

Technology Keynote

Where Will Technology
Take Our Industry and the
Businesses of our Clients?

Technology
KEYNOTE

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01 Chapter
ONE

DISRUPTIONS
RELEVANT TO THE
BIS INDUSTRY



GLOBAL USE CASES & EXAMPLES

Disruptions in...

Market | Product | Business Model

INNOVATION ≠ DISRUPTION

Disruptors are innovators, *but not all innovators are disruptors.*



Disruption **displaces** an existing market, industry, or technology and...

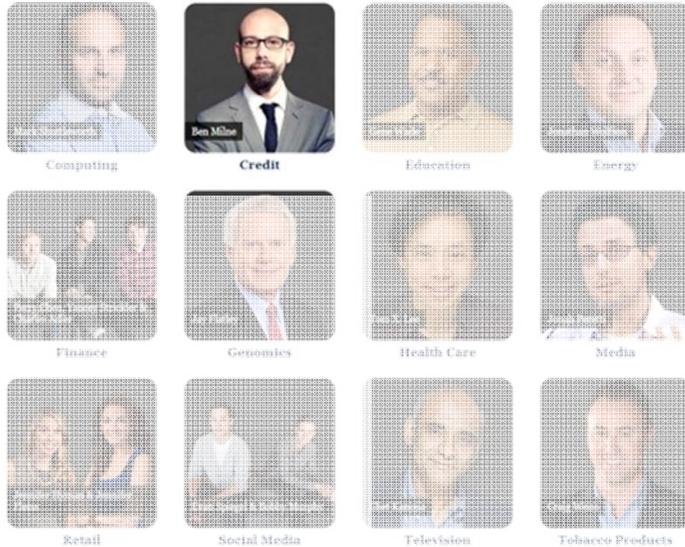
produces something new and more efficient and worthwhile.

It is at once **destructive** and **creative**.

Dr. Clay Christiansen
Professor, Harvard Business School;
Author, "Innovator's Dilemma"

CASE in POINT: Some of the greatest product disruptions are motivated by personal stories when entrepreneurial ideas come as a solution to a common problem or a pain-point.

Forbes Special Report **DISRUPTORS**



Source: Forbes Magazine, "The 12 Most Disruptive Names in Business 2013: The Full List", [Special Report](#).

Credit



Ben Milne

Founder, Dwolla

Age: 30

Headquarters: Des Moines, Iowa

Founded: 2009

Website: dwolla.com

Social: [in](#) [t](#) [f](#)

Fast Fact:

\$40 million is the average amount Dwolla processes per month.

Archetype:

Frank McNamara

Invented Diners Club, the first credit card

"I got more and more pissed off," says Milne, shelling out 4% of sales in interchange fees for his first business, a maker of speakers.

He turned a vexation into a new business that would make sending money a cheap and easy proposition.

Dwolla, an online and mobile payment system, lets users pay for things via e-mail, text message or social networks like Twitter.

Consumers love the service. Merchants pay just 25 cents in fees for amounts over \$10, instead of up to 1.9% of a transaction, plus a quarter, as Visa charges.

CASE in POINT: Product Disruption (Shika, Kenya)

▶ **Mobile app** | **Instant Credit** | **Automatic Fund Disbursement**



company



mission

On a mission to provide financial access through technology to over 200 million people globally.

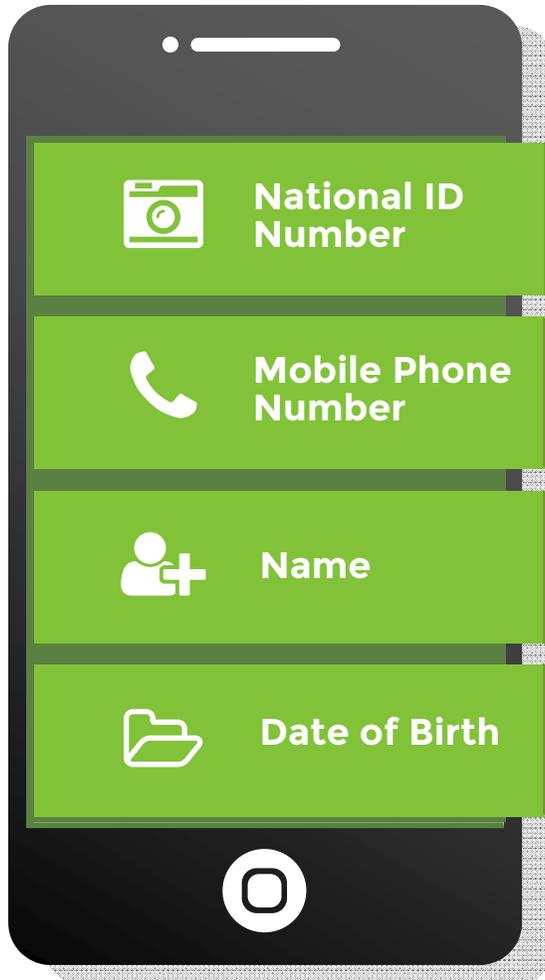
solution



what it means

Shika (*verb*)
to get; to catch

what it does



how it works...

