Nok Nok LABS

A PERSPECTIVE ON BIOMETRICS

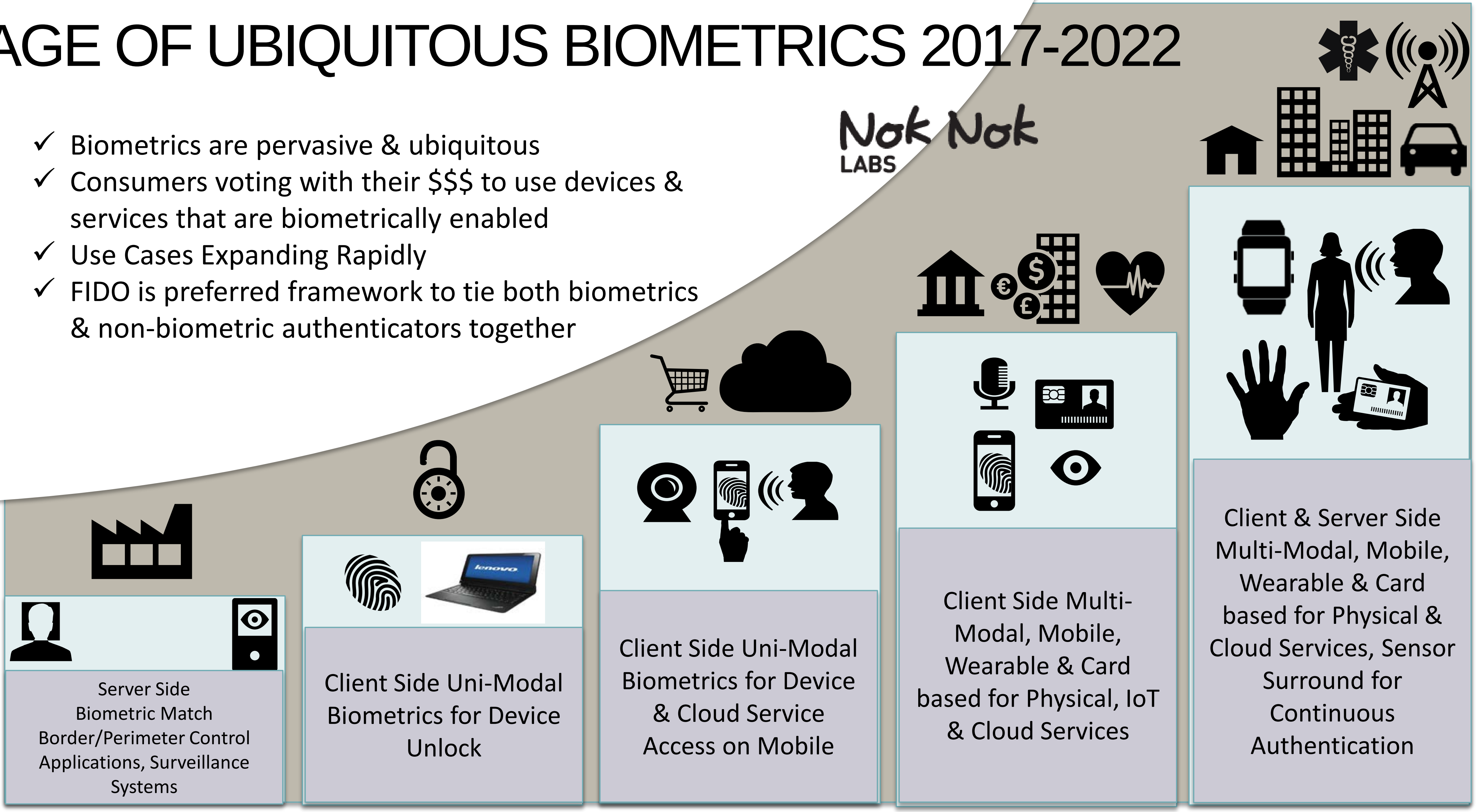
FEBRUARY 2017

Rajiv Dholakia, VP Products

AGE OF UBIQUITOUS BIOMETRICS 2017-2022

- ✓ Biometrics are pervasive & ubiquitous
- ✓ Consumers voting with their $$$ to use devices & services that are biometrically enabled
- ✓ Use Cases Expanding Rapidly
- ✓ FIDO is preferred framework to tie both biometrics & non-biometric authenticators together

Recognition to Authentication



Server Side Biometric Match Border/Perimeter Control Applications, Surveillance Systems

