <1 | Details |
| 07/13/16 | Ingo Money Secures \$4 mm in Financing | Ingo Money | Undisclosed Investors | 4 | Details |
| 07/12/16 | SirionLabs Secures \$12.3 mm in Series B Financing Led by Sequoia Capital | SirionLabs | Sequoia Capital; Canopy Ventures; Qualgro Asean Fund | 12 | Details |
| 06/29/16 | Final Secures \$8 mm in Financing from Digital Garage and Runa Capital | Final | Digital Garage; Runa Capital | 8 | Details |



Financing and M&A Transactions

Transaction Security Financings (cont.)

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|---|----------------------|--|---------------|-------------------------|
| 06/23/16 | Moqom Secures \$3 mm in Financing | Moqom | Pinemont Limited | \$3 | Details |
| 06/22/16 | Santander Innoventures Acquires an Undisclosed Stake in Socure | Socure | Santander Innoventures | na | Details |
| 06/21/16 | Payfone Secures \$2.7 mm in Financing | Payfone | Undisclosed Investors | 2 | Details |
| 06/07/16 | Convercent Secures \$11 mm in Series C Financing Led by Tola Capital | Convercent | Sapphire Ventures; Tola Capital; Undisclosed Investors | 11 | Details |
| 05/31/16 | Featurespace Secures \$9 mm in Financing Led by TTV Capital | Featurespace | TTV Capital; Imperial Innovations Group; Nesta; Cambridge Angels; Cambridge Capital Partners LLC | 9 | Details |
| 05/31/16 | Simility Secures \$1.5 mm in Financing | Simility | Undisclosed Investors | 1 | Details |
| 05/25/16 | Hypur Secures \$1.5 mm in Financing | Hypur | Undisclosed Investors | 1 | Details |
| 05/25/16 | Dashlane \$22.5 mm in Series C Financing Led by TransUnion | Dashlane | TransUnion; Rho Ventures; FirstMark Capital; Bessemer Venture Partners | 22 | Details |
| 05/10/16 | DebitShield Secures Seed Financing | DebitShield | Undisclosed Investors | na | Details |
| 05/04/16 | Easy Payment Gateway Secures Financing from Clearhaus | Easy Payment Gateway | Clearhaus | na | Details |
| 04/21/16 | Forter Secures \$32 mm in Series C Financing Led by Scale Venture | Forter | NEA, Sequoia Capital, Scale Venture Partners | 32 | Details |
| 12/16/15 | Kount Secures \$80 mm in Financing from CVC Capital Partners | Kount | CVC Capital Partners | 80 | Details |
| 10/13/15 | Payfone Secures Financing from IDology | Payfone | IDology | na | Details |
| 09/29/15 | Ravelin Secures \$1.5 mm in Financing | Ravelin | Amadeus Capital Partners Limited; Passion Capital; Playfair Capital | 2 | Details |
| 07/16/15 | Ethoca Technologies Secures \$45 mm in Financing Led by Spectrum Equity | Ethoca Technologies | Spectrum Equity | 45 | Details |
| 06/25/15 | TransUnion Raises \$665 mm in its Initial Public Offering | TransUnion | Public Investors | 665 | Details |
| 06/22/15 | Signifyd Secures \$7 mm in Series A Financing | Signifyd | Lucas Venture Group; Allegis Capital; IA Ventures; QED Investors; Tekton Ventures | 7 | Details |
| 05/18/15 | Feedzai Secures \$17.5 mm in Series B Financing | Feedzai | Sapphire Ventures; Espirito Santo Ventures; Oak HC/FT | 18 | Details |
| 03/25/15 | InAuth Secures \$20 mm in a Series A Financing Led by Bain Capital Ventures | InAuth | Bain Capital Ventures | 20 | Details |
| 03/16/15 | IdentityMind Secures Financing Led by Lakewood & Company | IdentityMind | Benhamou Global Ventures; Lakewood & Company; Mozido; SBT Venture Capital; Cybernaut | na | Details |
| 03/12/15 | Ravelin Secures Seed Financing from Passion Capital | Ravelin | Passion Capital | na | Details |



Financing and M&A Transactions

Transaction Security Financings

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|--|------------------------|---|---------------|-------------------------|
| 02/25/15 | SecureKey Technologies Secures \$19 mm in Series C Financing Led by Blue Sky Capital and Rogers Venture Partners | SecureKey Technologies | Blue Sky Capital; Rogers Venture Partners | \$19 | Details |
| 02/10/15 | Encap Secures Approximately \$5.4 mm in Financing | Encap | Undisclosed Investors | 5 | Details |
| 01/12/15 | Giact Systems Secures Financing from Tritium Partners | Giact Systems, Inc. | Tritium Partners | na | Details |
| 12/16/14 | Adyen Secures \$250 mm in Financing Led by General Atlantic | Adyen | Temasek; General Atlantic; Index Ventures; Felicis Ventures | 250 | Details |
| 11/24/14 | Mirador Financial Secures \$2 mm in Financing from Various Investors | Mirador Financial | Collaborative Fund; Crosslink Capital; Vesta Corporation; Wicklow Capital; Undisclosed Investors | 2 | Details |
| 11/20/14 | SecureKey Technologies Secures \$5.2 mm in Financing | SecureKey Technologies | Undisclosed Investors | 5 | Details |
| 11/04/14 | Forter Secures \$15 mm in Series B Financing from New Enterprise Associates and Sequoia Capital | Forter | New Enterprise Associates; Sequoia Capital | 15 | Details |
| 10/28/14 | Socure Secures \$2.5 mm in Series A Financing Led by ff Venture Capital | Socure | Flint Capital; ff Venture Capital; Founder Collective; Two Sigma Ventures | 3 | Details |
| 09/29/14 | Bionym Secures \$14 mm in Financing | Bionym | Ignition Partners; Export Development Canada; MasterCard; Salesforce Ventures; Relay Ventures | 14 | Details |
| 09/22/14 | BillGuard Secures \$2.8 mm in Financing | BillGuard | Undisclosed Investors | 1 | Details |
| 08/22/14 | Zumigo Secures \$6 mm in Series B Financing Led by Intel Capital | Zumigo | Intel Capital; Aligned Partners | 6 | Details |
| 08/20/14 | EyeVerify Secures \$6 mm in Series A Financing from Qihoo 360, Sprint and Wells Fargo Startup Accelerator | EyeVerify | Sprint PCS Wireless Web; Wells Fargo Startup Accelerator; Qihoo 360 | 6 | Details |
| 08/19/14 | Riskified Secures \$4 mm in Series A Financing Led by Genesis Partners | Riskified | Genesis Partners; Founder Collective; Entrée Capital | 4 | Details |
| 08/12/14 | Socure Secures \$4.3 mm in Series A Financing | Socure | Undisclosed Investors | 4 | Details |
| 07/30/14 | Socure Secures Financing from AlphaPrime Ventures | Socure | AlphaPrime Ventures | na | Details |
| 07/23/14 | Apply Financial Secures Financing from True Ventures | Apply Financial | True Ventures | na | Details |
| 07/03/14 | TeleSign Secures \$9 mm in Series B Financing from Telstra Ventures | TeleSign | Telstra Ventures | 9 | Details |
| 06/26/14 | BlockScore Secures \$2 mm in Financing | Blockscore | Battery Ventures; Lightspeed Venture Partners; Khosla Ventures; New Atlantic Ventures; Boost VC; Y Combinator | 2 | Details |
| 06/09/14 | Adyen Secures \$16 mm in Financing Led by Felicis Ventures | Adyen | Felicis Ventures; Index Ventures | 16 | Details |
| 05/19/14 | EyeLock Secures \$3 mm in Financing from VOXX International | EyeLock | VOXX International | 3 | Details |



Financing and M&A Transactions

Transaction Security Financings (cont.)

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|--|---------------------|--|---------------|-------------------------|
| 05/15/14 | Verafin Secures \$55.3 mm in Financing from Spectrum Equity | Verafin Inc. | Spectrum Equity; RBC Capital Markets | \$55 | Details |
| 05/14/14 | Sift Science Secures \$18 mm in Financing Led by Spark Capital | Sift Science | First Round Capital; Union Square Ventures; Spark Capital; Undisclosed Investors | 18 | Details |
| 04/29/14 | TeleSign Secures \$40 mm in Series B Financing Led by Adams Street Partners | TeleSign | Summit Partners; Adams Street Partners; March Capital Partners | 40 | Details |
| 04/26/14 | Signifyd Secures \$2.2 mm in Financing | Signifyd | Undisclosed Investors | 2 | Details |
| 04/24/14 | Ondot Systems Secures \$18 mm in Financing | Ondot Systems | Undisclosed Investors | 18 | Details |
| 03/25/14 | Forter Secures \$3 mm in Financing from Sequoia Capital | Forter | Sequoia Capital | 3 | Details |
| 03/24/14 | ThreatMetrix Secures \$20 mm in Financing | ThreatMETRIX | Undisclosed Investors | 20 | Details |
| 03/19/14 | Chargeback Guardian Secures \$1.2 mm in Financing | Chargeback Guardian | Undisclosed Investors | 1 | Details |
| 12/31/13 | Moqom Secures Financing from Enterprise Ireland | Moqom | Enterprise Ireland | na | Details |
| 12/12/13 | Norse Secures \$10 mm in Financing from Oak Investment Partners | Norse | Oak Investment Partners | 10 | Details |
| 11/27/13 | Advent International and Bain Capital Acquire Remaining 20% Stake in WorldPay from RBS | WorldPay | Bain Capital; Advent International Corporation | na | Details |
| 10/30/13 | Trustev Secures \$3 mm in Financing | Trustev | Greycroft Partners; Mangrove Capital Partners; ACT Venture | 3.8 | Details |
| 10/28/13 | Payfone Secures \$10 mm in Financing from Early Warning Services | Payfone | Early Warning Services | 10 | Details |
| 09/03/13 | WISeKey Secures \$25 mm in Financing | WISeKey SA | Undisclosed Investors | 25 | Details |
| 08/13/13 | Socure Secures \$1 mm in Financing | Socure | Undisclosed Investors | 1 | Details |
| 07/09/13 | Riskified Secures \$1.65 mm in Financing | Riskified | Genesis Partners; Formation 8; Founder Collective; Entree Capital; The Accelerator Group; T5 Capital | 2 | Details |
| 06/13/13 | Encap Secures Financing from ProVenture Seed | Encap | ProVenture Management | na | Details |
| 05/14/13 | EyeVerify Secures \$2.3 mm in Series A Financing from Think Big Ventures, Nebraska Angels and Mid America Angels | EyeVerify | Think Big Partners; Nebraska Angels; Mid-America Angels | 2 | Details |
| 03/20/13 | Sift Science Secures \$4 mm in Financing Led by Union Square Ventures | Sift Science | Union Square Ventures | 4 | Details |
| 02/19/13 | Feedzai Secures \$2.4 mm in Financing from SAP Ventures and Data Collective | Feedzai | SAP Ventures; Data Collective | 2 | Details |
| 01/14/13 | Skrill Acquires Stake in Cybits for Approximately \$1.3 mm | Cybits | Skrill Holdings | 1 | Details |



Financing and M&A Transactions

Transaction Security Financings (cont.)