01

Government Database
(instant verification)

02

Telecom Provider
(instant verification)

03

Government Database
(instant verification)

04

Government Database
(instant verification)



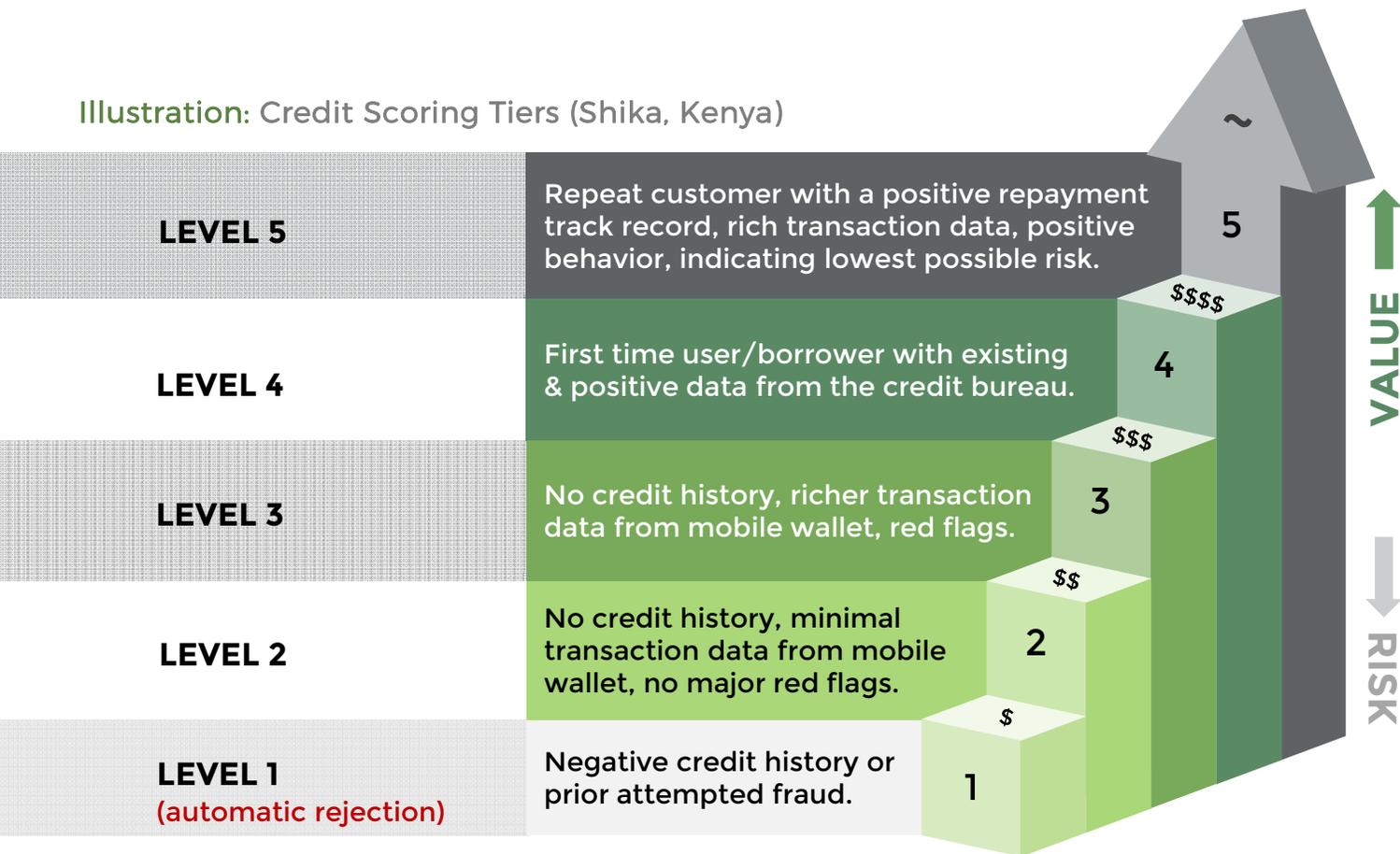
Personal transaction history from **M-Pesa** (mobile wallet)

Source: Interview and materials received from Alternative Circles, owner of the Shika brand.

CASE in POINT: Product Disruption (Shika, Kenya)

► Credit Tiers | Credit Risk Algorithm Logic

Illustration: Credit Scoring Tiers (Shika, Kenya)



APPROVAL RATE

40%

FEEs PAID BY CUSTOMER

<15%

CREDIT LIMIT

USD **\$500**

NPL RATIO

0.7%

MAX TERM

30 DAYS

TRANSACTION COST

~0.01%

Source: Interview and materials received from Alternative Circles, owner of the Shika brand.

CASE in POINT: Product Disruption (Shika, Kenya)

► Partnership Model

EXCLUSIVE PARTNER / SHAREHOLDER

CREDITINFO

(credit bureau)

EXCLUSIVE PARTNER / SHAREHOLDER

CREDITINFO

(credit bureau)



Kenyan fintech startup Alternative Circle raises \$1.1m funding

BY TOM JACKSON ON APRIL 3, 2017

Kenyan fintech startup Alternative Circle has raised US\$1.1 million in funding from international credit risk management company Creditinfo Group to help it achieve a wider geographical footprint.

Alternative Circle will in July launch its mobile-based credit facility app Shika, which allows users to access mobile loans and uses a decision engine to identify creditworthy borrowers.

Source: Interview and materials received from Alternative Circles, owner of the Shika brand.