Client Side Uni-Modal Biometrics for Device Unlock

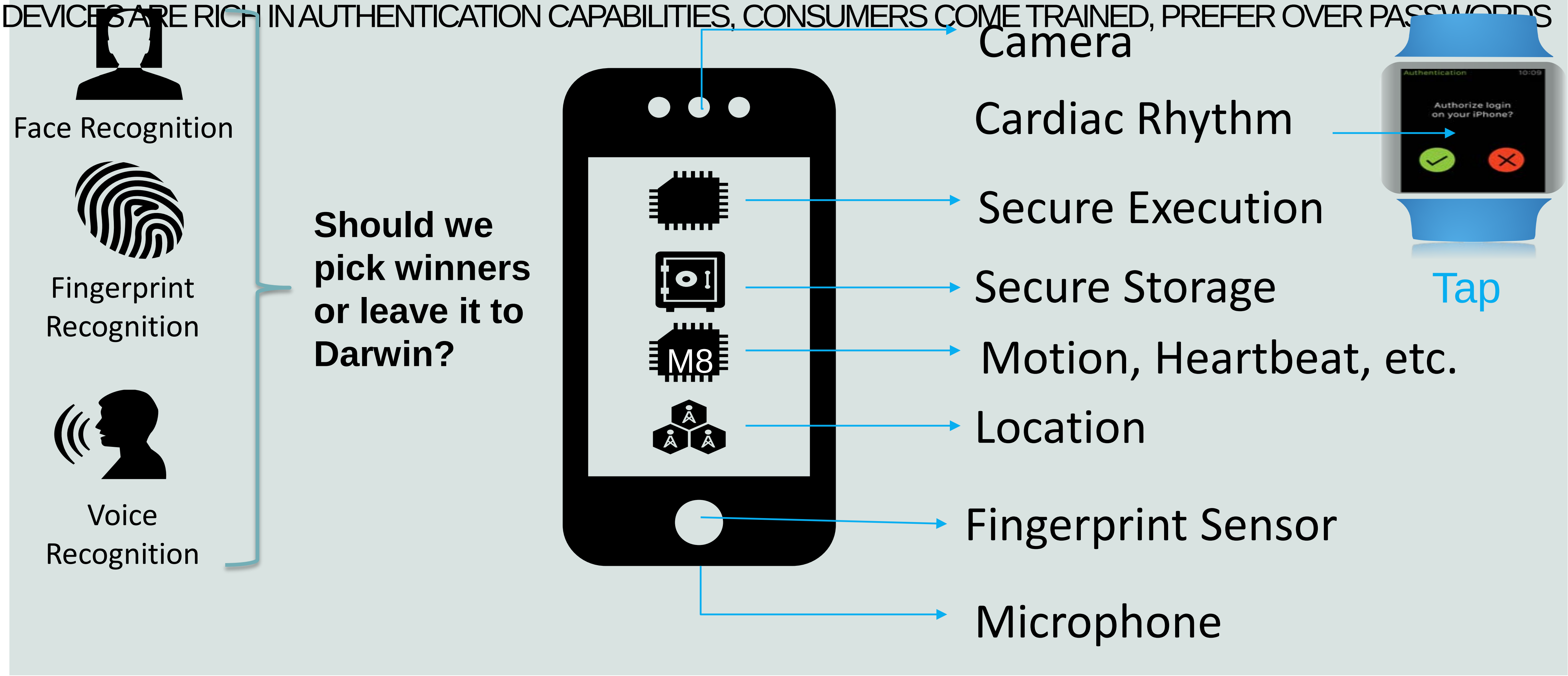
Client Side Uni-Modal Biometrics for Device & Cloud Service Access on Mobile

Client Side Multi-Modal, Mobile, Wearable & Card based for Physical, IoT & Cloud Services

Client & Server Side Multi-Modal, Mobile, Wearable & Card based for Physical & Cloud Services, Sensor Surround for Continuous Authentication

BIOMETRICS: A GIFT FROM THE DEVICE MAKERS & BIOMETRIC VENDORS

DEVICES ARE RICH IN AUTHENTICATION CAPABILITIES, CONSUMERS COME TRAINED, PREFER OVER PASSWORDS



Face Recognition

Fingerprint Recognition

Voice Recognition

Should we pick winners or leave it to Darwin?

Camera

Cardiac Rhythm

Secure Execution

Secure Storage

Motion, Heartbeat, etc.

Location

Fingerprint Sensor

Microphone

Tap

Nok Nok
LABS

MANAGING DIVERSITY OF BIOMETRIC METHODS

WHICH BIOMETRIC METHOD WILL REPLACE PASSWORDS?

NO SINGLE BIOMETRIC MODALITY WILL REPLACE PASSWORDS

Industry needs a framework for flexible authentication

Nok Nok Labs pioneered an industry movement of over 250+ companies (including major government agencies and technology alliances) that agree with our vision and expand the market for our software products – the FIDO Alliance

fido alliance

With industry and government leaders that include :

EMVCo
W3C
Smart Card Alliance
IDESG
SAMSUNG
Lenovo
ARM
intel
docomo
Bank of America
DISCOVER
VISA
RSA SECURITY
NIST National Institute of Standards and Technology U.S. Department of Commerce
LG Electronics
MasterCard
Google
CAICT 中国信通院
Synaptics
AGNITiO
aetna
Infineon
PayPal
oberthur TECHNOLOGIES
Bundesamt für Sicherheit in der Informationstechnik
NXP
TRUSTONIC
USAA
ING
Daon
QUALCOMM
Alibaba Group
NETFLIX
yubico
E*TRADE
ca technologies
Goldman Sachs
CrucialTec
WELLS FARGO
DUO
Cabinet Office
FORGEROCK
gemalto
YAHOO! JAPAN
Giesecke & Devrient Creating Confidence.
VASCO
Nok Nok LABS