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|---|------------------------------|--|---------------|-------------------------|
| 02/19/13 | Feedzai Secures \$2.4 mm in Financing from SAP Ventures and Data Collective | Feedzai | SAP Ventures; Data Collective | \$2 | Details |
| 01/14/13 | Skrill Acquires Stake in Cybits for Approximately \$1.3 mm | Cybits | Skrill Holdings | 1 | Details |
| 12/31/12 | TeleSign Secures Financing from Summit Partners | TeleSign | Summit Partners | na | Details |
| 12/19/12 | Signifyd Secures \$2 mm in Financing Led by Resolute.VC | Signifyd | Andreessen Horowitz; QED Investors; resolute.vc; Tekton Ventures; IA Ventures; Data Collective | 2 | Details |
| 12/14/12 | CardinalCommerce Secures Financing from Primus Capital | Cardinal Commerce | Primus Capital Partners | na | Details |
| 08/29/12 | LifeLock Announces Pricing of its Initial Public Offering | LifeLock | Undisclosed Investors | 141 | Details |
| 06/26/12 | OneAssist Secures \$3.5 mm in Financing from Sequoia Capital India and Lightspeed Venture Partners | OneAssist Consumer Solutions | Lightspeed Venture Partners; Sequoia Capital | 4 | Details |
| 06/25/12 | TeleSign Secures \$29 mm in Financing | TeleSign | Undisclosed Investors | 29 | Details |
| 05/25/12 | SecureKey Secures \$30 mm in Financing Led by Intel Capital | SecureKey Technologies | Intel Capital; Visa; Discover Financial Services; Mastercard Incorporated; Rogers Ventures; TELUS Corporation | 30 | Details |
| 05/10/12 | Jumio Secures Financing Led by Citi Ventures | Jumio | Citi Ventures | 3 | Details |
| 04/12/12 | 41st Parameter Secures \$13 mm in Financing | 41st Parameter | Norwest Venture Partners; Georgian Partners; JAFco Co., Ltd.; Kleiner, Perkins, Caufield & Byers | 13 | Details |
| 04/11/12 | OneID Secures \$7 mm in Financing Led by Khosla Ventures and North Bridge Venture Partners | OneID | North Bridge Venture Partners; Khosla Ventures | 7 | Details |
| 04/04/12 | Intrinsic-ID Secures \$6.7 mm in Financing Led by Robert Bosch | Intrinsic-ID | Prime Technology Ventures; Bosch | 7 | Details |
| 04/01/12 | Meontrust Secures \$1.3 mm in Financing | Meontrust | Undisclosed Investors | 1 | Details |
| 03/27/12 | ThreatMetrix Secures \$18 mm in Series D Financing Led by August Capital | ThreatMETRIX | August Capital; Tenaya Capital; US Venture Partners; CM Capital Investments Pty Ltd | 18 | Details |
| 03/14/12 | LifeLock Secures Approximately \$100 mm in Financing | LifeLock | Bessemer Venture Partners; Cross Creek; Goldman Sachs; Industry Ventures, LLC; Institutional Venture Partners; Keating Capital, Inc.; Kleiner, Perkins, Caufield & Byers; River Street Capital; Symantec Corporation | 100 | Details |
| 03/06/12 | Jumio Secures \$25.5 mm in Financing | Jumio | Andreessen Horowitz | 26 | Details |
| 10/18/11 | BillGuard Secures \$10 mm in Financing | BillGuard | Khosla Ventures; Innovation Endeavors; Bessemer Venture Partners; IA Ventures; Founders Fund | 10 | Details |
| 06/01/11 | CardinalCommerce Secures \$3.5 mm in Financing | CardinalCommerce | Undisclosed Investors | 4 | Details |
| 05/06/11 | Feedzai Secures Approximately \$2.1 mm in Seed Financing from Novabase Capital, Espirito Santo Ventures and EDP | Feedzai | Novabase Capital; Espirito Santo Ventures; EDP | 2 | Details |
| 04/28/11 | Early Warning Services Secures Financing from Capital One | Early Warning Services | Capital One Financial Corp. | na | Details |
| 04/21/11 | Trustwave Holdings Withdraws Filing for IPO | TrustWave Holdings, Inc. | Undisclosed Investors | na | Details |
| 04/12/11 | Payfone Secures \$19 mm in Financing from American Express | Payfone | American Express; Verizon Investment Management; Rogers Communications; Opus Capital Group; BlackBerry Partners Fund G.P. Inc.; RRE Ventures | 19 | Details |
| 02/14/11 | SecureKey Technologies Secures Financing from Intel Capital | SecureKey Technologies | Intel Corporation | na | Details |



Financing and M&A Transactions

Transaction Security Financings (cont.)

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|--|----------------------|--|---------------|-------------------------|
| 02/02/11 | BillGuard Secures \$3 mm in Financing | BillGuard | Bessemer Venture Partners; IA Ventures | \$3 | Details |
| 10/05/10 | ThreatMetrix Secures \$12.1 mm in Financing Led by Tenaya Capital | ThreatMETRIX | Tenaya Capital; US Venture Partners; CM Capital Investments Pty Ltd; Technology Venture Partners | 12 | Details |
| 08/02/10 | Payfone Secures \$11 mm in Series B Financing from Opus Capital, BlackBerry Partners Fund and RRE Ventures | Payfone | BlackBerry Partners Fund G.P. Inc.; Opus Capital Group; RRE Ventures | 11 | Details |
| 07/14/10 | FICO Completes Private Placement of \$245 mm Senior Notes | FICO | Undisclosed Investors | 245 | Details |
| 06/15/10 | LifeLock Raised \$14.1 mm in Financing Round | LifeLock | Undisclosed Investors | 14 | Details |
| 03/09/10 | Payfone Secures \$6 mm in Financing | Payfone | Opus Capital Group | 6 | Details |
| 12/17/09 | 41st Parameter Secures \$3.79 mm in Financing | 41st Parameter | Undisclosed Investors | 4 | Details |
| 09/14/09 | Verafin Secures \$5.5 mm in Financing Led by RBC Venture Partners | Verafin Inc. | RBC Information Systems | na | Details |
| 06/16/09 | enStage Secures Financing from Accel Partners | enStage, Inc. | Accel Partners | na | Details |
| 02/16/09 | Encap Secures Financing from Alliance Venture | Encap | Alliance Venture | na | Details |
| 10/21/08 | Trusteer Secures \$6 mm Financing Led by U.S. Venture Partners | Trusteer | US Venture Partners | 6 | Details |
| 10/01/08 | Experian Acquires 40% Stake in DP Information Group | DP Information Group | Experian plc | na | Details |
| 06/03/08 | Accertify Secures \$4 mm in Financing from Intel Capital | Accertify | Intel Capital | 4 | Details |
| 05/09/08 | Fair Isaac Secures \$275 million in Financing in a Private Placement | FICO | Undisclosed Investors | 275 | Details |
| 04/08/08 | ThreatMetrix Secures \$7 mm in Financing Led by CM Capital and Technology Venture Partners | ThreatMETRIX | Technology Venture Partners; CM Capital Investments Pty Ltd | na | Details |
| 03/27/08 | iovation Secures \$15 mm in Financing Led by Intel Capital | iovation, Inc | European Founders Fund; Intel Capital; SAP Ventures | 15 | Details |
| 01/23/08 | LifeLock Secures \$25 mm in Financing Led by Goldman Sachs Group | LifeLock | Goldman Sachs; Kleiner, Perkins, Caufield & Byers; Bessemer Venture Partners | 25 | Details |
| 01/07/08 | INSIDE Secure Secures Financing Led by Motorola Ventures and HID Global | INSIDE Secure | EuroUS Ventures; GGV Capital (Granite Global); Siparex; HID Global Corporation; Nokia Growth Partners; GIMV; Motorola Ventures; Sofinnova Ventures; Vertex Venture Capital; Visa Marketplace | na | Details |
| 08/09/07 | 41st Parameter Secures \$10.07 mm in Financing Led by JAFco Ventures | 41st Parameter | JAFco Co., Ltd.; Norwest Venture Partners; Kleiner, Perkins, Caufield & Byers | 10 | Details |
| 06/19/07 | TransUnion Acquires 1.16% Stake in Saksoft for \$0.8 mm | Saksoft Ltd. | TransUnion | <1 | Details |
| 05/15/07 | ID Analytics Secures \$20 mm in Financing Led by Investor Growth Capital | ID Analytics | Canaan Partners; Investor Growth Capital; Mission Ventures; Trinity Ventures | 20 | Details |
| 04/27/07 | LifeLock Secures \$6.85 mm in Financing Led by Kleiner, Perkins, Caufield & Byers | LifeLock | Bessemer Venture Partners; Kleiner, Perkins, Caufield & Byers; Biltmore Ventures, LP | 7 | Details |



