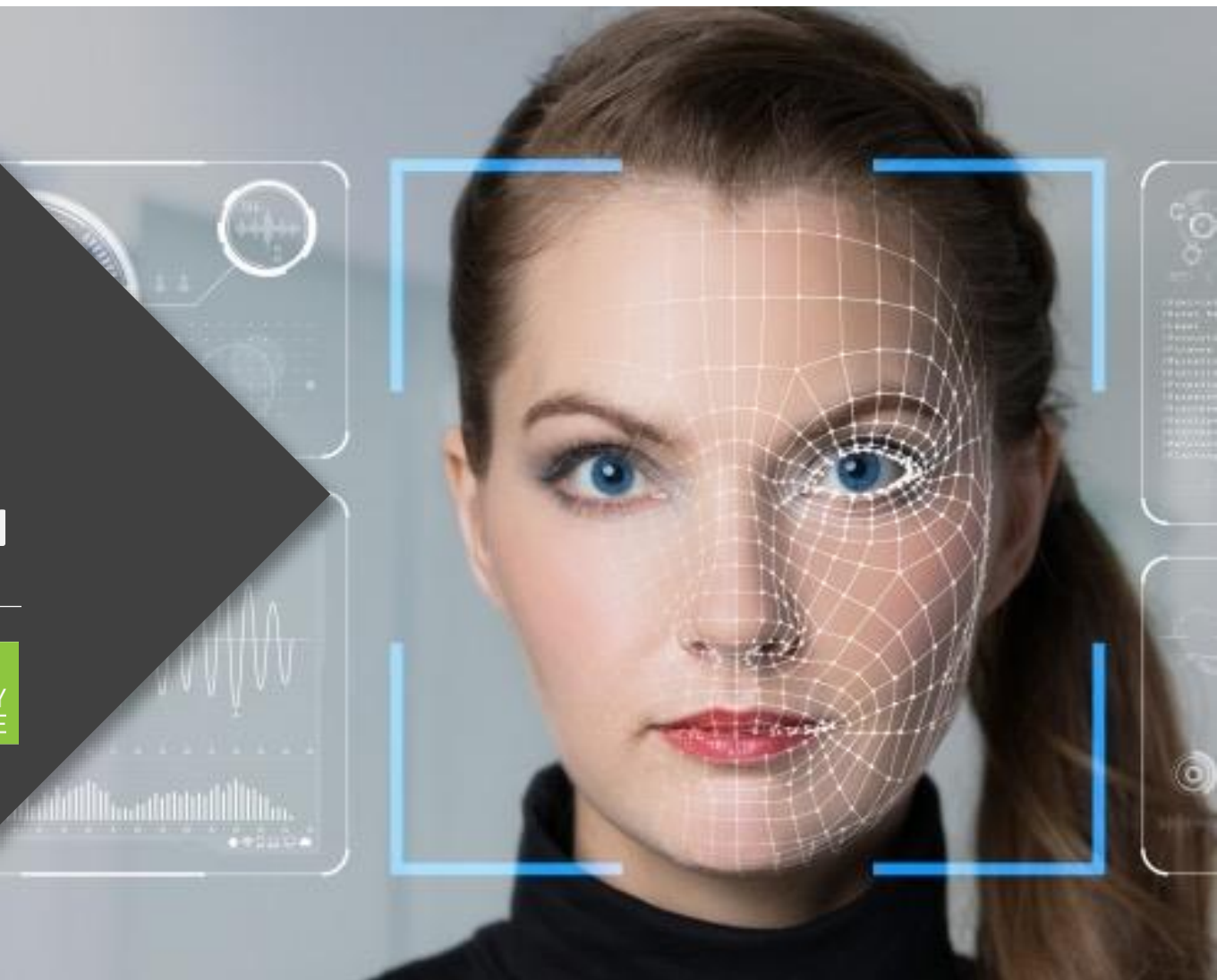




## AI-ENABLED GLOBAL FACE IDENTIFICATION



**GPU** TECHNOLOGY  
CONFERENCE



# FACEFIRST PROVIDES AI-ENABLED FACIAL IDENTIFICATION TECHNOLOGY TO A GLOBAL ECONOMY

  
**HEADQUARTERS**  
*Los Angeles  
California*

## SURVEILLANCE & PUBLIC SAFETY

Loss Prevention  
Return Fraud  
Crime Mitigation

## CUSTOMER EXPERIENCE

In-Store Personalization  