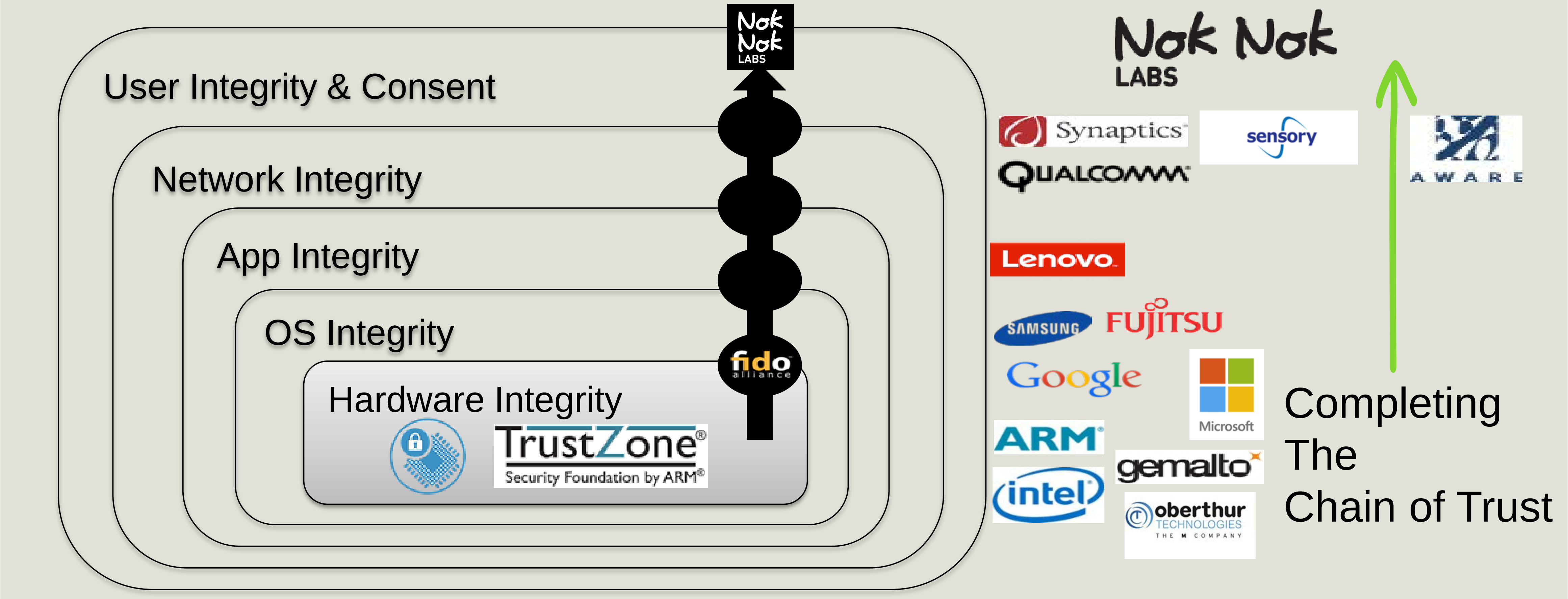
Government regulation for banking, payments and health care are driving enterprises to abandon the use of passwords

Industry alliances are cooperating to create alternatives to reliance on passwords

End users are rapidly adopting new authentication technologies such as fingerprint sensors, speaker recognition, face recognition and smart tokens, etc., that enable the elimination of passwords