Financing and M&A Transactions

Transaction Security M&A

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|--|-------------------------------|---|---------------|-------------------------|
| 12/01/16 | Visa has Agreed to Acquire CardinalCommerce | CardinalCommerce | Visa | na | Details |
| 11/20/16 | Symantec has Agreed to Acquire LifeLock for \$2.3 bn | LifeLock | Symantec Corporation | \$2,300 | Details |
| 11/04/16 | BC Partners and Medina Capital have Agreed to Acquire Easy Solutions | Easy Solutions | BC Partners; Medina Capital | na | Details |
| 10/04/16 | Management Agrees to Acquire ValidSoft for \$3 mm | ValidSoft Limited | Undisclosed Investors | 3 | Details |
| 09/29/16 | IBM has Agreed to Acquire Promontory Financial Group | Promontory Financial Group | IBM | na | Details |
| 09/16/16 | CashFlows Acquires iCheque Network | iCheque Network | CashFlows | na | Details |
| 09/13/16 | Ant Financial Acquires EyeVerify | EyeVerify | Ant Financial | na | Details |
| 09/06/16 | iovation Acquires LaunchKey | LaunchKey | iovation | na | Details |
| 09/06/16 | Vista Equity Partners Acquires RDC | RDC | Vista Equity Partners | na | Details |
| 07/27/16 | OMERS and Harvest Partners have Agreed to Acquire Epiq for \$1 bn | EPIQ Systems Inc. | OMERS Private Equity; Harvest Partners, LLC | 1,000 | Details |
| 07/25/16 | WISeKey has Agreed to Acquire OpenLimit | OpenLIMIT | WISeKey SA | na | Details |
| 07/06/16 | Management Acquires Payment Card Technologies | Payment Card Technologies | Undisclosed Investors | 13 | Details |
| 06/24/16 | AllClear ID Acquires Encap Security | Encap Security | All Clear ID | na | Details |
| 06/06/16 | Acuant Acquires AssureTec | AssureTec Technologies | Acuant | na | Details |
| 06/02/16 | FinTech Group and Finotek Form Joint Venture | FinTech Group / Finotek JV | Finotek; FinTech Group | na | Details |
| 06/01/16 | Vista has Agreed to Acquire Ping Identity | Ping Identity | Vista Equity Partners | na | Details |
| 05/06/16 | Centana Growth Partners has Agreed to Acquire Jumio | Jumio | Centana Growth Partners | na | Details |
| 04/27/16 | Upland Software Acquires Advanced Processing & Imaging | Advanced Processing & Imaging | Upland Software | na | Details |
| 04/19/16 | eBay Enterprise and Innotrak Merge to form Radial | Radial | eBay Enterprise; Innotrak | na | Details |
| 04/19/16 | Experian has Agreed to Acquire CSID for \$360 mm | CSID | Experian | 360 | Details |
| 03/21/16 | Jumio Acquisition Acquires Jumio in an Asset Sale | Jumio | Jumio Acquisition, LLC | na | Details |
| 03/08/16 | Equiniti Acquires KYCnet | KYCnet | Equiniti | na | Details |
| 03/08/16 | Equiniti Acquires RiskFactor Solutions | RiskFactor Solutions | Equiniti | na | Details |
| 02/09/16 | KPMG Acquires Markets IT | Markets IT | KPMG Australia | na | Details |



Financing and M&A Transactions

Transaction Security M&A (cont.)

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|--|--------------------------|-----------------------------------|---------------|-------------------------|
| 01/15/16 | IBM Acquires IRIS Analytics | IRIS Analytics | IBM | na | Details |
| 12/10/15 | TransUnion Acquires Trustev for \$44 mm | Trustev | TransUnion | \$44 | Details |
| 09/24/15 | Prosper Marketplace Acquires BillGuard | BillGuard | Prosper Marketplace | na | Details |
| 05/28/15 | Mitek Acquires IDchecker for \$10.6 mm | Idchecker | Mitek | 11 | Details |
| 04/07/15 | Early Warning has Agreed to Acquire Authentify | Authentify | Early Warning Services | na | Details |
| 04/07/15 | Singtel has Agreed to Acquire Trustwave | Trustwave | Singtel | na | Details |
| 03/10/15 | PayPal Acquires CyActive Security for \$60 mm | CyActive | PayPal | 60 | Details |
| 02/24/15 | Twilio Acquires Authy | Authy | Twilio | na | Details |
| 01/13/15 | FICO Acquires TONBELLER | TONBELLER | FICO | na | Details |
| 12/23/14 | SafeCharge has Agreed to Acquire 3VCorporate for Approximately \$17.7 mm | 3VCorporate | SafeCharge | 18 | Details |
| 12/12/14 | SafeCharge Acquires CreditGuard for \$8 mm | CreditGuard | SafeCharge | 8 | Details |
| 11/18/14 | Providence Equity Acquires Stake in VendorSafe | Vendor Safe Technologies | Providence Equity Partners | na | Details |
| 11/11/14 | Worldpay Acquires SecureNet Payment Systems | SecureNet | WorldPay | na | Details |
| 11/03/14 | TransUnion Acquires L2C | L2C | TransUnion | na | Details |
| 10/31/14 | Garnero Group Acquisition Company has Agreed to Acquire a 70% Stake in WISEKey | WISEKey SA | Garnero Group Acquisition Company | na | Details |
| 10/16/14 | DocMagic Acquires eSignSystems | eSign Systems | Document Systems Inc. | na | Details |
| 08/29/14 | Morpho Acquires Dictao | Dictao | Morpho | na | Details |
| 08/08/14 | Gemalto Acquires SafeNet for \$890 mm | SafeNet | Gemalto N.V | 890 | Details |
| 07/21/14 | ACI Worldwide Acquires ReD for \$205 mm in Cash | ReD Corp | ACI Worldwide | 205 | Details |
| 06/25/14 | Diebold has Agreed to Acquire Cryptera | CRYPTERA | Diebold | na | Details |
| 05/27/14 | VASCO Data Security has Agreed to Acquire Risk IDS | Risk IDS | VASCO Data Security | na | Details |
| 05/19/14 | MasterCard has Agreed to Acquire ElectraCard Services | ElectraCard Services | MasterCard | na | Details |
| 04/24/14 | GBGroup has Agreed to Acquire DecTech Solutions for Approximately \$28.3 mm | DecTech Solutions | GB Group | 28 | Details |
| 04/21/14 | Cross Match has Agreed to Merge with DigitalPersona | DigitalPersona | Cross Match Technologies, Inc. | na | Details |



Financing and M&A Transactions

Transaction Security M&A (cont.)

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|---|--|---|---------------|-------------------------|
| 03/18/14 | Trustwave Acquires Cenzip | Cenzip | TrustWave | na | Details |
| 02/10/14 | HID Global Acquires Lumidigm | Lumidigm | HID Global Corporation | na | Details |
| 02/04/14 | 2FA has Agreed to Acquire ProtectDrive | ProtectDrive | 2FA | na | Details |
| 12/17/13 | Datacard Group Acquires Entrust | Entrust | DataCard Group | na | Details |
| 12/16/13 | TransUnion Acquires TLO for \$154 mm in Cash | TLO | TransUnion | \$154 | Details |
| 12/12/13 | LifeLock Acquires Lemon for Approximately \$42.6 mm in Cash | Lemon | LifeLock | 43 | Details |
| 12/02/13 | NCR Acquires Alaric System for Approximately \$84 mm | Alaric | NCR Corporation | 84 | Details |
| 11/11/13 | Trustwave Acquires Application Security | Application Security | TrustWave | na | Details |
| 10/01/13 | Experian Agrees to Acquire 41st Parameter | 41st Parameter | Experian | 324 | Details |
| 08/15/13 | IBM Acquires Trusteer | Trusteer | IBM | na | Details |
| 05/20/13 | VASCO Data Security International Acquires Cronto | Cronto | VASCO Data Security | 19 | Details |
| 04/03/13 | Experian Acquires Decisioning Solutions | Decisioning Solutions | Experian | na | Details |
| 04/03/13 | LexisNexis Risk Solutions Acquires RSA Security's Consumer Knowledge Based Authentication | RSA Security's Consumer Knowledge Based Authentication | LexisNexis Risk Solutions | na | Details |
| 04/01/13 | FICO Acquires Infoglide | Infoglide Software | FICO | na | Details |
| 03/06/13 | WorldPay Acquires YESpay | YESpay International Limited | WorldPay | na | Details |
| 02/12/13 | TeleSign Acquires Routo Telecommunications | Routo Telecommunications | TeleSign | na | Details |
| 11/15/12 | Sysnet Global Solutions Acquires Panoptic Security | Panoptic Security | Sysnet | na | Details |
| 07/16/12 | Francisco Partners Acquires Cross Match Technologies | Cross Match Technologies, Inc. | Francisco Partners | na | Details |
| 03/14/12 | LifeLock Acquires ID Analytics | ID Analytics | LifeLock | 186 | Details |
| 03/06/12 | Trustwave Acquires M86 Security | M86 Security | TrustWave Holdings, Inc. | na | Details |
| 02/17/12 | Advent International and Goldman Sachs Acquire TransUnion for Approximately \$3 bn | TransUnion | Goldman Sachs Merchant Banking Division; Advent International Corporation | 3,000 | Details |
| 01/10/12 | ThreatMetrix Acquires TrustDefender | TrustDefender | ThreatMETRIX | na | Details |
| 11/28/11 | Experian Acquires 192business | 192business | Experian | na | Details |



Financing and M&A Transactions

Transaction Security M&A (cont.)

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|---|---|-----------------------------|---------------|-------------------------|
| 09/07/11 | Primus Capital Acquires G2 Web Services | G2 Web Services | Primus | na | Details |
| 05/03/11 | WorldPay Acquires Envoy Services | Envoy Services | WorldPay | na | Details |
| 04/04/11 | VASCO Acquires Alfa & Ariss for \$1.4 mm in Cash | Alfa & Ariss | Vasco Data Security | \$1 | Details |
| 03/07/11 | Authenticate Acquires Hawk and Seal | Hawk and Seal | Authenticate | na | Details |
| 01/14/11 | BAE Systems has Agreed to Acquire Norkom Group for Approximately \$294 mm | Norkom | BAE Systems | 294 | Details |
| 01/01/11 | VASCO Data Security International Acquires DigiNotar for \$12.9 mm | DigiNotar | Vasco Data Security | 13 | Details |
| 11/08/10 | Early Warning Services Acquires Austin Logistics Risk Analytics Business from ALI Solutions | Austin Logistics Risk Analytics Business | Early Warning Services | na | Details |
| 11/04/10 | American Express has Agreed to Acquire Accertify for Approximately \$150 mm | Accertify | American Express | 150 | Details |
| 10/11/10 | HID Global Acquires ActivIdentity | ActivIdentity Corporation | HID Global Corporation | 161 | Details |
| 08/30/10 | CA Technologies Acquires Arcot Systems for \$200 mm in Cash | Arcot Systems, Inc. | CA, Inc. | 200 | Details |
| 08/19/10 | MasterCard Acquires DataCash Group for Approximately \$520 mm in Cash | DataCash | MasterCard | 520 | Details |
| 06/22/10 | Trustwave Acquires Breach Security | Breach Security | TrustWave Holdings, Inc. | na | Details |
| 06/09/10 | Autonomy has Agreed to Acquire CA Technologies Information Governance Business | CA Technologies's Information Governance Business | Autonomy | 19 | Details |
| 04/29/10 | Madison Dearborn Capital Partners has Agreed to Acquire a 51% Stake in TransUnion | TransUnion | Madison Dearborn Partners | na | Details |
| 04/21/10 | Visa Acquires CyberSource for Approximately \$2 bn | CyberSource Corp. | Visa | 2,000 | Details |
| 04/01/10 | SafeNet Acquires Aladdin Knowledge Systems | Aladdin Knowledge Systems | SafeNet | na | Details |
| 03/03/10 | Trustwave Acquires Intellitactics | Intellitactics | TrustWave Holdings, Inc. | na | Details |
| 01/12/10 | Trustwave Acquires BitArmor | BitArmor | TrustWave Holdings, Inc. | na | Details |
| 09/10/09 | Trustwave Acquires Vericept | Vericept Inc | TrustWave Holdings, Inc. | na | Details |
| 08/31/09 | Actimize Acquires Fortent for \$73.5 mm in Cash | Fortent | Actimize | na | Details |
| 07/14/09 | Neural Technologies Acquires FICO's LiquidCredit | FICO's LiquidCredit | Neural Technologies | na | Details |
| 06/17/09 | Actimize Acquires Syfact International | Syfact International B.V. | Actimize | 4 | Details |