VIP Customer Service  
Frictionless Commerce

## OEM & CHANNEL

Direct OEM  
Channel Partners  
Alliance Partners

RETAIL

FINANCIAL  
SERVICES

TRANSPORTATION

EVENT  
VENUES

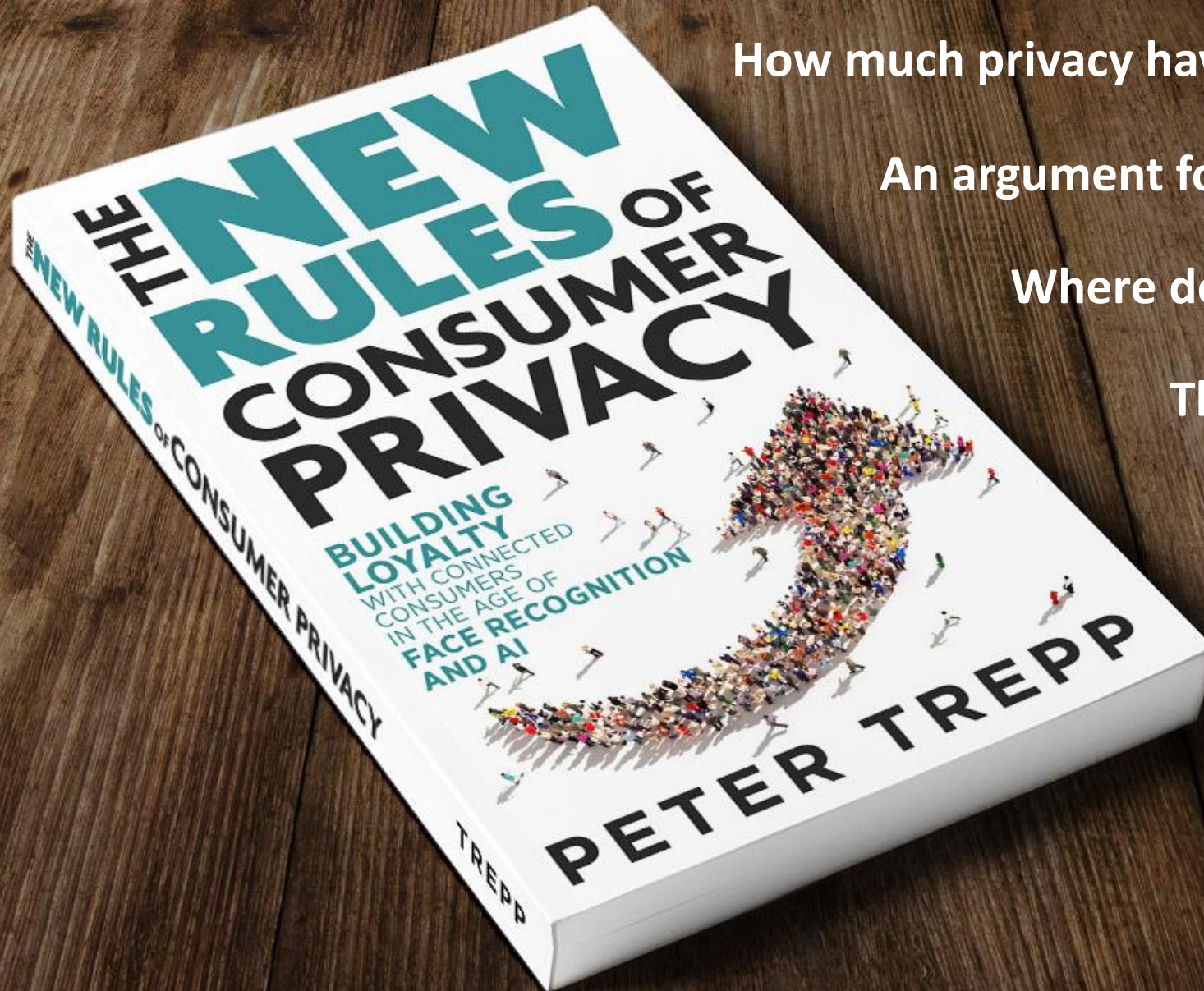
HOTELS &  
CASINOS

LAW  
ENFORCEMENT

GOVERNMENT







How much privacy have we already lost?

An argument for personal privacy.

Where do we go from here?