FIDO DOES BIOMETRICS REALLY WELL

AUTHENTICATION THAT CAN GO FROM SILICON TO THE CLOUD



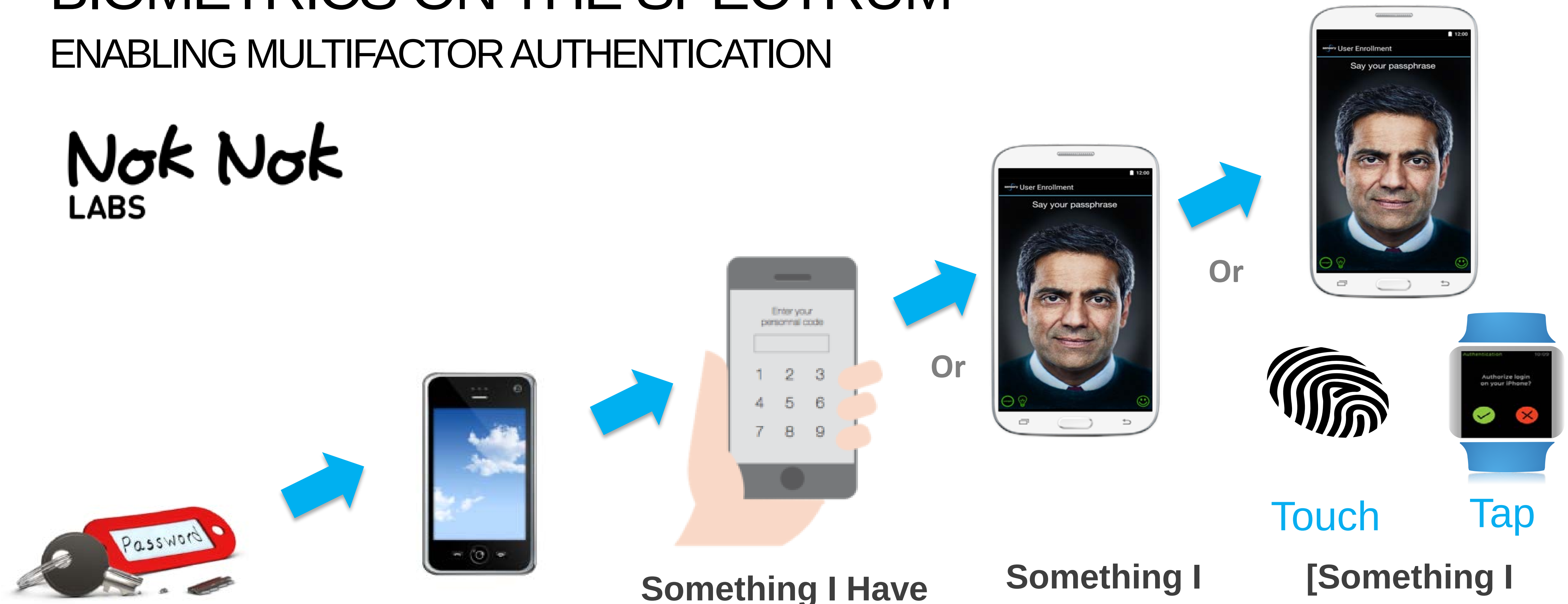
Completing The Chain of Trust

Easy for Users, Easy for Developers, Easy for IT Operators

BIOMETRICS ON THE SPECTRUM

ENABLING MULTIFACTOR AUTHENTICATION

Nok Nok LABS



Or

Or

Touch

Tap

Somethin
g I Know

Somethin
g I Have

Something I Have
+
Something I
Know

Something I
Have, Who I am
…

[Something I
Have, Who I am]
x2
…

fido UAF™ Certified

Nok Nok
LABS

CHALLENGES ORIENTING TO A NEW TECHNOLOGY

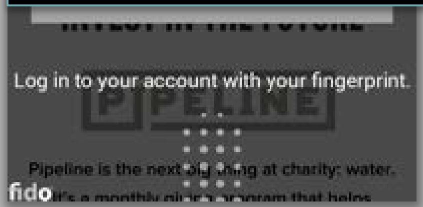
Understanding biometrics deeply and designing a solution

BIOMETRICS: DESIGN, EFFECTIVENESS & SECURITY CHALLENGES

?

- □ What you mean it’s a probabilistic match?
- □ I’d like a copy of the fingerprint for my server as well…
- □ It’s PII or isn’t it?
- □ Why does Apple’s matching model differ from Android from Microsoft?
- □ Rubber fingers, rubber fingers, hair-on-fire

?



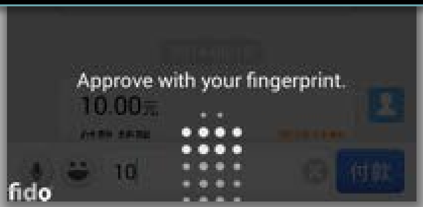
INVEST IN THE FUTURE

Log in to your account with your fingerprint.

PIPELINE

Pipeline is the next big thing at charity: water. It's a monthly giving program that helps

fido



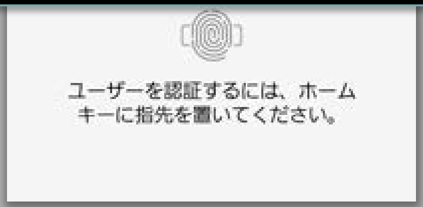
Approve with your fingerprint.

10.00元

10

付款

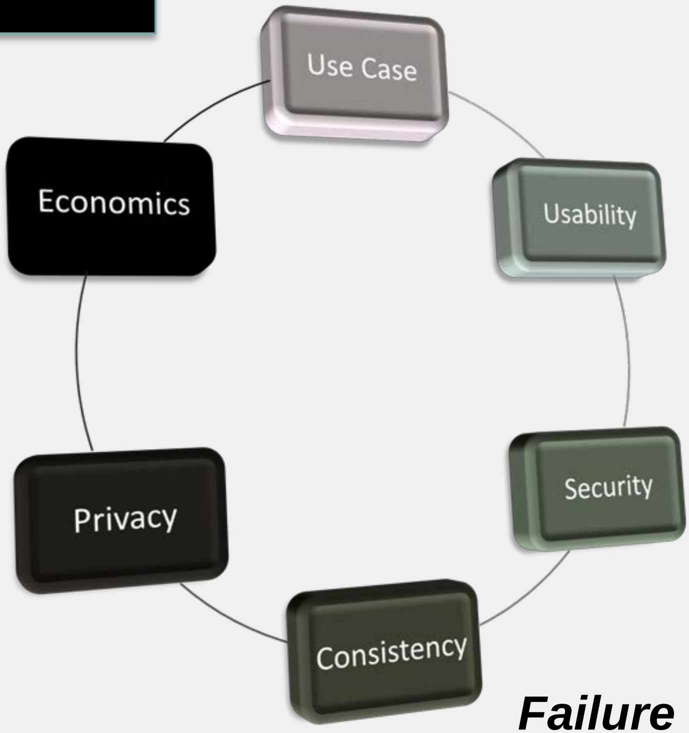
fido



ユーザーを認証するには、ホームキーに指先を置いてください。

MASTERING BIOMETRIC AUTHENTICATION: BEST PRACTICES

- ✓ **Run a POC**
- ✓ **Develop a framework for use (beware shiny objects)**
- ✓ **Build a 3-5 year roadmap**
- ✓ **Consider a standards-based approach with FIDO**



Recognition or Authentication? What's at stake? Consent?

Active or Passive? Single or Multi-Modal? Recovery? Lifecycle model?

Documented Threat Model? How are templates & matcher protected? Attack vectors?

Failure modes, Predictability, Operational variations?

Is there PII? Who owns the biometric?

Operating multiple authentication silos or standards-based approach?