Financing and M&A Transactions

Transaction Security M&A (cont.)

| Announced Date | Transaction Overview | Company | Selected Buyers / Investors | Amount (\$MM) | FinTech Database |
|----------------|---|--|---|---------------|-------------------------|
| 04/13/09 | Thoma Bravo has Agreed to Acquire Entrust for \$114 mm | Entrust, Inc. | Thoma Bravo | \$114 | Details |
| 03/23/09 | Elephant Talk Communications Acquires ValidSoft | ValidSoft Limited | Elephant Talk Communications | na | Details |
| 02/17/09 | Trustwave Acquires Mirage Networks | Mirage Networks, Inc. | TrustWave Holdings, Inc. | na | Details |
| 12/10/08 | Experian Acquires SearchAmerica for \$90 mm in Cash | SearchAmerica | Experian plc | 90 | Details |
| 11/03/08 | HID Global Acquires Nectar smart card | Nectar smart card | HID Global Corporation | na | Details |
| 08/27/08 | Trustwave Acquires ControlPath | ControlPath Inc. | TrustWave Holdings, Inc. | na | Details |
| 07/31/08 | First Data Sells Its 18% Stake in Early Warning Services | Early Warning Services | Undisclosed Investors | na | Details |
| 02/28/08 | SafeNet Acquires Ingrian Networks | Ingrian Networks, Inc. | SafeNet | na | Details |
| 02/21/08 | HID Global and ASSA ABLOY Identification Technologies Merge | Assa Abloy Identification Technologies | HID Global Corporation | na | Details |
| 01/28/08 | PayPal Acquires Fraud Sciences for \$169 mm | Fraud Sciences | PayPal | 169 | Details |
| 08/29/07 | AmbironTrustWave Acquires One-SEC | One-SEC | TrustWave Holdings, Inc. | na | Details |
| 07/02/07 | NICE Acquires Actimize for Approximately \$281.5 mm in Cash and Stock | Actimize | NICE Systems Ltd. | 282 | Details |
| 06/18/07 | CyberSource Acquires Authorize.Net for \$565 mm in Stock and Cash | Authorize.Net Holdings, Inc. | CyberSource Corp. | 565 | Details |
| 06/11/07 | AmbironTrustWave Acquires SecureTrust | SecureTrust | TrustWave Holdings, Inc. | na | Details |
| 03/05/07 | Digital Envoy Acquires Cydelity | Cydelity | Digital Envoy, Inc. | na | Details |
| 01/09/07 | TrustWave Acquires SecurePipe | SecurePipe | TrustWave Holdings, Inc. | na | Details |
| 10/02/06 | Palamon Capital Partners Acquires Retail Decisions for \$315mm | Retail Decisions plc | Palamon Capital Partners | 315 | Details |
| 08/02/06 | TransUnion Acquires Qsent | Qsent | TransUnion LLC | na | Details |
| 07/19/06 | Entrust Acquires Business Signatures for \$50 mm in Cash and Stock | Business Signatures Corporation | Entrust, Inc. | 50 | Details |
| 06/29/06 | EMC Corporation Acquires RSA Security for \$2,341 in Cash | RSA Security | EMC Corporation | 2,341 | Details |
| 06/22/06 | Experian Acquires Eiger Systems | Eiger Systems | Experian | na | Details |
| 05/22/06 | Bank of America, BB&T, JPMorgan Chase, Wachovia and Wells Fargo Acquires Early Warning Services | Early Warning Services | BB&T (Branch Banking & Trust); JP Morgan Chase & Co; Bank of America Corp.; Wells Fargo & Company; Wachovia Corp. | na | Details |

VIII. Selected Transaction Profiles

A. Visa Acquires CardinalCommerce



Visa Acquires CardinalCommerce

Transaction Summary & Overview

Transaction Overview and Rationale

Overview of Transaction

- On December 1, 2016, CardinalCommerce announced its strategic sale to Visa in one of the largest payments deals of the year
- Headquartered in Cleveland, Ohio, CardinalCommerce is a pioneer and global leader in enabling authenticated payment transactions in the card-not-present payments industry and is the largest authentication network in the world
- Founded in 1999, CardinalCommerce's products are used globally: across 6 continents (Africa, Asia, Australia, Europe, North America and South America), in more than 200 countries and used with more than 180 different currencies

Significance of Transaction

- The acquisition will help accelerate the growth of Visa's digital commerce by enabling more secure, seamless payments, through browsers, mobile apps and connected devices
- As Visa plans to integrate tokenization into Visa Checkout over the next 18 months, the addition of CardinalCommerce will allow a more seamless integration of 3-D Secure and delivery of these new fraud mitigation capabilities to merchants

FT Partners' Role

- FT Partners served as exclusive strategic and financial advisor to CardinalCommerce and its Board of Directors
- This transaction demonstrates FT Partners' continued leadership position as the "advisor of choice" to the highest quality FinTech companies

Financial Technology Partners LP FTP Securities LLC

*is pleased to announce its exclusive role as
sole strategic and financial advisor to*



in its sale to



*The Only Investment Bank
Focused Exclusively on Financial Technology*



Visa Acquires CardinalCommerce

CardinalCommerce Overview

Products



- ✓ **Consumer Authentication**
- ✓ **Alternative Payments**
- ✓ **Tokenization**
- ✓ **Mobile Marketing**
- ✓ **AuthBridge**



CEO: Mike Keresman

Headquarters: Cleveland, OH

Founded: 1999

Employees: ~150

- Founded in 1999 by Mike Keresman, Tim Sherwin and Chandra Balasubramanian, CardinalCommerce is a global leader and pioneer in enabling payment authentication, facilitating alternative payments and securing transactions in the card-not-present world
- CardinalCommerce's products and solutions drive increased sales, improve margins and eliminate fraud
- The Company partners with a variety of payment brands, processors, shopping carts, gateways and order management systems to provide an array of options for its Customers
- CardinalCommerce completed a growth capital raise from Primus Capital in December 2012



For Merchants

Enables a merchant to create a **Consumer Authentication strategy** based on its own business rules to increase sales and improve margins, all tuned to the consumer experience



For Financial Institutions

Enables financial institutions to improve the level of security and convenience available to consumers with **Cardinal Consumer Authentication for Financial Institutions**



For Mobile

Lets clients ensure that their consumers can make secure, remote payments from any device with **Cardinal's mobile solutions**



Visa Acquires CardinalCommerce

CardinalCommerce Overview (cont.)

Cardinal Founders

Michael A. Keresman, III
Founder, Chairman,
President, CEO

- Previously co-founder at STERIS Corporation (NYSE: STE), holding several senior management positions from 1988 to 1999, including Senior Vice President, CFO and CIO
- Part of the management team that created the first state-wide HMO in the country
- Recognized as one of Ernst & Young's Entrepreneurs of the Year in 2004 and 2005

Chandra Balasubramanian
Co-Founder, EVP and
CTO

- Previously Co-Founder and Division Manager of QIS/Live TechSolutions, a company which develops, markets and supports web-based solutions to enhance workplace productivity and retail, as well as B2B eCommerce
- From 1995 to 1998, served as technical consultant for: PMH Caramanning, Hong Leong Bank and AIT Sdn Bhd

Francis M. "Tim" Sherwin
Co-Founder and EVP

- Currently, leads Cardinal's business development and product strategy efforts
- More than 20 issued / pending patents related to secure payment processing, mobile payments and tokenization
- Previously SVP of Business Development at QIS, an IT and internet services firm and earlier was with STERIS Corporation as Controller of the North American Division

FINANCIAL
TECHNOLOGY
PARTNERS

Source: Company website

Clients & Partners

Merchants



Gateways



Processors & Acquirers





Visa Acquires CardinalCommerce

Visa Overview

VISA

CEO: Alfred F Kelly Jr

Headquarters: Foster City, CA

Founded: 1958

Employees: 11,300

- Visa Inc. (NYSE: V) is a global payments technology company that connects consumers, businesses, financial institutions and governments in more than 200 countries and territories to electronic payments
- Visa went public in 2008 in one of the largest IPOs in history
- In 2016, Visa and Visa Europe merged, creating a company that enables more than \$6.5 trillion in global payments volume annually, by providing digital payment products, services and processing to 17,000 financial institutions, 40 million merchants, and 2.9 billion Visa accounts worldwide

Selected Acquisitions

| Date | Company | Deal Amount (\$ in mm's) | Sector |
|-------|--|-----------------------------|----------|
| 11/15 | VISA Europe | \$23,400 | Payments |
| 02/15 |  trialpay | na | Payments |
| 06/11 |  Fundamo | 110 | Banking |
| 02/11 |  playspan | 190 | Payments |
| 04/10 | CyberSource* | 2,000 | Payments |

2015 Key Stats

| | | |
|---------------|-----------------|------------------------------------|
| \$8.2 | trillion | Total Volume ⁽¹⁾ |
| \$13.9 | billion | Revenue |
| 98.4 | billion | Transactions |



Visa Acquires CardinalCommerce

Primus Overview



Office Locations:

Cleveland, OH
Atlanta, GA

Founded:

1984

Fund Size:

~\$350 mm




- Founded in 1984, Primus is a growth-oriented private equity firm focused on investing in leading healthcare, software, and technology-enabled companies
- Primus partners with exceptional management teams to accelerate growth, improve operating performance and increase the value of the companies in which they invest
- The types of transactions Primus pursues includes buyouts, control and minority recapitalizations, secondary share purchases and expansion financings
- Primus' flexible approach enables the firm to engage with business owners and design tailored investment structures to meet the particular needs of each transaction

Key Investment Criteria

- **Geography:** United States and Canada
- **Transaction Type:** Growth, Buyouts, Recapitalizations
- **Industry Focus:** Healthcare, Software / Technology, Tech-Enabled Services
- **Investment Amount:** \$15 – 70 mm (larger with LP co-investment)

FINANCIAL
TECHNOLOGY
PARTNERS

Selected FinTech Investments

| Date | Company | Sector |
|-------|---|----------|
| 06/14 |  HYPERWALLET | Payments |
| 12/12 |  CARDINAL* COMMERCE | Payments |
| 09/11 |  Web Services | Payments |