FOUNDERS
& SHARE-
HOLDERS

SHIKA
MARKETING
ADMIN, OPS
& CR. Risk

BANKS
WORKING
CAPITAL &
UW Risk

REVENUE
SHARING
40 / 60

CASE in POINT: Market disruptions may occur when there is a void, unfilled by incumbents

SHADOW BANKING

DEFINITION:

Financial intermediaries or activities involved in credit intermediation outside the regular banking system.

#1. CHINA USD \$2,738 billion

- ~35-50% of the GDP;
- 3rd largest globally (after USA & UK)
- >20% annual growth
- **2X faster than bank credit**

#2. AUSTRALIA USD \$230 billion

#3. INDIA USD \$190 billion

#4. HONG KONG USD \$103 billion

#5. INDONESIA USD \$41 billion

Source: International Monetary Fund (IMF), [Global Financial Stability Report](#): Risk taking, Liquidity and Shadow Banking – Curbing excess while promoting growth, October 2014.

Shadow banking can serve a useful purpose, because it:

- broadens access to credit (i.e. financial inclusion, especially in emerging economies)
- improves the efficiency of the financial system (i.e. through market liquidity & risk sharing)
- provides an alternative when banks decide to lend less.

ABOUT CHINA (2014)

79%

Have a bank account

10%

Borrowed from formal FI's (banks)

36%

Borrowed funds last year

25%

Borrowed from family / friends

WHY IS FORMAL LENDING SO LOW?

- National consumer credit database is still young (since 2006) and not robust
- Credit system has limited coverage; PBOC has data on 2/3 of population, of which only 30% have credit history
- Chinese consumers are still largely cash-based and not debt-oriented; but, this is rapidly changing...
- FinTechs are starting to capture the lending market.

Source: International Monetary Fund (IMF), [Shadow banking is boon, bane for financial system](#), 1 October, 2014.

Source: World Bank, [Financial Inclusion Data / Global Findex](#), 2014.

CASE in POINT: Market disruptions in China...

► WeLab | Dumiao



WHO ARE THE FINTECHs
that are exploiting the credit gap in China with fast & easy online loans and proprietary credit scoring models?

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匠心读秒，极速智能
DUMIAO, DO MORE

3m
loan requests / mo

伙伴 COOPERATION



WeLab DEMOCRATIZING FINANCE
This is our story

WHAT WE DO
With our proprietary risk management technology, we effectively analyze unstructured mobile big data within seconds to make credit decisions for individual borrowers.

INVESTORS:

- CK Hutchison's TOM Group,
- Khazanah Nasional Bhd. (Malaysian sovereign wealth fund),
- ING Bank,
- Sequoia Capital and
- Guangdong Technology Financial Group (provincial gov't fund).

Source: Techinasia.com, "How fintech startups are using big data to solve China's huge credit gap", 2 October, 2017.

CASE in POINT: Business model disruptions can redefine entire value-chains that may introduce previously unknown players and diminish the role of the incumbents. Case: PayPal

How It Works Independently (now)

- PayPal lends to merchants between 8% to 18% of their annual sales turnover (*only via PayPal*)
 - Credit limit is up to 2 months' worth of sales turnover (considered as *standard working capital*), hence limited to 18% of annual sales;
 - PayPal uses self-imposed restrictions and policy (e.g. risk reserves) related to balances.
- Credit application is initiated by the merchant online;
 - If approved, money is deposited between 10 to 60 minutes (considered industry best practice) and is immediately accessible;
- There is no need for KYC, since PayPal lends only to its existing merchants with a proven history.

Source: PayPal, interviews with executives tasked with partnership development and strategy.

Proprietary Credit Risk Scoring Model

- PayPal uses **about 1,000 variables** about the merchant to assess risk. Chief among them are the following qualification criteria:
 - **Minimum of 1 year history** with PayPal;
 - **At least USD \$20,000 in annual sales turnover** through PayPal during 12 month prior and sales trajectory (12-month forecast);
 - **Financial health** of the merchant's business (using both in-house and *merchant-reported data*); *
 - **Comparative performance vis-à-vis peers** in the same category (i.e. similar merchants);
 - **Operational health** (e.g. chargebacks)
 - **Number of repeat buyers**;
 - **Concentration of risk**, e.g. number of buyers, inventory diversity, dependence on one-off variables;

* NOTE: In a few, rare occasions, e.g. in the case of large merchants, PayPal may require audited financial statements.

▶ PayPal

Unique Advantages & Challenges

Solution

ADVANTAGES

- Independent Credit Risk Scoring (i.e. use of in-house data, based on past transaction history & inventory)
- Efficient Debt Collection
- Flexibility & Convenience
 - Flexible, user-assigned payback period (e.g. 6, 9 or 12 mo.)
 - Merchant can choose to pay back daily, weekly, monthly;
 - Automatic deduction of installment payments;

CHALLENGES:

1. **Capital Deployment** (e.g. merchant and consumer loan underwriting)
2. **Regulatory and Compliance Requirements** (e.g. lending licenses are required in each jurisdiction)
3. **Reaching Global Scale** (i.e. inadequate resources)

Begin partnering with Banks

(who have the capital, but don't have the kind of reach that PayPal has)

Source: PayPal, interviews with executives tasked with partnership development and strategy.

How It Will Work With Bank Partners?