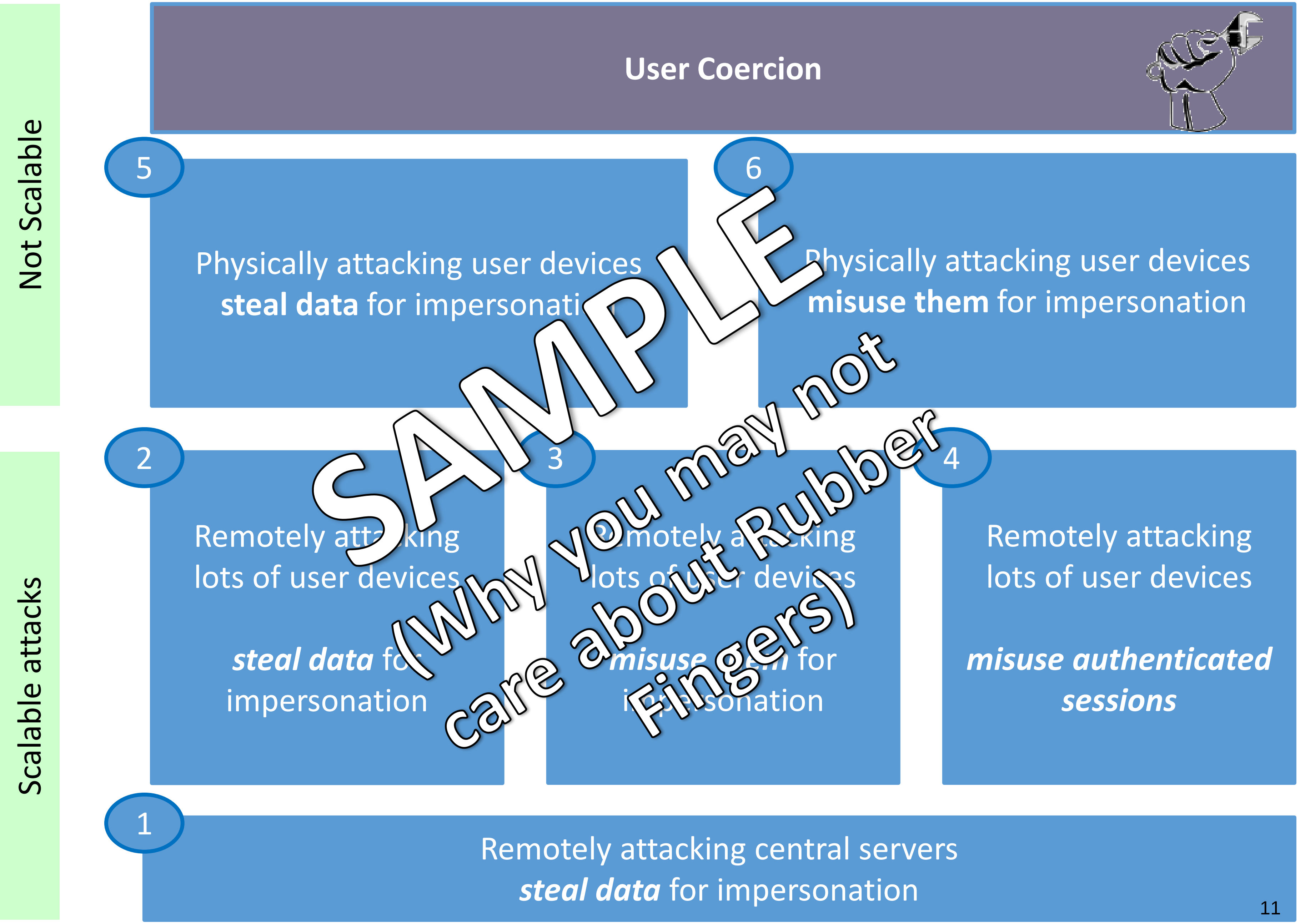
ATTACKS MITIGATED

Physical attacks possible on lost or stolen devices (≈3% in the US in 2013)

With hardening of FPS Authenticator Implementations – mitigate remote/scalable attacks

CONFIDENCE NOT FEAR

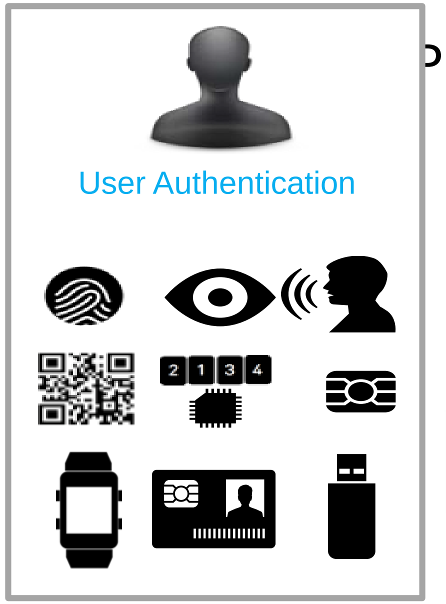
Threat Model For Fingerprint Sensors


Not Scalable
Scalable attacks
User Coercion
5
Physically attacking user devices **steal data** for impersonation
6
Physically attacking user devices **misuse them** for impersonation
2
Remotely attacking lots of user devices
steal data for impersonation
3
Remotely attacking lots of user devices
misuse them for impersonation
4
Remotely attacking lots of user devices
misuse authenticated sessions
1
Remotely attacking central servers ***steal data*** for impersonation