The future of real AI.

amazon

audible  
an amazon company

BARNES & NOBLE  
BOOKSELLERS



# REAL-WORLD PROBLEMS WE SOLVE

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## Identifying Bad Actors

- Organized Retail Crime (ORC)
- Return Fraud
- Known Criminals & Terrorists
- Employee Theft



## Improve Transaction Security & Convenience

- More Convenient Payment Methods
- Second Factor Authentication (2FA)
- ID & Age Verification
- Frictionless Commerce



## Improving the Customer Experience

- VIP in Store
- Proximity Marketing
- Shortening/Eliminating Lines
- Custom/Tailored Messaging



## Facial Identification as-a-Service

- Integration with VMS Providers
- OEM to Third Parties
- Robust SDK/API for Developers
- Embedded Hardware Integration

# HOW WE SOLVE THESE PROBLEMS

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## AI-Enabled Software



Our proprietary and patented algorithm is designed, written and supported in the U.S. We leverage the latest advances in neural networks and deep learning to deliver world-class solutions.

## Partnerships & Alliances



Our world-class partners are strategic and complementary to our product offering. This is a critical element to identifying, engaging and supporting our customers over the long-term.

## Professional Services



We partner with our customers throughout the life of our relationship. From pilot to production, and well after deployment, we are committed to the success of our customers.

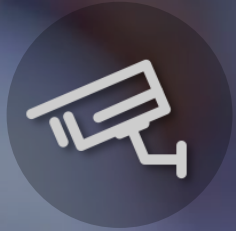
## Experience & Insight



We bring years of first-hand experience and a proven track record, deploying hundreds of locations and matching millions of faces. We are also domain experts in matters of privacy and security.



# AI-ENABLED SOFTWARE: SELECT PRODUCTS



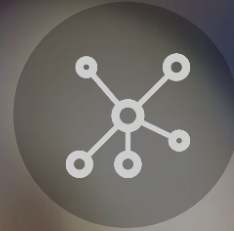
SENTINAL-IQ™

Identify known criminals via fixed-camera surveillance and receive real-time alerts with situational intelligence to any device at any location



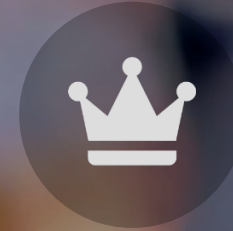
FIELD-IQ™

Identify known criminals and persons of interest in the field in just seconds and integrate with relevant data sources



WATCHLIST-IQ™

Share critical information about known criminals with other organizations through a secure, governed network



CUSTOMER-IQ™

Identify your most loyal customers the moment they visit and deliver a more personal, convenient and frictionless in-store experience



SWORD™

Detect concealed guns, knives and explosive devices and the identities of known black lists and white lists in a compact mobile or tablet device

## VALUE PROPOSITION

**KNOWN THREAT  
DETECTION**

**REAL-TIME  
ALERTS**

**IDENTITY  
NETWORK EFFECT**

**CUSTOMER ID  
VERIFICATION**

**INTELLIGENT  
DATA ANALYTICS**

# THE HUMAN BRAIN HAS FACIAL RECOGNITION BUILT-IN

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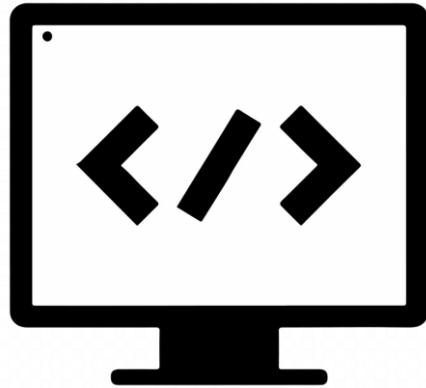
**Who is this?**

# HOW TO BUILD A FACIAL RECOGNITION ALGORITHM?

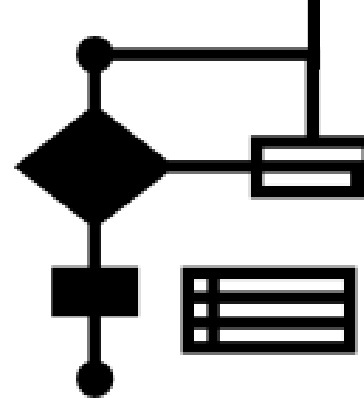
DETERMINE THE MATH

$$\frac{\partial}{\partial x} \|f(x)\|_2^2 = 2f(x) \frac{\partial}{\partial x} f(x)$$
$$\frac{\partial}{\partial x} \|f(x)\|_2 = \frac{\partial}{\partial x} \sqrt{\|f(x)\|_2^2}$$
$$\frac{1}{2\sqrt{\|f(x)\|_2^2}} 2f(x) \frac{\partial}{\partial x} f(x)$$