- The Marketplace (i.e. PayPal) creates the credit rating score and passes it to the partner bank, along with;
 - Yes/No (is the applicant creditworthy?)
 - Loan Assignment (what is the amount of the loan?)
 - Term of Loan (what is the payback period?)
- The Bank offers the balance sheet as a loan;
- The Marketplace receives a “bounty” (i.e. a fixed fee, e.g. 2%, for loan generation/brokerage)

Key Benefits To Both Sides:

- The Bank *substantially* reduces the cost of KYC (~\$200/client); expands client base; improves portfolio risk.
- The Marketplace gains the necessary capital to scale in each market; avoids substantial amount of credit risk.



**Win-
Win**



Beneficial Implications Arising From PayPal's Envisioned Partnership Model



How It Works Independently (now)

- PayPal lends to merchants between 8% to 18% of their annual sales turnover (*via PayPal*)

- Credit limit is based on merchant's sales turnover (considered a percentage of sales turnover, limited to 18% of annual sales turnover)
- PayPal uses sales reserves (e.g. risk reserves) related to merchant's sales

- Credit application process is done online;

- If approved, credit limit is granted within minutes (compared to days with traditional banks)

- There is no need for merchants to provide any collateral only to its existing merchants with a proven history.



VS.

How It Will Work With Partners (future)

- The Marketplace (i.e. PayPal) creates the credit rating score and passes it to the partner bank, along with;



- The Marketplace receives a "brokerage fee" for loan generation/brokerage

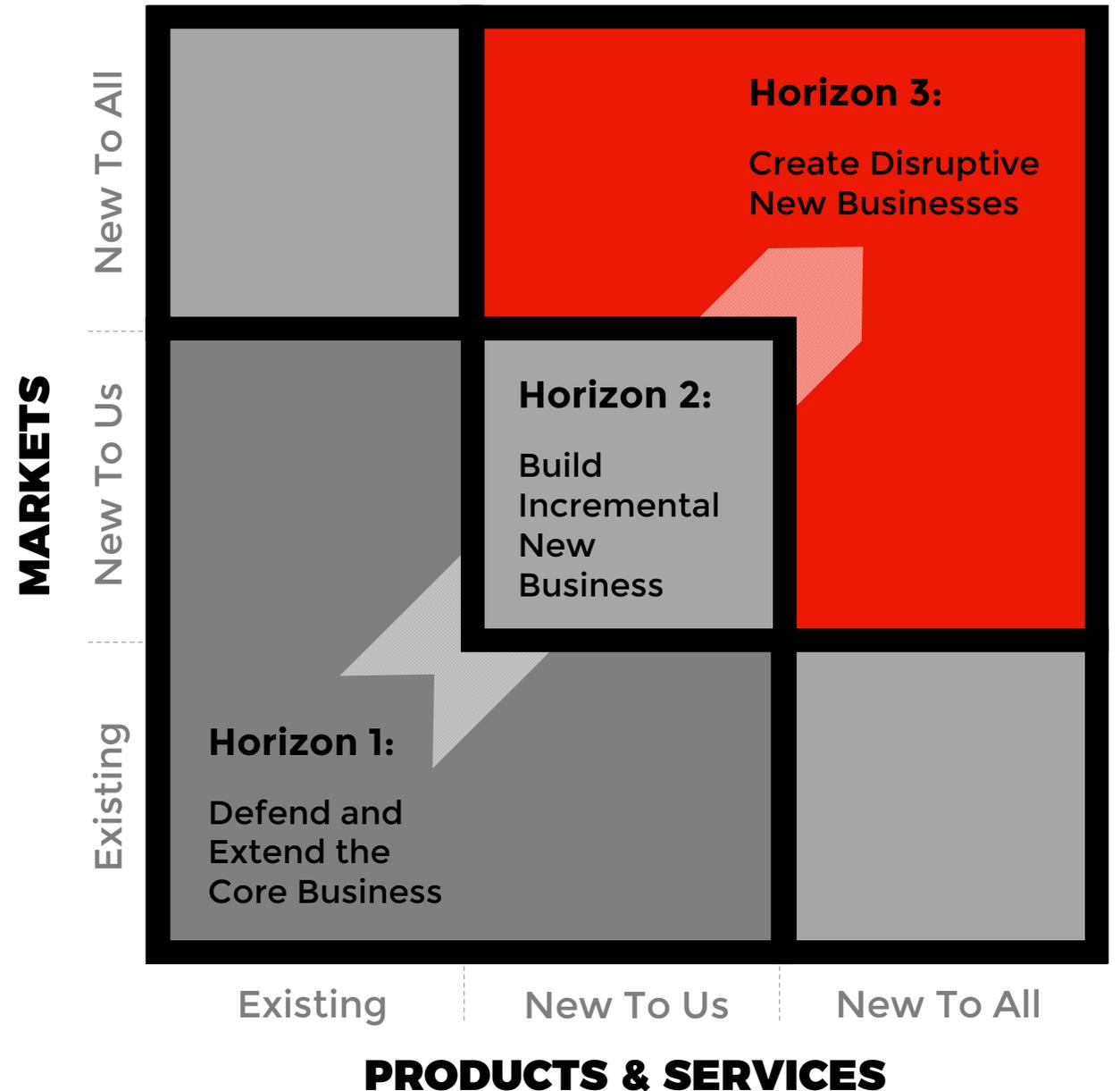


- The Marketplace gains the necessary capital to scale in each market; avoids substantial amount of credit risk.