Key Individuals



Jon Dick
Managing Director



Ron Hess
Director



Phillip Molner
Managing Partner



Loyal Wilson
Founder & Senior Advisor



William Mulligan
Managing Partner



Aaron Davis
Principal

Source: Company website

B. Prosper Marketplace Acquires BillGuard



Prosper Marketplace Acquires BillGuard

Transaction Summary & Overview

Transaction Overview and Rationale

Overview of Transaction

- On September 24, 2015 BillGuard (the “Company”) announced its sale to Prosper Marketplace
- Headquartered in New York, BillGuard is a leading personal finance analytics company that offers award-winning mobile consumer apps to manage, protect and do more with money and credit; to date, BillGuard has flagged over \$70 million in unauthorized charges for its mobile users
- Prosper Marketplace operates a leading online marketplace for consumer credit that connects borrowers with investors
- The transaction is expected to close by the end of calendar year 2015 and is subject to applicable regulatory approvals and other conditions

Significance of Transaction

- Enables Prosper Marketplace to offer consumers a comprehensive financial management package, which will help them make smarter financial decisions
- BillGuard’s world-class technology team will accelerate Prosper Marketplace’s product development while providing ongoing access to the strong engineering and product talent pool in Israel

FT Partners’ Role

- FT Partners served as exclusive strategic and financial advisor to BillGuard and its Board of Directors
- Developed extensive marketing materials and data analyses to highlight the unique aspects of the business, and led all aspects of transaction execution
- Transaction highlights FT Partners’ continued success advising leading financial technology companies and generating highly successful outcomes across the sector

Financial Technology Partners LP FTP Securities LLC

*is pleased to announce its exclusive role as
sole strategic and financial advisor to*

BILLGUARD

in its sale to

PROSPER[®]

FINANCIAL
TECHNOLOGY
PARTNERS

**The Only Investment Bank
Focused Exclusively on Financial Technology**
www.ftpartners.com



Prosper Marketplace Acquires BillGuard

BillGuard Overview

BILLGUARD

Company Overview

CEO: Yaron Samid

Headquarters: New York, NY

Founded: 2010

- BillGuard provides personal finance security from unwanted charges including hidden fees, billing errors, scams and fraud on credit card bills
- BillGuard's specialties include personal finance security, credit monitoring, market data analytics and surveillance
- Has partnerships with world-class identity theft and fraud analytics firms to boost security for added protection.
- BillGuard raised approximately \$16.5 mm through three rounds of funding prior to the acquisition by Prosper

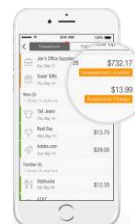
Selected Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|--|
| 08/10/14 | \$3 | Financing | Secured financing from undisclosed investors |
| 10/18/11 | 10 | Financing | Secured financing from Bessemer Venture Partners, IA Ventures, Innovation Endeavors, Khosla Ventures and The Founders Fund |
| 02/02/11 | 3 | Financing | Secured financing from Bessemer Venture Partners and IA Ventures |

Products & Services Overview

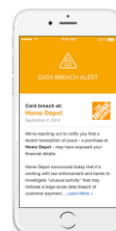


BillGuard uses crowdsourcing to detect fraud and overspending patterns that banks and consumers regularly miss and has become the world's #1 transaction monitoring app



Track

- Tracks charges, showing consumers where they've shopped
- Alerts the cardholder when a card is used away from normal patterns
- Allows consumers to manage all of their accounts in one place



Protect

- Sends suspicious charge alerts and provides details on merchants when they do not recognize a charge
- BillGuard has also discovered over \$70 mm in wrongful charges



Save

- Tracks spending patterns to search for coupons that can lower monthly bills
- The platform also introduces consumers to new products and services that are complementary to their spending habits



Prosper Marketplace Acquires BillGuard

BillGuard Overview (cont.)

Protects Consumers

Key Metrics



1

Track and manage personal finances

BillGuard harnesses the power of crowdsourcing to detect fraud and overspending patterns that banks and consumers often miss

100M

U.S. Data Breach Victims
in 2014

2

Protect against unwanted charges and ID theft

BillGuard Pro and Ultimate use world-class IDT security platforms to make you safer and more secure

85%

Percentage of ID Theft
Involves Card Fraud

3

Intelligent design makes users more efficient

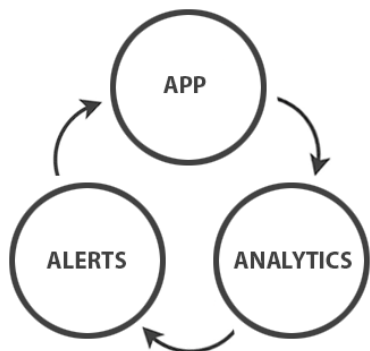
The simple, clean design drives growth in user rates, as anyone can harness the full power of the app in a short period of time

\$70M+

Wrongful Charges Found by
BillGuard Users

\$17M

Saved by Data Breach Victims Using
BillGuard in 2014





Prosper Marketplace Acquires BillGuard

Prosper Marketplace Overview



Company Overview

| | |
|------------------|----------------------------------|
| CEO: | Aaron Vermut |
| Headquarters: | San Francisco, CA |
| Other Locations: | Salt Lake City, UT & Phoenix, AZ |
| Founded: | 2005 |
| Employees: | 500+ |

Selected Recent Financing / M&A Transactions

| Date | \$ mm | Type | Commentary |
|----------|-------|-----------|---|
| 04/07/15 | \$165 | Financing | Secured financing from CS NEXT Investors; JP Morgan; SunTrust Bank; BBVA Ventures; Neuberger Berman Private Equity Partners; Passport Capital; Breyer Capital |
| 05/01/14 | 70 | Financing | Secured financing from Francisco Partners; IVP; Phenomen Ventures |
| 09/23/13 | 25 | Financing | Secured financing from Sequoia Capital; BlackRock |
| 01/14/13 | 20 | Financing | Secured financing from Accel Partners; Benchmark Capital; Atlanticus Holdings; DAG Ventures; Draper Fisher Jurvetson; Meritech Capital Partners; Omidyar Network; QED Investors; Sequoia Capital; TomorrowVentures; Victory Park Securities; Volition Capital |

Products & Services Overview



- Prosper Marketplace is a pioneer of online marketplace lending that connects borrowers with investors
- The Prosper platform enables borrowers to access credit at affordable rates and provides investors with attractive risk-adjusted rates of return
- Prosper has originated more than \$4 billion in loans through its platform since it first launched in 2006

Platform Overview

- Innovative marketplace model that efficiently connects qualified supply and demand of capital
- Online operations that substantially reduce the need for physical infrastructure and improve convenience
- Data and technology driven automation that increases efficiency, and improves the borrower and investor experience



Create Loan Listing



Investors Commit Funds to the Loan



Receive Money



Make Monthly Payments

C. Singtel Acquires Trustwave for \$810 mm



Singtel Acquires Trustwave for \$810 million

Transaction Summary & Overview


Transaction Summary

- On April 8, 2015, Trustwave announced that it had entered into an agreement with Singapore Telecommunications Limited (Singtel) to be acquired for \$810 million
 - The proposed acquisition is subject to regulatory approvals, as well as various closing conditions put in place by each party involved
- Post acquisition, Trustwave will operate as a subsidiary of Singtel, keeping its headquarters and management team in Chicago, IL, strengthening its market position in the US and Europe and expanding into the Asia Pacific Region with help from Singtel
- Trustwave provides cloud and managed security services and solutions to enable businesses to better manage their information security and compliance systems
- Singtel is a leading Asian communications company that provides a number of payment technology, communication services and data solutions over wireless, internet and fixed platforms
- The acquisition increases the market reach of Trustwave's managed security services and strengthens and expands Singtel's existing cloud-based information security offerings
- Following the close of the merger, Singtel looks to combine its information and communications tech division with Trustwave's managed security services to provide a more complete offering to its customers
- The managed security services industry is in a prime position for rapid growth due to the relatively recent increase in frequency and complexity of cyber-related attacks; already a \$14 billion industry, it is projected to grow upwards of 75% to \$24 billion over the next three years



CEO: Robert McCullen
Headquarters: Chicago, IL
Founded: 1995
Employees: 590

Previous Equity Financing

| Date | Size (\$ mm) | Investor |
|----------|-----------------|---|
| 05/19/04 | \$10 |  |

Commentary

"This strategic partnership creates an unparalleled opportunity to combine Singtel's robust information and communications solutions with Trustwave's industry-leading security technologies and managed services platform to deliver cutting-edge solutions that will enhance our customer experience."

- Robert McCullen, President, CEO & Chairman, Trustwave



Singtel Acquires Trustwave for \$810 million

Trustwave Solutions by Industry



Education

- Trustwave's solution ensures that credit card information, Social Security Numbers and intellectual property are safe from hacks and cyber attacks
- Provides solutions such as secure web gateways, web filtering, SSL Certificates and data backup to allow for open access but maintain security



Health Care

- Solutions work to limit data breaches, which allow for sensitive patient data to be exposed, including Social Security Numbers, fingerprints and patient diagnoses
- Protects a practice's infrastructure, networks and data while also maintaining compliance with industry regulations



Financial Services

- Although the financial services industry often has security parameters in place, Trustwave augments those systems, providing increased protection from financially motivated hackers, malicious insiders and state-sponsored hackers
- Additionally, all compliance mandates are satisfied automatically



Public Sector

- Trustwave's solution for the public sector augments government agencies' ability to design and implement risk-based cybersecurity systems, identify standard methods for critical infrastructure and monitor, respond and reduce cybercrime-related incidents



Payment Services

- Trustwave has experience working within the payments industry and the inherent security metrics needed, as well as card brand and industry mandates, such as the Payment Card Industry Data Security Standard
- E-Commerce and POS solutions ensure that payments are processed smoothly



Restaurants

- Solutions are designed to ensure that restaurants meet certain compliance standards for card payments, including the Payment Card Industry Data Security Standard
- Trustwave works with restaurants to help protect customer data breaches



Hotels

- In addition to meeting payment card regulations, Trustwave also helps hotels protect client information
- Additionally, the Company provides security testing, managed firewall services and a Managed Security Information and Event Management solution to protect the hotel's network and critical information



Retail

- Trustwave helps retailers more efficiently meet compliance standards, improve their data protection efforts and fight off malicious intrusions
- Trustwave takes over the company's compliance and security program, allowing the company to focus completely on its business with peace of mind



Singtel Acquires Trustwave for \$810 million

Trustwave Management Team



Robert McCullen, Chairman, CEO and President

- Currently serves as Trustwave's CEO, President, and Chairman
- Before Trustwave, he was a co-founder and managing partner of Ambrion, which eventually merged with Trustwave



Michael Bartlett, EVP, Global Sales

- Currently is the Executive Vice President of Global Sales and brings over 25 years of sales management experience to Trustwave
- Prior to joining Trustwave, he was Vice President of Worldwide Sales for the CascadeBusiness Unit of Riverbed Technology



John Amaral, SVP, Product Management

- He is the Senior Vice President of Product Management and has over 20 years of product development experience
- He joined Trustwave after it acquired Vericept, a provider of data loss prevention, where he was CTO