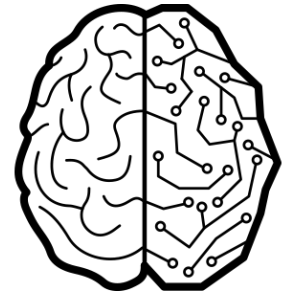
WRITE THE CODE



TRAIN THE ALGORITHM



RUN

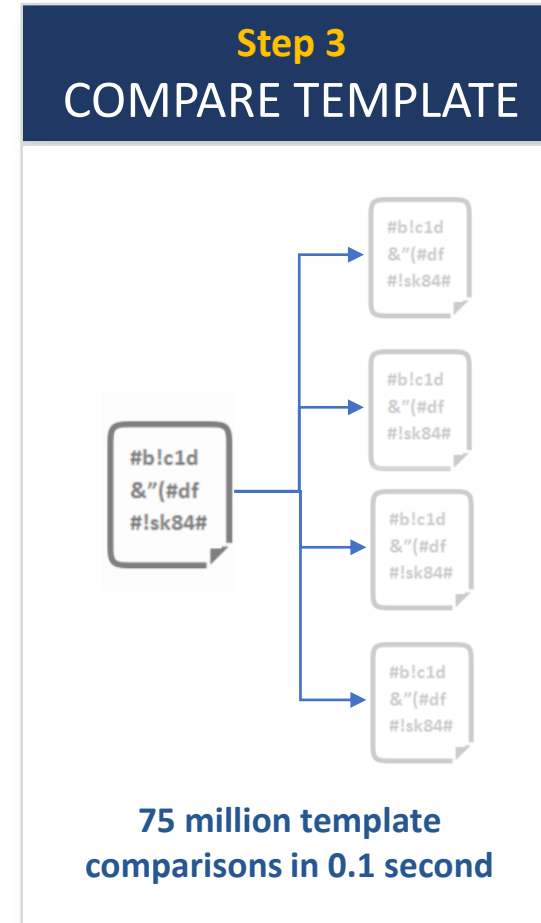
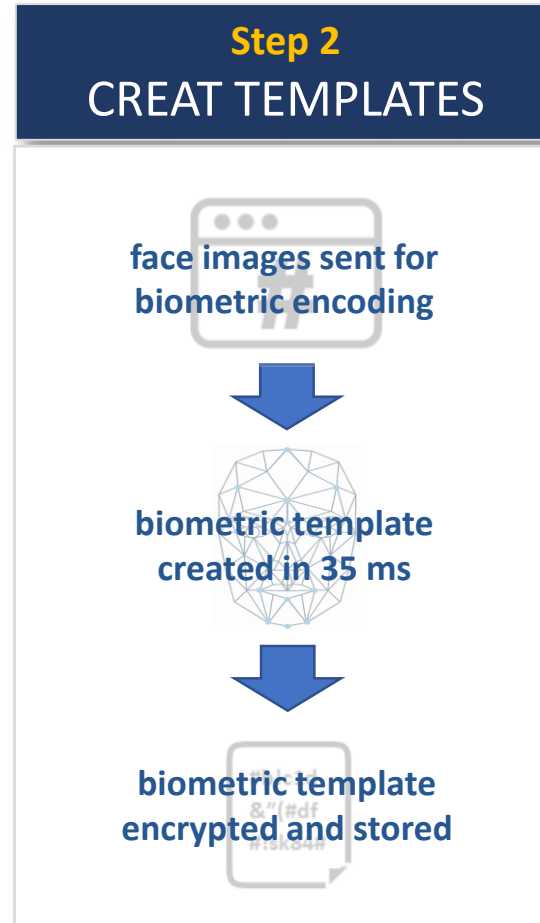
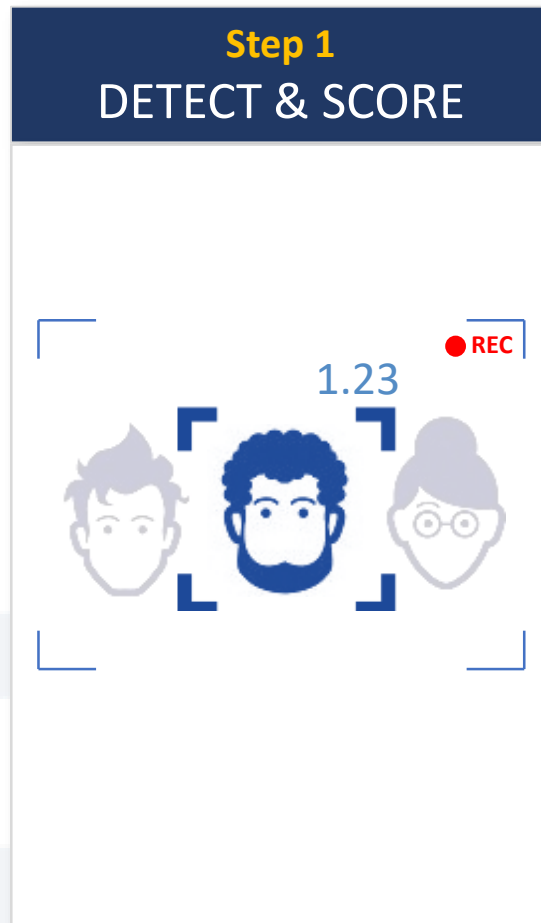