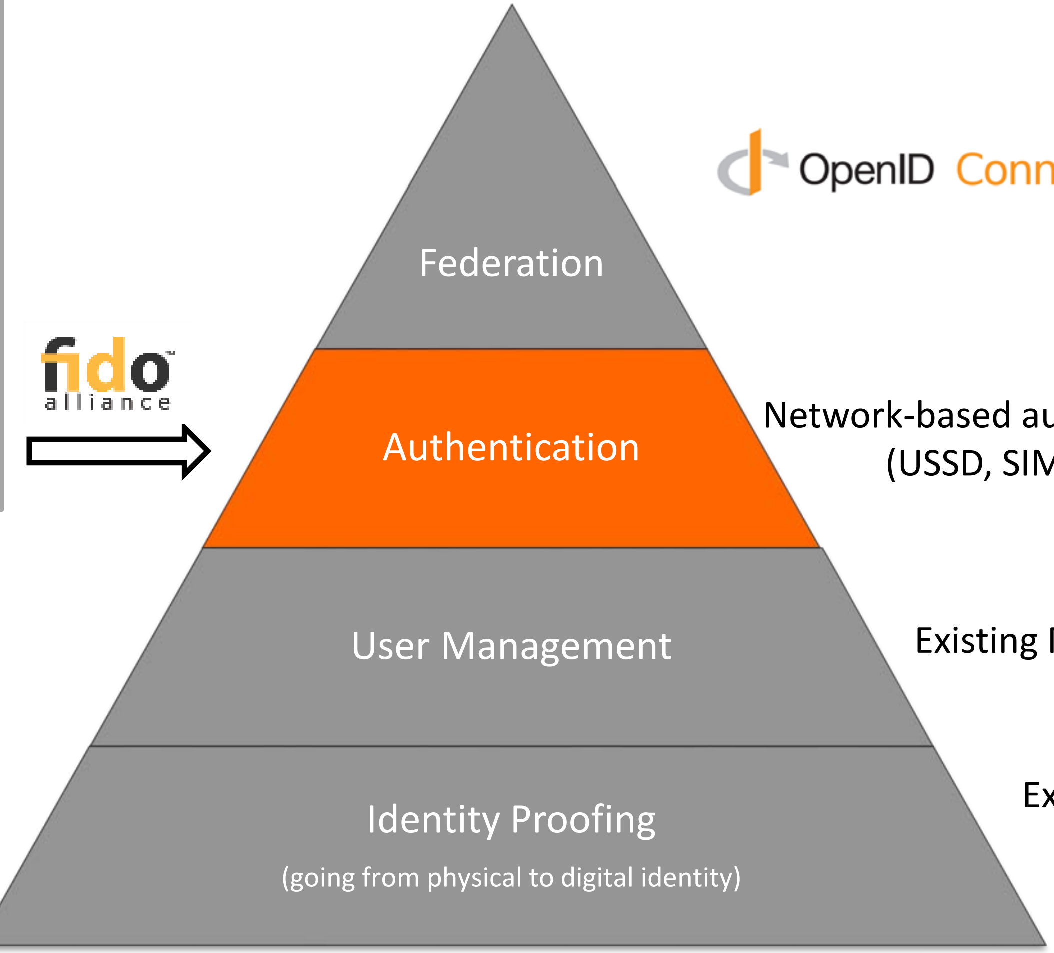
Nok Nok LABS

BIOMETRICS & MOBILE CONNECT

MOBILE CONNECT LEVERAGES FIDO TO EXPAND THE SET OF AUTHENTICATORS



P INTO FIDO FRAMEWORK – EASY FOR DEVELOPERS, IT OPERATOR



OpenID Connect

Network-based authenticators (USSD, SIM applet etc.)