Steve Kelly, SVP, Product and Corporate Marketing

- Mr. Kelly currently serves as Senior Vice President of Product and Corporate Marketing
- Prior to Trustwave, he worked at a number of firms in the information security industry



James Kunkel, EVP, Corporate Development

- He is the Company's Executive Vice President of Corporate Development
- Before joining Trustwave, he held positions in several leading payment processing companies





Singtel Acquires Trustwave for \$810 million

Singtel Overview



CEO: Sock Koong Chua
Headquarters: Singapore, Singapore
Founded: 1879
Employees: 23,279
Market Cap: \$50.8 bn
Revenue: \$12.4 bn

Company Overview

- Singapore Telecommunications Group (Singtel) provides telecommunication services in the areas of mobile phone, ISP, IPTV, and fixed telephone line
- The Company's mobile division provides mobile devices and plans as well as applications and services for mobile devices in the areas of e-commerce, social and more
- The Company's broadband services division provides wireless, broadband and TV packages to the consumer and corporate markets
- Singtel's network system provides connections to and from Singapore to over 100 countries and the Company is a major investor in many of the world's submarine cable and satellite network systems

Acquisition History

| Date | Size (\$ mm) | Company |
|----------|--------------|---|
| 09/19/12 | \$26.5 |  Pixable |
| 07/26/12 | 9.4 |  |
| 03/05/12 | 312.0 | [a·mo·bee] |
| 11/04/11 | 258.6 |  AIS |
| 06/28/07 | 758.0 |  WARID TELECOM |
| 06/02/05 | 118.0 | Pacific Bangladesh Telecom |
| 05/20/00 | 252.0 |  bharti |
| 01/16/95 | 33.0 | Yorkshire Cable Communications |

D. Early Warning Acquires Authentify



Early Warning Acquires Authentify

Transaction Summary

Transaction Summary

- On April 7, 2015 Early Warning announced that it signed a definitive agreement to acquire Authentify
 - Terms of the acquisition were not disclosed
- The acquisition will enable Early Warning to offer organizations digital, multi-factor authentication and the ability to integrate, manage and prioritize multiple digital channel authentication methods through one platform
 - Reduces fraud and risk, while improving the consumer experience
- Authentify provides real-time, automated multi-factor authentication services for online business enterprises
- Early Warning is a provider of fraud prevention and risk management tools through collaboration and sharing of information within the industry to respond quickly to evolving fraud challenges

As organizations strive to provide consumers with an online experience that is both seamless and secure, managing authentication factors and methods is crucial. With the acquisition of Authentify, Early Warning is well on its way to realizing its vision of providing both the powerful multi-faceted authentication needed today plus the advanced authentication needs of the future.

- Paul Finch, CEO, Early Warning

Transaction Rationale

- The acquisition of Authentify combined with Early Warning's 2013 equity investment and exclusive agreement with Payfone creates a differentiated digital channels authentication solution suite that augments Early Warning's identity and payment solutions
- The digital channels authentication solution suite offers the following benefits:
 - Improved mobile security and reduced consumer friction by leveraging innovation in biometric and behavioral authentication
 - Strengthened authentication events
 - Supports the integration, delivery, prioritization and management of current and future digital authentication technologies enabled by a Software Development Kit
 - Offers a true, persistent identifier that is authenticated in real time

Guarding businesses and consumers from fraud is becoming more critical each day, and this acquisition represents two companies with a common objective uniting to reinforce that goal. Our customers have come to trust Authentify to better secure their online environments, and we are pleased to see their ability to authenticate with ease and accuracy only strengthened.

Peter Tapling, CEO, Authentify



Early Warning Acquires Authentify

Authentify Overview

Authentify Overview



CEO: Peter G. Tapling

Headquarters: Chicago, IL

Founded: 1999

- **Authentify provides intuitive and consistent multi-factor authentication services for protecting user accounts or key information from unauthorized access**
 - Services enable organizations that need strong security to quickly and cost-effectively add 2-factor or 3-factor authentication layers to user logon, transaction verifications or critical changes such as adding a payee to an e-pay or wire account
- **Solutions include transaction verification, remote user access, token issuance, password reset, risk management, SMS password delivery and telephone data services**
- **The Company's patented technology employs service-oriented message architecture to seamlessly integrate into existing security processes**
- **Customers include financial services firms, corporate security professionals and e-merchants**
- **The Company currently serves over 1,200 financial institutions and e-commerce companies**

Products

Authentify xFA – Takes advantage of a smartphone's sensors, processing power and data channels to offer flexible authentication

Two-Factor Authentication for VPN – Ensure secure access from anywhere or anytime; users seeking to log on are authenticated via an out-of-band channel using a second device.

Authentify 2CHK – Protect your customers from man-in-the-middle and man-in-the-browser attacks; offers a secure communication channel to customers via their phones, or a secure second channel to the user's desktop

Identify and Access Management - Safeguard user accounts or key information from unauthorized access

Password Reset - The password reset application combines true out-of-band safeguards with real-time delivery to produce the most secure and convenient method of resetting account access

Two-Factor Authentication - Phone-based two-factor authentication that works with any phone from anywhere

Transaction Verification – Authenticate legitimate online account activities against sophisticated attacks and fraud



Early Warning Acquires Authentify

Early Warning Overview



EARLY WARNING®

Collaborative intelligence. Trusted exchange.

CEO: Paul Finch

Headquarters: Scottsdale, AZ

Founded: 1995

- **Early Warning provides innovative risk management solutions, enabling businesses and consumers to transact with security and convenience**

- The Company's suite of solutions uses collaborative data contributed by an array of financial services organizations and advanced analytical modeling

- **Early Warning is a regulated credit reporting agency specializing in consumers' bank records**

- **Serves a network of 1,100 financial institutions, government entities and payment companies**

- **The Company is owned by Wells Fargo, Bank of America, JP Morgan Chase, BB&T and Capital One**

- These banks as well as hundreds of others across the country exchange information to obtain a single view of fraud activity and manage fraud on a cross-institution basis

- **In 2014, Early Warning's solutions identified nearly \$24 bn in high-risk deposits and payments**

Solutions

Authentication Solutions



Identity Solutions – Improve account openings while reducing fraud with accurate, comprehensive and customizable identity solutions



Mobile Solutions – Deterministic mobile authentication solutions to optimize banking apps, browsers, mobile payments, contact centers and more

Payment Solutions



Deposit Payment Solutions – Mitigate deposit payment fraud with advance notification of high-risk deposits and high-risk payments from DDA accounts



Card Payment and Lending Solutions – Identify potential common points of purchase compromises faster and more accurately to reduce the risk of card data exposure

Regulatory Solutions



Mobile Number Verification – Verify the accuracy of consumer mobile phone numbers to reduce the risk of violating TCPA rules and regulations



Asset Search and Verification Service – Efficient Solution for Government Asset Inquiries



Internal Fraud Prevention Service – Applicant screening solution for Financial Service Organizations

IX. Overview of FT Partners

Overview of FT Partners

Strong Domain Expertise Across Financial Technology











































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|---|---|---|---|--|--|
| <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its role as strategic and financial advisor to</p> <p>Heartland in its sale to globalpayments for total consideration of \$ 4,300,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its role as strategic and financial advisor to</p> <p>MERCURY in its cash sale to vantiv for total consideration of approximately \$1,650,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>MERCURY in its approximately 60% majority sale to SILVERLAKE for aggregate consideration of approx. \$ 900,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>Currencies Direct in its sale to Palamon Capital Partners CORSAIR CAPITAL for a total consideration of \$310,000,000+</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as financial advisor to</p> <p>GreenSky in its minority investment from DST ICONIQ TPG for total consideration of \$ 300,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>OZFOREX FOREIGN EXCHANGE SERVICES in its Initial Public Offering valuing the equity at approximately A\$480,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> |
| <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as advisor to</p> <p>CIBC in its strategic investment in BlackRock with additional participation from MasterCard Bain Capital Ventures Alkermes \$70,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>VERUS in its sale to sage for cash consideration of approximately \$ 325,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>CentralPayment in its Strategic Investment by TSYS for total consideration of approximately \$ 100,000,000+</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>FLEET ONE in its cash sale to wex for total consideration of approximately \$ 369,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>NMI NETWORK MERCHANTS INC. in its growth investment by Bregal Sagemount for a total valuation of nearly \$ 200,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>avidxchange in its Series E minority financing from Bain Capital Ventures FOUNDRY TPG KoyBank nyca for total consideration of \$ 225,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> |
| <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its role as strategic and financial advisor to</p> <p>TRANSFIRST in its cash sale to Vista Equity Partners from WCAS \$1,500,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole debt capital advisor to</p> <p>jack henry & ASSOCIATES INC. in its acquisition of iPay Technologies for total consideration of approximately \$ 300,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>CHROMERIVER in its Series D investment from Great Hill PARTNERS for total consideration of approximately \$ 100,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>VeriFone THE WAY TO PAY™ in its \$177,000,000 Initial Public Offering valuing the equity at approximately \$ 650,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>PROPAY in its sale to TSYS \$ 100,000,000+</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> | <p>Financial Technology Partners LP FTP Securities LLC</p> <p>is pleased to announce its exclusive role as sole strategic and financial advisor to</p> <p>lynk in its sale to The Royal Bank of Scotland for cash consideration of approximately \$ 525,000,000</p> <p>FINANCIAL TECHNOLOGY PARTNERS</p> <p>The Only Investment Bank Focused Exclusively on Financial Technology</p> |

Overview of FT Partners

FT Partners has Significant Experience Advising Large Financing Rounds and “Unicorns”

FT Partners has a history of advising on some of the largest financing transactions in the FinTech space

Representing numerous FinTech “Unicorns” above \$1 billion valuations

| Company | Amount Raised | Selected Prominent Investors in FT Partners Led Rounds |
|---|----------------|---|
|  MERCURY [®] | \$420,000,000+ |    |
|  GreenSky [™] | 300,000,000+ |     |
|  liquidnet | 250,000,000 |   |
|  square trade [™] protection plans | 238,000,000 |    |
|  avidxchange | 225,000,000 |  |
|  nmi | 150,000,000+ |    |
|  Kabbage | 135,000,000 |  |
|  TradingScreen SIMPLIFYING GLOBAL MARKETS [®] | 110,000,000+ |     |
|  YAPSTONE [™] POWERING PAYMENTS | 110,000,000 |    |
| CHROMERIVER | 100,000,000 |  |
|  Credit Karma [™] | 85,000,000 |   |
|  earnest | 75,000,000 |   |
|  taulia | 60,000,000 |  |

Note: FT Partners represented investor in Dynamics (CIBC) and Credit Karma (Google Capital); some transactions include a combination of equity and smaller amount of debt financing.