Artificial  
Intelligence  
Algorithm

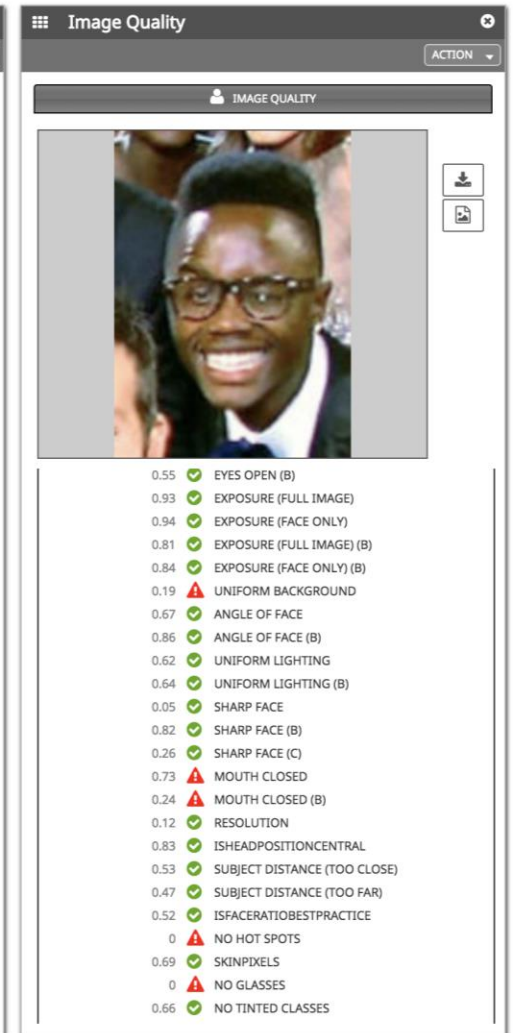
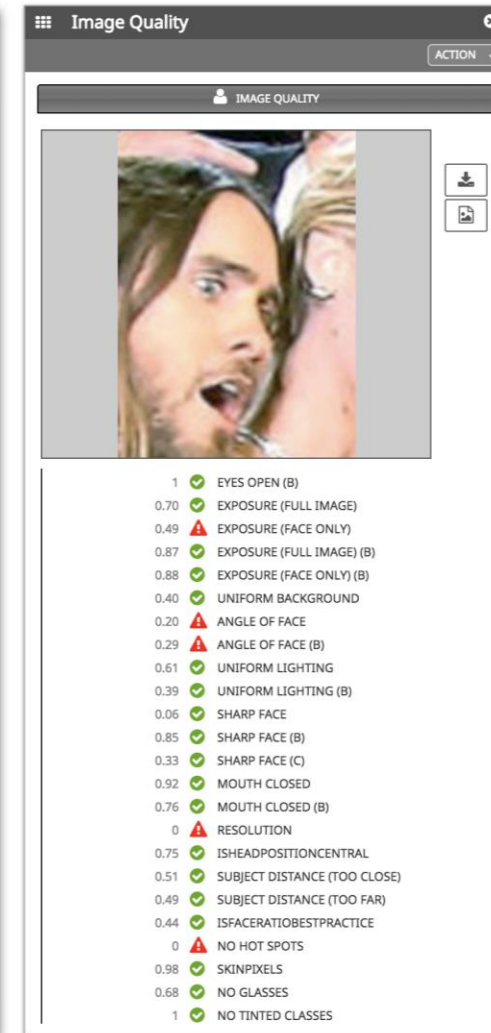