Existing MNO CRM databases

Existing MNO KYC processes

FIDO provides Authentication Framework for Device-Based Authenticators

Nok Nok LABS

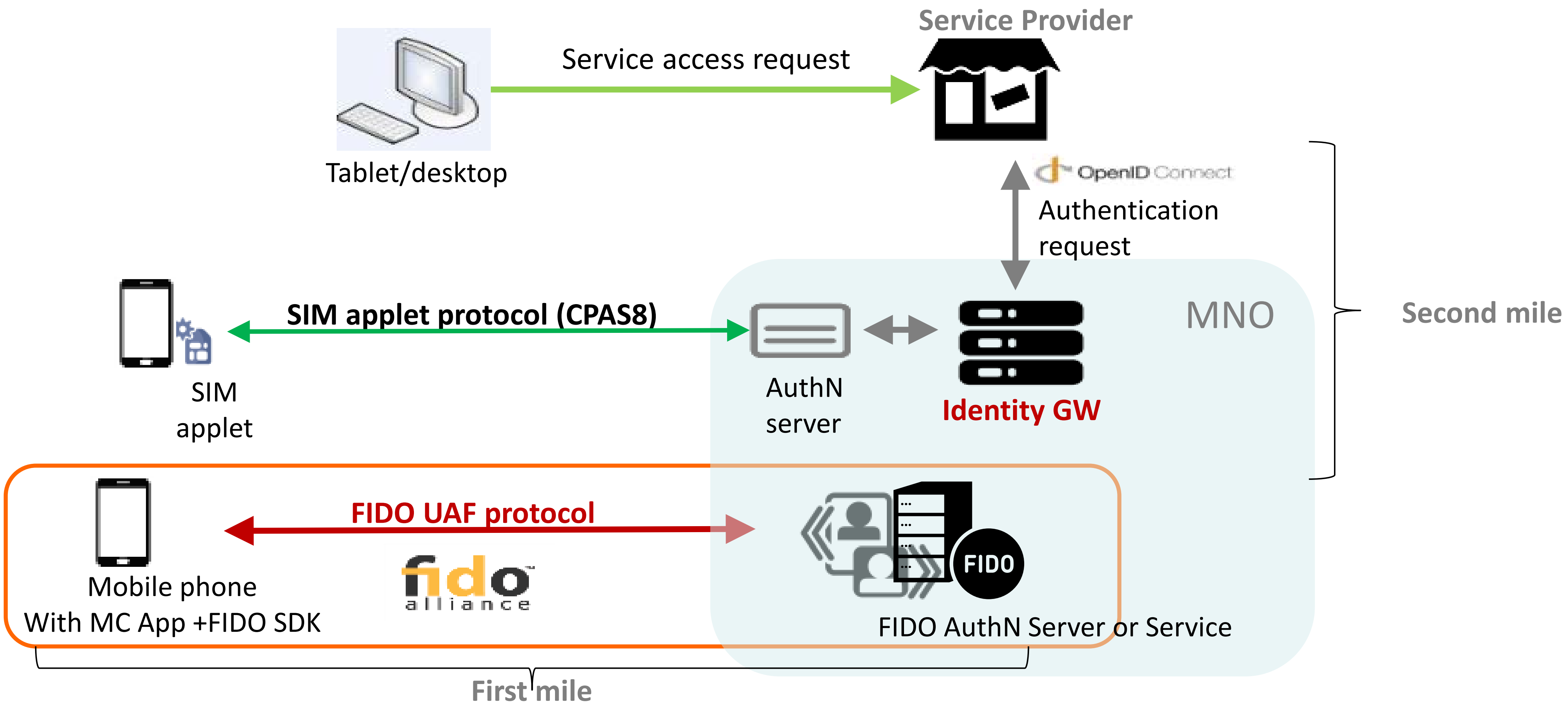
FIDO is an Authentication Framework

Mobile Connect is an Identity Framework

NOK NOK LABS

MOBILE CONNECT HIGH LEVEL ARCHITECTURE WITH FIDO

FIDO INTEGRATES AS OPTIONAL AUTHENTICATOR SUBSYSTEM



Nok Nok
LABS

BIOMETRICS & BUSINESS STRATEGY

THE BATTLE FOR CUSTOMER EXPERIENCE & THE CLOUD

Biometrics in particular & authentication in general are becoming a strategic weapon for dominance in cloud services

Apple on their vision for iTouch (much more than a sensor)

- https://www.youtube.com/watch?v=U2MTLNfCZBQ

NTT DOCOMO Demo Videos:

- https://www.youtube.com/watch?v=QzM4PpXEqP8 [Fall 2015]

PayPal Video

- http://youtu.be/L2xAk0aHBsI

How it Works:

- https://www.youtube.com/watch?v=YcfGlLrSzQw

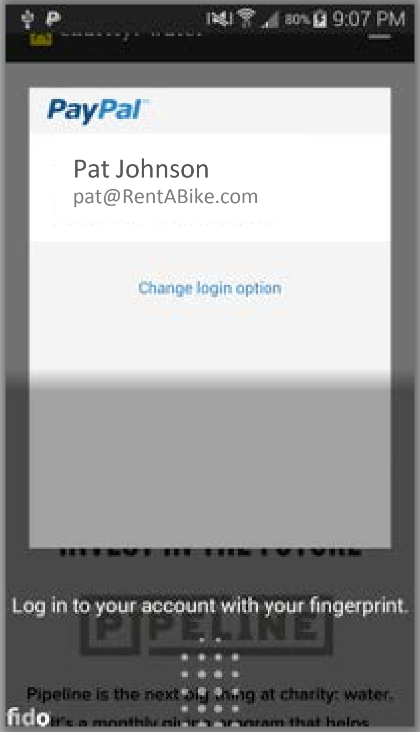
BIOMETRICS: LEADERS FORGING AHEAD, SEEING STUNNING BENEFITS

PayPal

支付宝 Alipay.com

NTT docomo

Cigna.

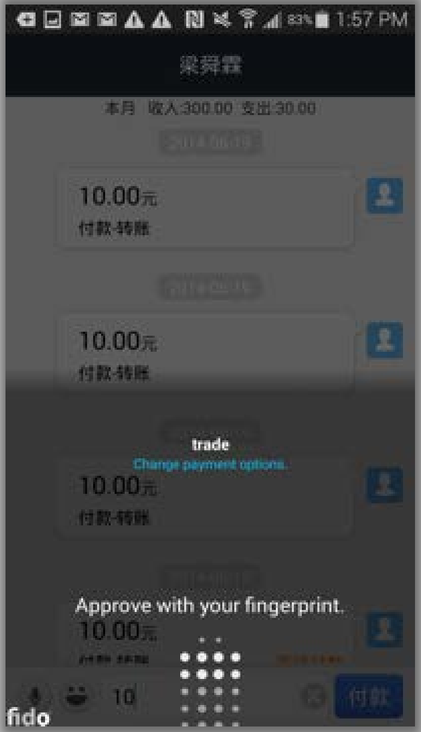


PayPal

Pat Johnson
pat@RentABike.com

Change login option

Log in to your account with your fingerprint.