Timeline of Selected FT Partners Payments Processing Transactions

FT Partners has a history of executing on some of the most ground-breaking Payments transactions in the last decade+

2004

- VeriFone** THE WAY TO PAY™
- \$292mm Debt Recap**
- Lipman**
- VeriFone** THE WAY TO PAY™
- \$540mm Debt Financing to acquire**
- VeriFone** THE WAY TO PAY™
- \$177mm IPO**
- lynk** (now WorldPay US)
- \$525mm Sale to The Royal Bank of Scotland**
- VeriFone** THE WAY TO PAY™
- \$325mm Sale to sage**
- VERUS** (now Sage Payments)
- \$370mm Sale to WESTERN UNION**
- CUSTOM HOUSE**
- \$100+mm Sale to TSYs**
- PROPAY**
- \$100+mm Sale to TSYs**
- century PAYMENTS**
- \$100+mm Sale to worldpay**
- ACCEL PARTNERS**
- \$50mm Financing from YAPSTONE ePayments as a Service**
- TRANSFIRST**
- \$675mm Recap**
- TRANSFIRST**
- \$70mm strategic investment from CIBC MasterCard**
- Bain Capital Ventures**
- Adams Capital Management**
- judo**
- Growth Financing from ROUTE SIXTY-SIX VENTURES**
- MERCURY**
- \$1.65bn Sale to vantiv**
- globalpayments**
- Heartland**
- \$4.5bn Sale to**
- cardconnect.**
- \$438mm Sale to FinTech Acquisition Corp (NASDAQ: FINTC)**
- SEARCHLIGHT**
- Investment in HARBORTOUCH**
- Remitly**
- \$38.5mm Financing**
- Currencies Direct**
- \$310mm+ Sale to Palamon CORSAIR CAPITAL**
- TRANSFIRST**
- \$1.5bn Sale to Vista Equity Partners**
- nmi**
- Growth Investment from Great Hill PARTNERS**
- CentralPayment**
- \$100mm+ Sale to TSYs**
- SOLVERAS PAYMENT SOLUTIONS™**
- \$50mm Sale to TRANSFIRST**
- CAYAN** (fka Merchant Warehouse) in its Recap by PARTHENON CAPITAL PARTNERS
- cardsPRING**
- Sale to twitter**
- BregalSagemount**
- nmi**
- Growth Investment from**
- azimo**
- \$20mm Financing from frog**
- sum up**
- Financing from Groupon BBVA**
- YAPSTONE** POWERING PAYMENTS
- \$60mm Debt Financing Comerica Bank**
- BregalSagemount**
- TPG KeyBank**
- nyca**
- FOUNDRY GROUP**
- Bain Capital Ventures**
- \$235mm Financing from**
- avidxchange**
- MARQETA**
- \$25mm Financing**
- Great Hill PARTNERS**
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- \$20mm Financing from frog**

Overview of FT Partners

FT Partners Advises CardinalCommerce in its Sale to Visa

Transaction Overview and Rationale

Overview of Transaction

- On December 1, 2016, CardinalCommerce announced its strategic sale to Visa in one of the largest payments deals of the year
- Headquartered in Cleveland, Ohio, CardinalCommerce is a pioneer and global leader in enabling authenticated payment transactions in the card-not-present payments industry and is the largest authentication network in the world
- Founded in 1999, CardinalCommerce's products are used globally: across 6 continents (Africa, Asia, Australia, Europe, North America and South America), in more than 200 countries and used with more than 180 different currencies

Significance of Transaction

- The acquisition will help accelerate the growth of Visa's digital commerce by enabling more secure, seamless payments, through browsers, mobile apps and connected devices
- As Visa plans to integrate tokenization into Visa Checkout over the next 18 months, the addition of CardinalCommerce will allow a more seamless integration of 3-D Secure and delivery of these new fraud mitigation capabilities to merchants

FT Partners' Role

- FT Partners served as exclusive strategic and financial advisor to CardinalCommerce and its Board of Directors
- This transaction demonstrates FT Partners' continued leadership position as the "advisor of choice" to the highest quality FinTech companies

Financial Technology Partners LP FTP Securities LLC

*is pleased to announce its exclusive role as
sole strategic and financial advisor to*



in its sale to



***The Only Investment Bank
Focused Exclusively on Financial Technology***

Overview of FT Partners

FT Partners Advises BillGuard on its Sale to Prosper Marketplace

Transaction Overview and Rationale

Overview of Transaction

- On September 24, 2015 BillGuard (the “Company”) announced its sale to Prosper Marketplace
- Headquartered in New York, BillGuard is a leading personal finance analytics company that offers award-winning mobile consumer apps to manage, protect and do more with money and credit; to date, BillGuard has flagged over \$70 million in unauthorized charges for its mobile users
- Prosper Marketplace operates a leading online marketplace for consumer credit that connects borrowers with investors
- The transaction is expected to close by the end of calendar year 2015 and is subject to applicable regulatory approvals and other conditions

Significance of Transaction

- Enables Prosper Marketplace to offer consumers a comprehensive financial management package, which will help them make smarter financial decisions
- BillGuard’s world-class technology team will accelerate Prosper Marketplace’s product development while providing ongoing access to the strong engineering and product talent pool in Israel

FT Partners’ Role

- FT Partners served as exclusive strategic and financial advisor to BillGuard and its Board of Directors
- Developed extensive marketing materials and data analyses to highlight the unique aspects of the business, and led all aspects of transaction execution
- Transaction highlights FT Partners’ continued success advising leading financial technology companies and generating highly successful outcomes across the sector

Financial Technology Partners LP FTP Securities LLC

*is pleased to announce its exclusive role as
sole strategic and financial advisor to*

BILLGUARD

in its sale to

PROSPER 

FINANCIAL
TECHNOLOGY
PARTNERS

*The Only Investment Bank
Focused Exclusively on Financial Technology*

Overview of FT Partners

FT Partners Advises Feedzai on its \$17.5 million in Series B Financing

Transaction Overview and Rationale

Overview of Transaction

- On May 19, 2015, Feedzai announced the completion of its \$17.5 mm Series B round from Oak HC/FT, Sapphire Ventures and Espirito Ventures
- Feedzai uses machine learning and big data science to provide enterprise software for fraud and risk management
- Oak HC/FT's General Partner, Patricia Kemp, and Venture Partner, Jonathan Weiner, will join the Company's Board of Directors

Significance of Transaction

- The financing will be used to expand sales and engineering teams to help meet customer demands for the software
- This investment strengthens Feedzai's position in the fraud-prevention vertical, allowing the Company to develop new solutions for the world's largest payment providers, banks and retailers

FT Partners' Role

- FT Partners served as exclusive financial advisor to Feedzai and its Board of Directors
- The transaction demonstrates FT Partners' continued leadership in serving top-tier Financial Technology companies by assisting them in achieving their long-term strategic and capital raising goals

Financial Technology Partners LP FTP Securities LLC

*is pleased to announce its exclusive role as
sole strategic advisor to*

feedzai

in its Series B financing from

OAK
HC/FT  **ESPIRITO SANTO**
Ventures **SAPPHIRE**
VENTURES

for approximately

\$ 17,500,000

**FINANCIAL
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**The Only Investment Bank
Focused Exclusively on Financial Technology**

Overview of FT Partners

FT Partners Advises Heartland Payment Systems on its \$4.3 bn Sale

Transaction Overview and Rationale

- FT Partners served as strategic and financial advisor to Heartland Payment Systems (NYSE: HPY) in its landmark \$4.3 billion sale to Global Payments (NYSE: GPN) for a combination of cash and stock
- Global Payments will acquire Heartland for \$100 per share, representing a total transaction value of approximately \$4.3 billion
- Consideration for the transaction will consist of 0.6687 shares of Global Payments stock and \$53.28 for each share of Heartland stock at closing
- This transaction creates the leading global provider of integrated payments technology solutions
- This deal represents the largest U.S. strategic merchant acquiring acquisition in over a decade
- Also represents the single largest U.S. strategic payment processing deal in the last 8 years
- This transaction underscores FT Partners' continued leadership position as "advisor of choice" to the highest-quality companies in the FinTech space

Financial Technology Partners LP FTP Securities LLC

*is pleased to announce its role as
strategic and financial advisor to*

Heartland

in its sale to



for total consideration of

\$ 4,300,000,000

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Overview of FT Partners

FT Partners Advises on Strategic Sale of Mercury for \$1.65 bn in Cash to Vantiv

Transaction Overview and Rationale

Overview of Transaction

- Mercury announced its sale to Vantiv for \$1.65 billion in cash on May 12, 2014
- Vantiv will fund the acquisition with committed financing; the transaction is expected to close in the second quarter of 2014
- This transaction is Vantiv's largest acquisition to-date (~5x larger than its acquisition of Litle) and one of the largest strategic merchant acquiring M&A transactions consummated in over a decade

Significance of Transaction

- Vantiv's acquisition of Mercury accelerates the Company's growth in the integrated payment space by significantly expanding distribution channels and technology capabilities
- Expands Vantiv's reach into the SMB segment through Mercury's distribution network, complementary verticals and ability to design integrated, value-added POS innovations
- Enhances Vantiv's competitive position in the payments sector broadly on the basis of technology differentiation, leading processing scale and omni-channel presence while increasing penetration into high growth channels
- Expected to add one to two percentage points to Vantiv's net revenue growth per year while being modestly accretive to Vantiv's non-GAAP earnings per share in 2014 with accelerating accretion in 2015

FT Partners' Role

- FT Partners served as advisor to Mercury
- FT Partners was also Mercury's advisor in the Company's 60% sale to Silver Lake in April of 2010 at a \$700mm valuation

Financial Technology Partners LP FTP Securities LLC

*is pleased to announce its role as
strategic and financial advisor to*



in its cash sale to

vantivTM

for total consideration of

\$ 1,650,000,000

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Overview of FT Partners

FT Partners Advises CIBC on its Investment in Dynamics' \$70 mm Series C Capital Raise

Transaction Overview and Rationale

Overview of Transaction

- On December 8, 2014, Dynamics announced it closed a \$70 million Series C round of financing that included new investors CIBC and MasterCard along with existing investors Bain Capital Ventures and Adams Capital Management
- The investment by CIBC follows the successful launch with Dynamics of the marquee CIBC Tim Hortons Double Double Card, which combines a no-fee CIBC credit card with a Tim Card, all in one
- Dynamics designs and manufactures integrated payment cards and advanced payment platforms; the company has currently launched products with banks in the United States and Canada
- CIBC is a leading Canadian-based global financial institution with a market capitalization of \$41 billion and a Basel III Common Equity Tier 1 ratio of 10.3%; through its three major businesses, Retail and Business Banking, Wealth Management and Wholesale Banking, CIBC provides a full range of financial products and services to 11 million clients in Canada and around the world