Source: PayPal, interviews with executives tasked with partnership development and strategy.

IN SUM...

There is no point in defending the status quo, when the whole sector is under siege by disruption.



IN SUM...

There is no point in defending the status quo, when the whole sector is under siege by disruption.

EMBRACE

NEW TECHNOLOGIES AND PARTNERSHIPS

&

COLLABORATE

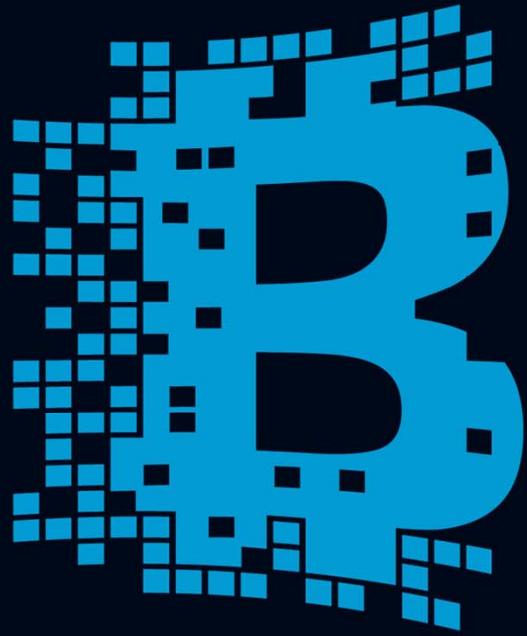
LIKE NEVER BEFORE

02 Chapter
TWO

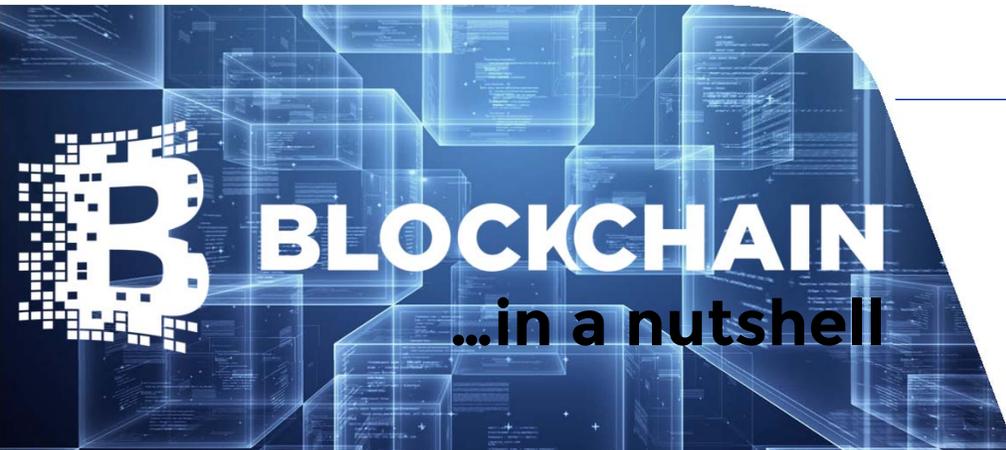
**INNOVATIVE
TECHNOLOGIES**
THAT UNLOCK NEW
OPPORTUNITIES &
VALUE

USE CASES & EXAMPLES

FinTech & InfoTech Solutions
that are re-shaping the industry landscape



BLOCKCHAIN



- KYC blockchain was used to **collect, validate, secure** and **share** customer information on a **permissioned ledger**.
- Banks are able to **store secured digital records** of the validation process, thereby **streamlining auditing & regulatory reporting**.
- The new KYC utility **eliminates the need for multiple form-filling** by customers at different banks.

THE PLATFORM...

- Remained stable even with a high volume of information flow;
- Maintained confidentiality by allowing access only with legitimate authentication;
- Demonstrated significant uptime during operation & was resistant to tampering attempts.

NEWS

<p>“Proof-of-Concept on ASEAN’s First Industry Know Your Customer Blockchain Bank Project”</p> <p>Fintechnews.sg, Oct 3, 2017</p>	<p>“SG Regulator Teams Up with Asian Banks for Blockchain KYC Trial.”</p> <p>Coindesk.com, Oct 3, 2017</p>	<p>“ASEAN Banks Complete Trial of KYC Blockchain.”</p> <p>Finextra.com, Oct 3, 2017</p>
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NOTE: The trial project was supported by the industry regulator, **Info-communications Media Development Authority (IDMA)**, with technical developing & testing by **Bluzelle**, a specialist technology start-up based in Singapore, and cyber-resiliency & TRM advisory support from **KPMG**.