梁舜霖

本月 收入:300.00 支出:30.00

10.00元
付款-转账

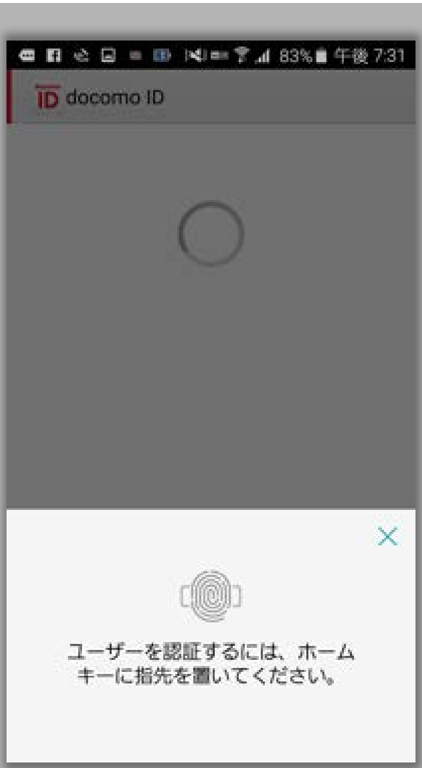
10.00元
付款-转账

trade
Change payment options.

10.00元
付款-转账

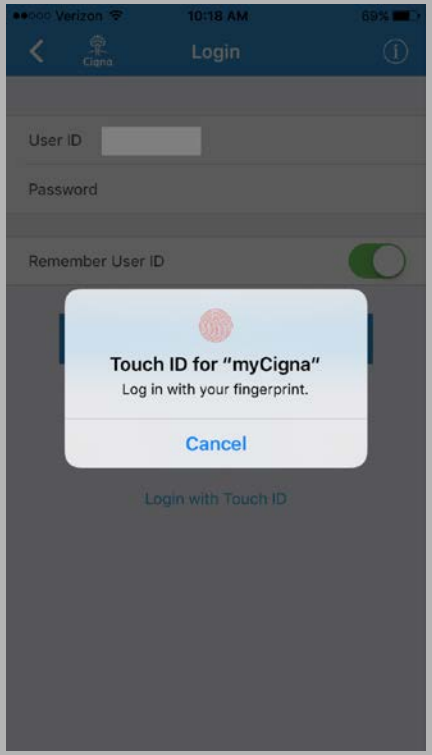
Approve with your fingerprint.

10.00元



docomo ID

ユーザーを認証するには、ホーム
キーに指先を置いてください。



Login

User ID

Password

Remember User ID

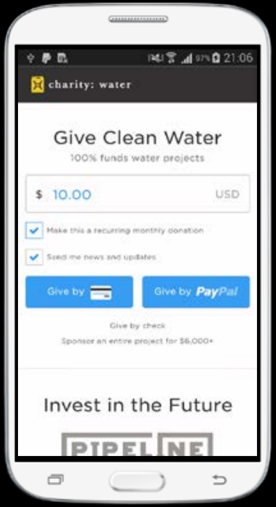
Touch ID for "myCigna"
Log in with your fingerprint.

Cancel

Login with Touch ID

BIOMETRIC AUTHENTICATION : A BUSINESS PERSPECTIVE

FRICTIONLESS AUTHENTICATION, PERSONALIZED TRANSACTIONS



21:06

charity: water

Give Clean Water

100% funds water projects

$ 10.00 USD

☑ Make this a recurring monthly donation

☑ Send me news and updates

Give by | Give by PayPal

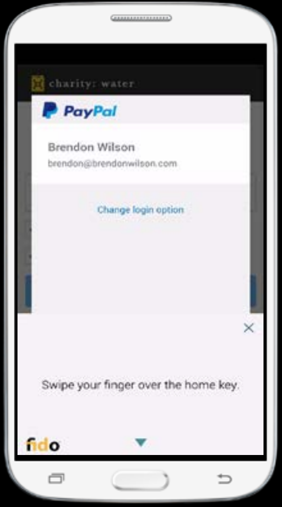
Give by check

Sponsor an entire project for $6,000+

Invest in the Future

PIPELINE

Tap



charity: water

PayPal

Brendon Wilson

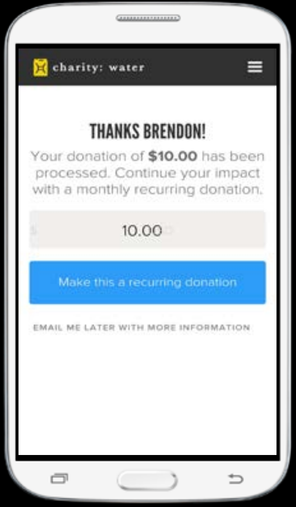
brendon@brendonwilson.com

Change login option

Swipe your finger over the home key.

fido

Touch



charity: water

THANKS BRENDON!

Your donation of **$10.00** has been processed. Continue your impact with a monthly recurring donation.

10.00

Make this a recurring donation

EMAIL ME LATER WITH MORE INFORMATION

Sent!

Leaders are:

- ✓ Delighting customers
- ✓ Increasing ARPU
- ✓ Locking down security
- ✓ **Creating seamless customer experiences across their ecosystem for strategic advantage in cloud services and IoT**

FIN