Significance of Transaction

- CIBC has a strong history of innovation and this investment further strengthens its relationship with Dynamics as the two continue to work together to bring new payment products to market
- The transaction demonstrates the continued relevance of the physical card as a means of payment and the increasing importance of innovative payment solutions that create value for consumers in new, differentiated ways while upholding the highest security standards
- The additional capital will help Dynamics to continue to meet global demand for its "Interactive Payment Card" technology platform by increasing the Company's ability to scale its manufacturing operations and extend its technical capabilities and product lines

FT Partners' Role

- FT Partners served as a strategic and financial advisor to CIBC on its investment
- Highlights FT Partners' continued success in advising a broad range of top-tier strategic investors across the financial technology landscape

Financial Technology Partners LP FTP Securities LLC

is pleased to announce its role as advisor to



in its strategic investment in



with additional participation from



Bain Capital Ventures



for approximately

\$ 70,000,000

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Overview of FT Partners

FT Partners Advises on the Sale of TransFirst to Vista Equity Partners

Transaction Overview and Rationale

Overview of Transaction

- On October 13, 2014, Vista Equity Partners announced that it will acquire TransFirst, a leading provider of secure transaction processing services, from Welsh, Carson, Anderson & Stowe ("WCAS")
- Similar to the May 2014 acquisition of Mercury by Vantiv, TransFirst had filed for an IPO prior to the transaction
- Vista Equity Partners is a U.S.-based private equity firm with over \$13.5 bn in cumulative capital commitments that focuses on software, data and technology-enabled businesses
- WCAS originally acquired TransFirst in June 2007

Significance of Transaction

- Vista's acquisition of TransFirst is one of the largest private equity-lead LBO's in the merchant acquiring space
- With over 200,000 merchants and more than 1,300 partners, the acquisition will allow TransFirst to solidify its position as a leading provider of payment processing solutions in the SMB space
- TransFirst intends to leverage Vista Equity Partners' expertise in helping its portfolio companies achieve operational, product and customer service excellence by contributing professional expertise and proven best practices

FT Partners' Role

- FT Partners served as a strategic and financial advisor to TransFirst in its sale process
- FT Partners has previously worked with TransFirst, including the Company's \$675 mm debt recap transaction in 2012

Financial Technology Partners LP FTP Securities LLC

*is pleased to announce its role as
a strategic and financial advisor to*



in its sale to



Vista Equity Partners

from



\$ 1,500,000,000



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Overview of FT Partners

Selected FT Partners' Research (click to view)



Research Report: PayPal Spin-off Overview



Research Report: Global Money Transfer



Research Report: Innovations in Capital Markets Technology



Research Report: Apple Unveils Apple Pay



Square Completes its IPO



First Data: Post Quiet Period Review



Worldpay Files for its IPO



Shopify: Post Quiet Period Review

FT Partners regularly publishes research highlighting the most important transactions, trends and insights impacting the global Financial Technology landscape. Our unique insight into FinTech is a direct result of executing hundreds of transactions in the sector combined with over 13 years of exclusive focus on Financial Technology. Please visit our [subscription form](#) to subscribe to our exclusive monthly newsletter and receive our research reports.

Overview of FT Partners

Award-Winning Investment Banking Franchise Focused on Superior Client Results

FT Partners has been recognized as Investment Banking Firm of the Year and regularly achieves Merger and Financing Deal of the Year recognition



M&A Advisor
Awards

| | |
|------|---|
| 2016 | <ul style="list-style-type: none"> ■ Investment Banking Firm of the Year ■ Cross Border Deal of the Year |
| 2015 | <ul style="list-style-type: none"> ■ Dealmaker of the Year ■ Technology Deal of the Year |
| 2014 | <ul style="list-style-type: none"> ■ Equity Financing Deal of the Year ■ Professional Services Deal of the Year, Above \$100mm |
| 2012 | <ul style="list-style-type: none"> ■ Dealmaker of the Year ■ Professional Services Deal of the Year, Above \$100mm |
| 2011 | <ul style="list-style-type: none"> ■ Boutique Investment Bank of the Year ■ Deal of the Decade ■ 10 Deal of the Year Nominations Across 9 Categories |
| 2010 | <ul style="list-style-type: none"> ■ Upper Middle Market Deal of the Year, Above \$500 mm ■ IT Services Deal of the Year, Below \$500mm ■ Cross-Border Deal of the Year, Below \$500mm |
| 2007 | <ul style="list-style-type: none"> ■ Dealmaker of the Year – Steve McLaughlin ■ Business to Business Services Deal of the Year ■ Computer and Information Technology Deal of the Year, Above \$100mm ■ Financial Services Deal of the Year, Above \$100mm |



Institutional Investor
Annual Ranking

| | |
|-----------|--|
| 2015 | ■ Steve McLaughlin ranked #4 in Institutional Investor's FinTech 35 List |
| 2006-2008 | ■ Consecutively ranked (2006, 2007 and 2008) among the top Bankers in Financial Technology |



Middle Market
Financing Awards

| | |
|------|--|
| 2008 | <ul style="list-style-type: none"> ■ Equity Financing Dealmaker of the Year – Steve McLaughlin ■ Information Technology Deal of the Year ■ Financial Services Deal of the Year |
| 2006 | <ul style="list-style-type: none"> ■ Financing Professional of the Year – Steve McLaughlin ■ <i>Financing Deal of the Year - Equity</i> ■ <i>Financing Deal of the Year - Debt</i> |

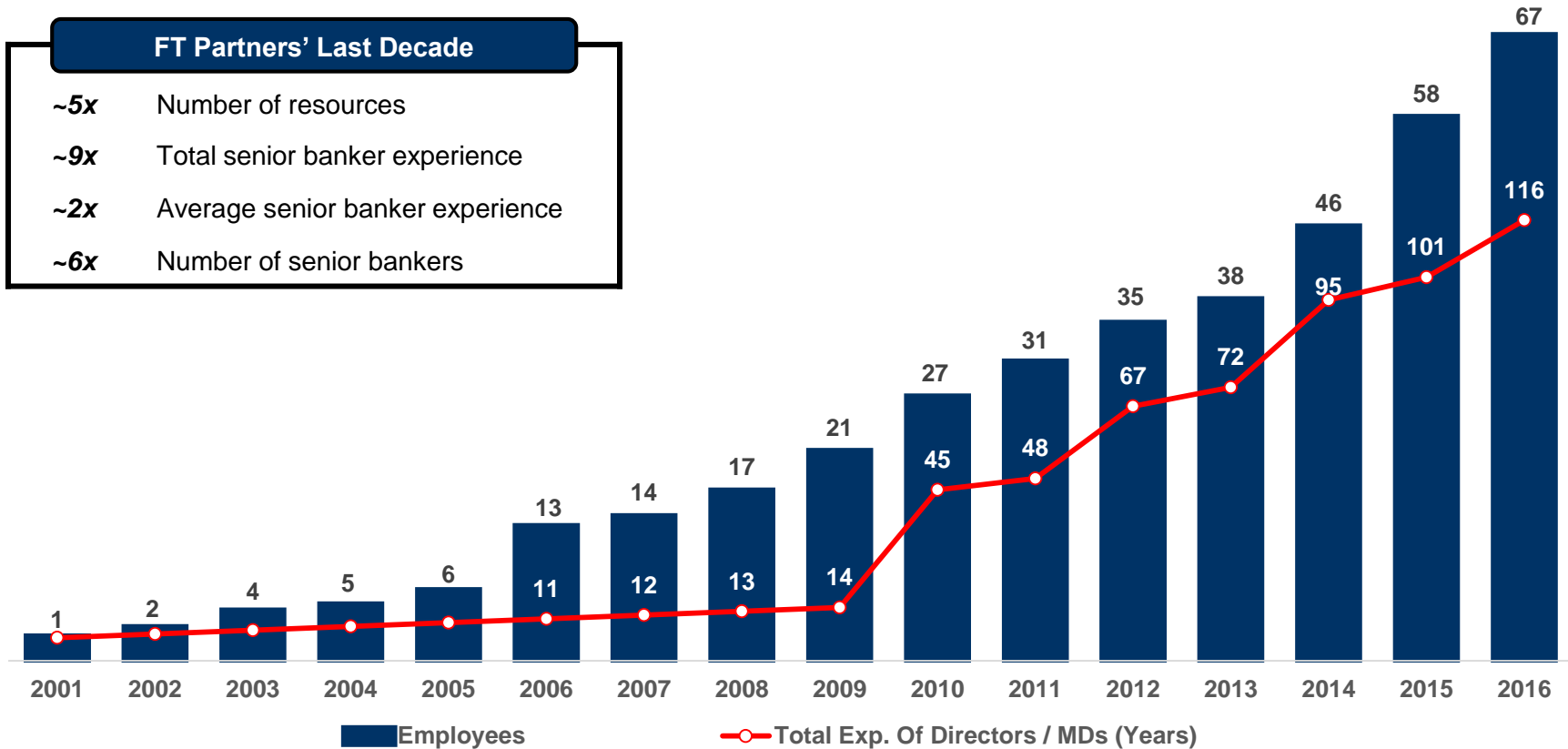
Note: **Bold** represents awards that FT Partners has won, *italics* represents nominations.

Overview of FT Partners

Platform of Choice for Clients and Bankers Alike

FT Partners' Last Decade

- ~5x Number of resources
- ~9x Total senior banker experience
- ~2x Average senior banker experience
- ~6x Number of senior bankers








Avg Years of Director / MD Experience



Overview of FT Partners

The FT Partners Senior Banking Team

| Name / Position | Prior Background | Experience / Education | Years of Experience |
|---|---|--|---------------------|
| Steve McLaughlin <i>Founder, CEO and Managing Partner</i> |  | <ul style="list-style-type: none"> Formerly with Goldman, Sachs & Co. in New York and San Francisco from 1995-2002 Formerly Co-Head of Goldman Sachs' Financial Technology Group (#1 market share) Wharton M.B.A. | 21 |
| Larry Furlong <i>Managing Director</i> |  | <ul style="list-style-type: none"> Formerly with Goldman, Sachs & Co. in New York, London and Los Angeles beginning in 1995 Wharton M.B.A. | 21 |
| Greg Smith <i>Managing Director</i> |  | <ul style="list-style-type: none"> Formerly award winning Equity Research Analyst at Merrill Lynch / J.P. Morgan / Sterne Agee Recent coverage included V, MA, DFS, FISV, FIS, JKHY, DST, ENV, GPN & HPY among others | 20 |
| Tim Wolfe <i>Managing Director</i> |  | <ul style="list-style-type: none"> Formerly with Goldman, Sachs & Co. beginning in 2000 40 Under 40 M&A Advisor Award Winner 2013 Harvard M.B.A. | 14 |
| Andrew McLaughlin <i>Managing Director, Research & Business Development</i> |  | <ul style="list-style-type: none"> Leads FT Partners' Research and Business Development Team Formerly with Deloitte Consulting | 10 |