Illustration: Screenshot from the KYC Utility developed and tested in SG

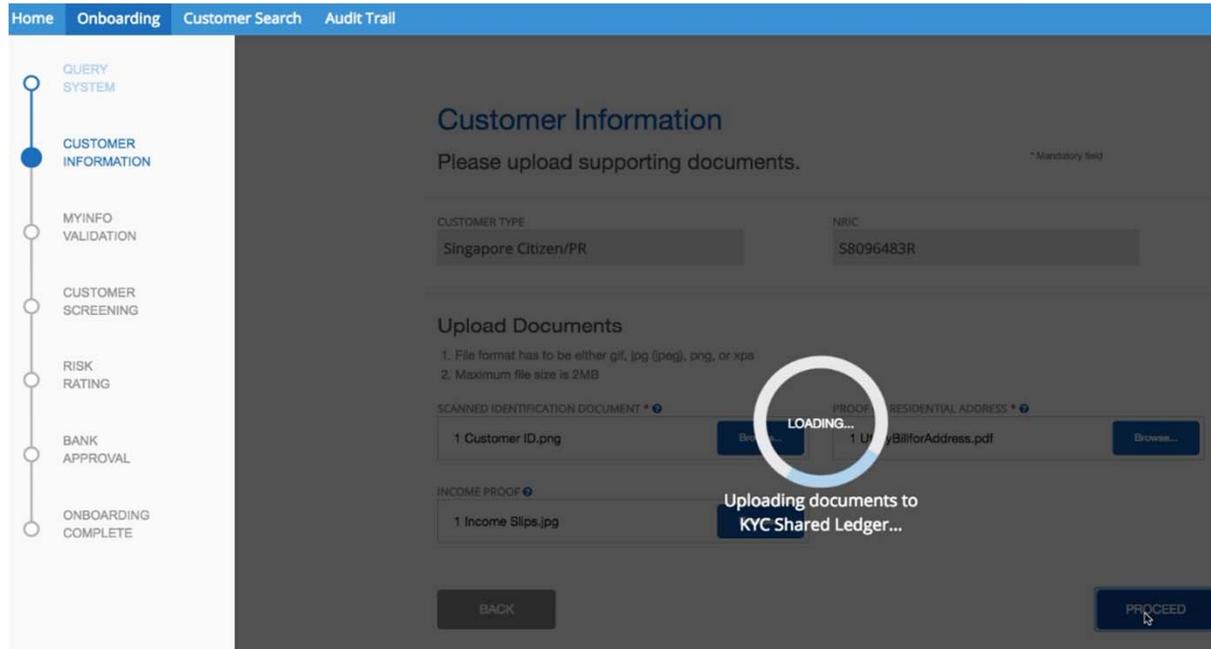
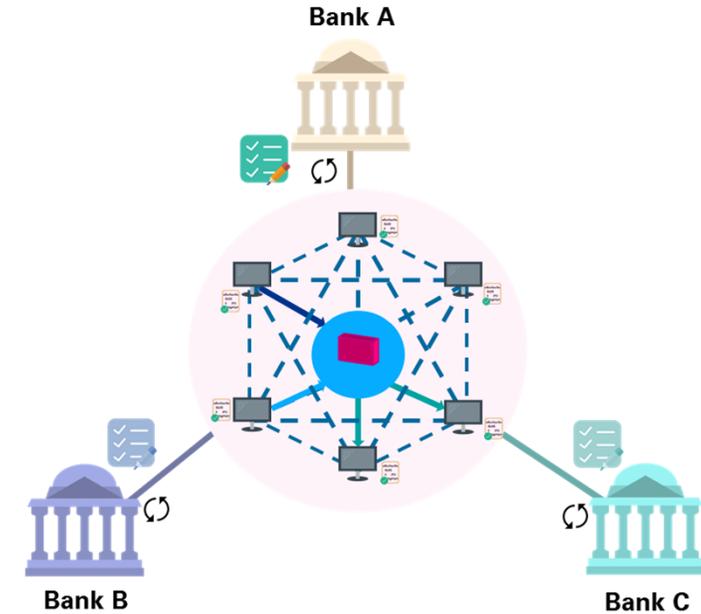


Illustration: Consortium of Banks share access to a single db for KYC



what it does...

- ▶ Verifiable proof of existence
- ▶ Instant audit trail
- ▶ Built in synchronization of data
- ▶ Decentralized db is 100% tamper proof

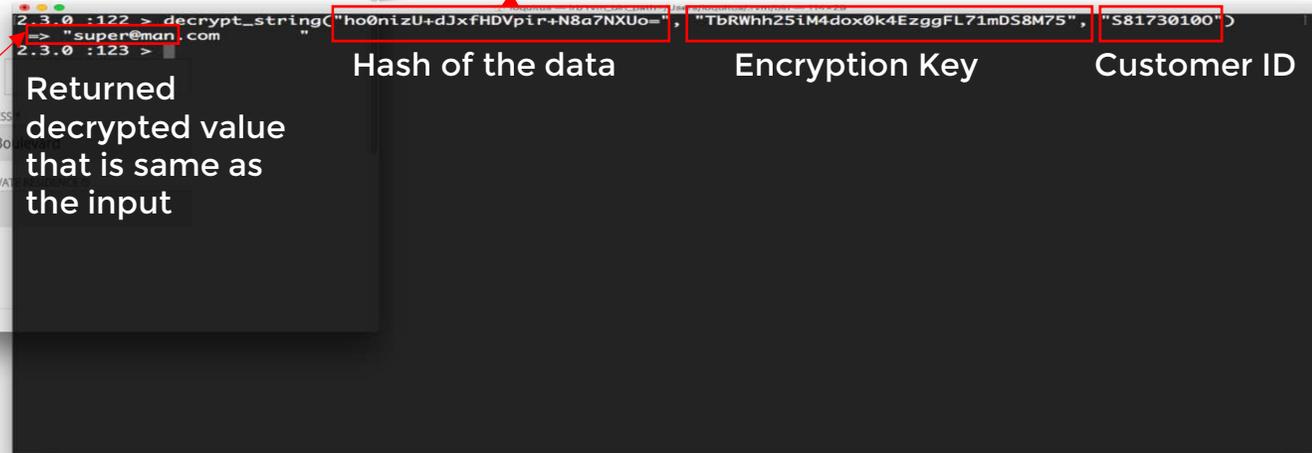
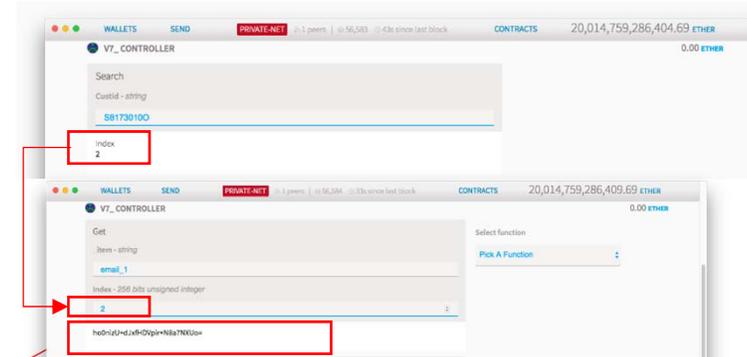
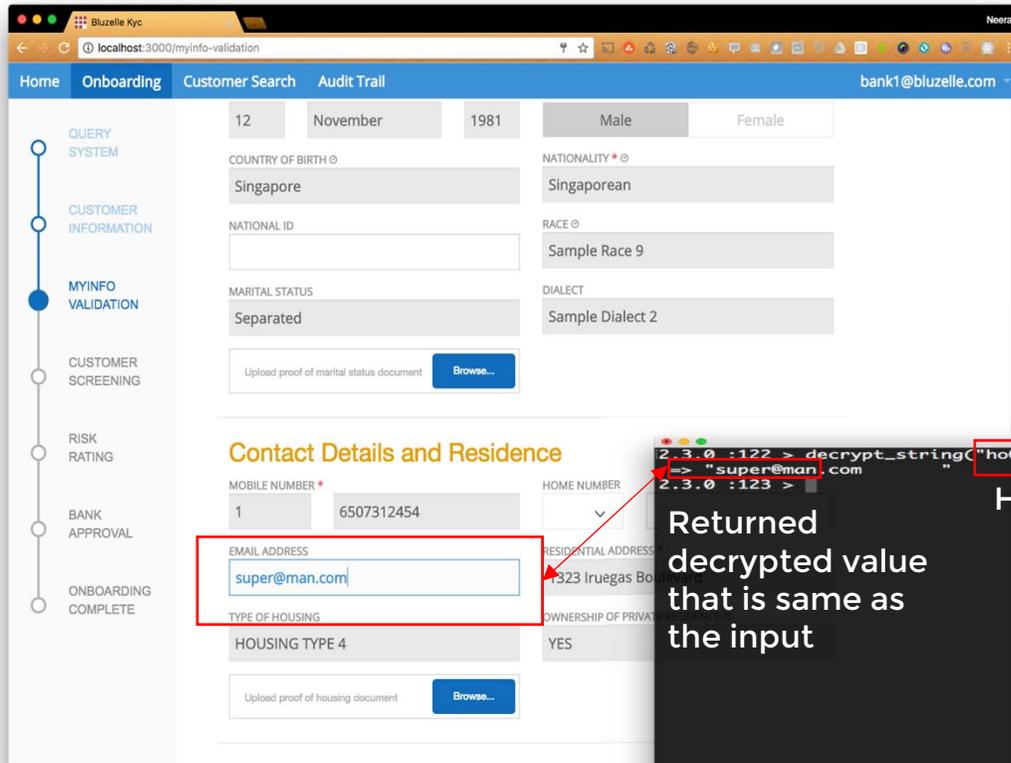
how it works...

- ▶ Governing body validates technology
- ▶ Members are given public/private keys
- ▶ System connects to government networks
- ▶ Ledger provides legitimate records to members / banks

Source: Bluzelle, the technology company responsible for the development of the pilot KYC utility; www.bluzelle.com.

1. A bank updates email address to the shared ledger

2. Look up the hash for the encrypted data in Ethereum



3. Decrypt data

Source: Bluzelle, the technology company responsible for the development of the pilot KYC utility; www.bluzelle.com.

ABOUT IAB

- ▶ Founded in 1946 and Headquartered in NYC
- ▶ Represents 650 leading media and technology companies, which
- ▶ Fields critical research on interactive advertising
- ▶ Educates brands, agencies, and the wider business community on the importance of digital marketing.



The ability to keep a **fully verifiable and immutable ledger** or database **available to all members of a particular group** or market makes blockchain an attractive tool to address challenges as diverse as payment processing or fraud prevention.

Such a fundamental technology should not be ignored, it should be embraced, and this is why we are forming this group.”

Source: IAB, [“Blockchain for Advertising”](#), 09/18/2017

CASE IN POINT: What Is IAB's Objective?

IAB | TECH LAB



IAB TECH LAB | Blockchain Working Group

ABOUT THE IAB TECH LAB

- ▶ A nonprofit research and development consortium, incl:
 - Digital publishers
 - Ad Technology (AdTech) firms
 - Marketers
 - Agencies

MISSION

- ▶ To investigate the application of blockchain technology,
- ▶ To address challenges in the digital advertising space,
- ▶ To develop standards and best practices for the use of blockchain.

INITIAL FOCUS

- ▶ Financial Transactions & Billings
- ▶ Discrepancy Reconciliation
- ▶ Validation of Advertising Resources and Assets
- ▶ Fraud Detection & Prevention

CURRENT STATUS

- ▶ Developing education content for blockchain technology & its use in advertising
- ▶ Setting priorities for business use cases and required technology standards and best practices.

LAUNCHED SOLUTIONS...

- | | |
|-----------|-----------------------------------|
| ▶ AdChain | ▶ NYIAX |
| ▶ Adex | ▶ Rebel AI |
| ▶ Amino | ▶ The Basic Attention Token (BAT) |
| ▶ Faktor | |

NOTE: Refer to Appendix for the full list and descriptions.



**FINAL THOUGHTS
& IDEAS**

Next Steps

Recommendations

Senators Rip Credit-Reporting Model in Wake of Equifax Breach

Ex-Equifax CEO faces questions about how the company handled the breach and whether an industry overhaul is needed



Equifax's former chief executive, Richard Smith, appeared before the Senate banking committee Wednesday and received criticism for missteps that allowed hackers to access consumers' data. PHOTO: AARON P. BERNSTEIN/REUTERS

By AnnaMaria Andriotis, Michael Rapoport and Christina Rexrode

Updated Oct. 4, 2017 4:46 p.m. ET

Source: WSJ, "[Senators Rip Credit-Reporting Model in Wake of Equifax Breach](#)", 04/10/2017.

Quotes & Thoughts from the Senate Banking Committee Hearing...

"Why consumers don't have the option to "opt in" before companies like Equifax are allowed to access their data?"

"Maybe we ought to start thinking about opting in as opposed to opting out."

Sen. Heidi Heitkamp (D., N.D.)

"Consumers have more control over their personal medical data; why similar standards shouldn't be applied to financial information?"

Sen. Sherrod Brown (D., OH)

"You have my information, you don't pay me for it, you don't have my permission."

"You can't run your business without me. My data is the product you sell."

Sen. John Kennedy (R., La.)

"Consumers don't choose to share their data with these firms nor do they receive compensation for it, even though companies like Equifax profit by gathering it and selling it to lenders and other companies." – WSJ

KEY RECOMMENDATIONS

Forrester | BIAA 2017 Biennial Conference



1

Create a Joint Taskforce on Blockchain

- ▶ Similar to IAB Tech Lab's "Blockchain Working Group", this taskforce would identify use-cases benefiting the industry
- ▶ It could serve to educate the rest of the community & provide
- ▶ It could also coordinate the R&D efforts and pilot projects.

2

Explore Alternative Partnership Models

Observe and learn from FinTechs and collaborate with new data partners...

3

Show Regulators & Consumers That You **Can** Innovate

Continue to build trust and confidence with governments and consumers [**mission critical**]

4

Launch POC's

Collaborate, experiment, test, and launch joint pilot solutions [MVPs].



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Thank
You

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APPENDIX

Supplementary Material

APPENDIX

01

List and explanation of blockchain-related technologies and solutions referenced on page #23 of this presentation.

- ▶ **AdChain** is an open protocol on Ethereum's public blockchain. Its stated goal is to allow for building of decentralized applications, specifically for use in the digital advertising ecosystem.
- ▶ **Adex** is a decentralized ad exchange that utilizes Ethereum to address problems like fraud, privacy, and consent in the digital advertising space.
- ▶ **Amino** combines technologies from blockchain, payments, and adtech to bring transparency, integrity, and auditability to online advertising
- ▶ **Ethereum** is a blockchain based, publicly available open source distributed computing platform that provides a decentralized virtual machine and its own cryptocurrency tokens called "ether". These attributes make Ethereum an attractive base for the generation of smart contracts and serves as the foundation of other applications.
- ▶ **Faktor** is a blockchain-based identity management platform that can be utilized by publishers, advertisers, and individual users.
- ▶ **Hyperledger** is an umbrella project of open source blockchain initiatives that was started and managed by the Linux Foundation.
- ▶ **NYIAX**, a guaranteed media contract exchange, bridges the space between the financial and digital advertising ecosystems utilizing blockchain in partnership with NASDAQ
- ▶ **Rebel AI** secures digital advertising and protects publisher identity and brand spend using machine learning, blockchain, and encryption technologies
- ▶ **The Basic Attention Token (BAT)** utilizes the Ethereum blockchain to create a token that can be used to obtain a variety of advertising and attention-based services on a purpose-built platform.

List of research sources
used for this
presentation.

RESEARCH SOURCES

1. Forbes Magazine, “The 12 Most Disruptive Names in Business 2013: The Full List”, [Special Report](#).
2. Interview and materials received from Alternative Circles, owner of the Shika brand.
3. International Monetary Fund (IMF), [Shadow banking is boon, bane for financial system](#), 1 October, 2014.
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6. Techinasia.com, “[How fintech startups are using big data to solve China’s huge credit gap](#)”, 2 October, 2017.
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13. The Interactive Advertising Bureau (IAB), “[Blockchain for Advertising](#)”, 18 September 2017.
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