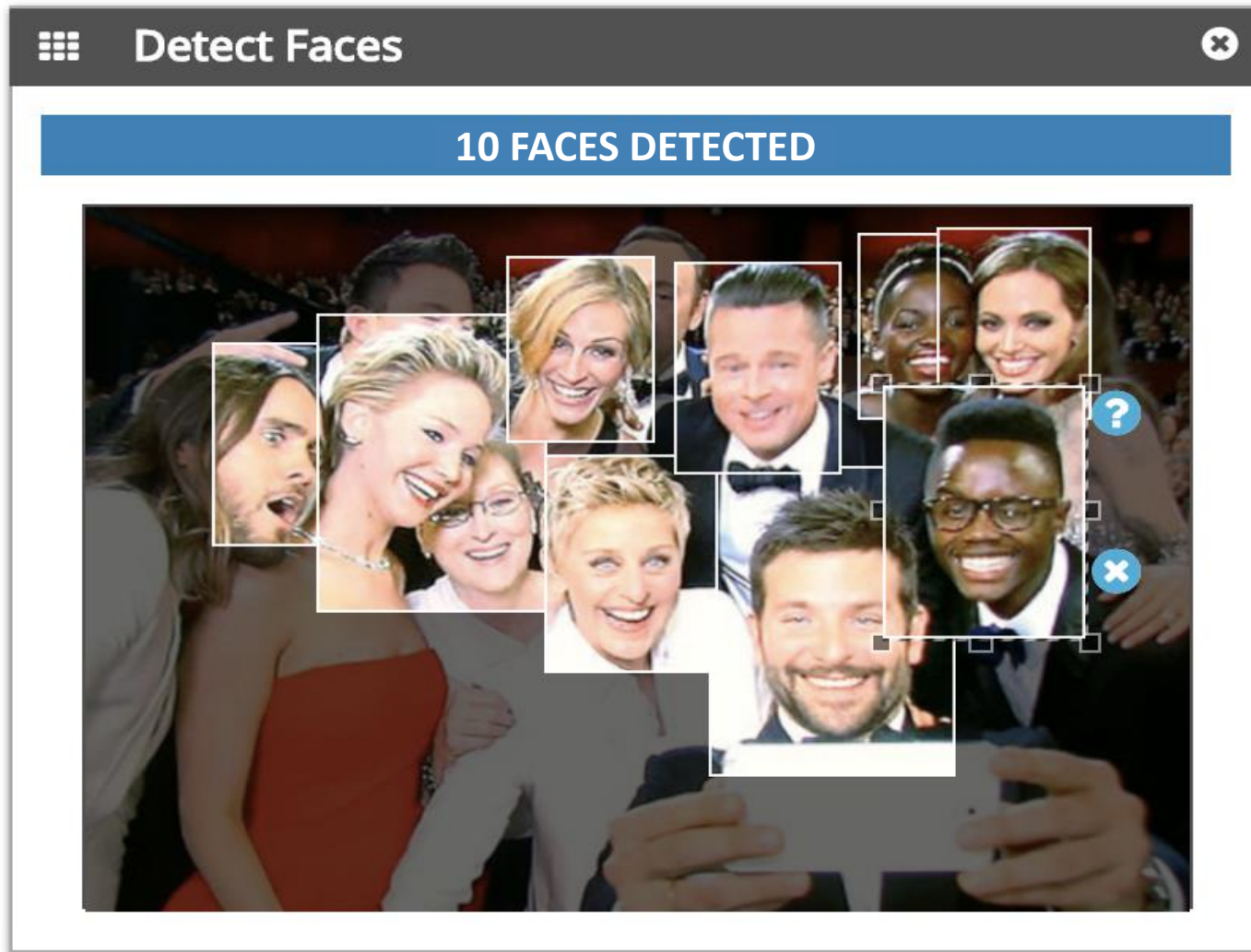




# HOW DOES FACIAL RECOGNITION WORK?



# EASILY IDENTIFY A FACE IN A CROWD

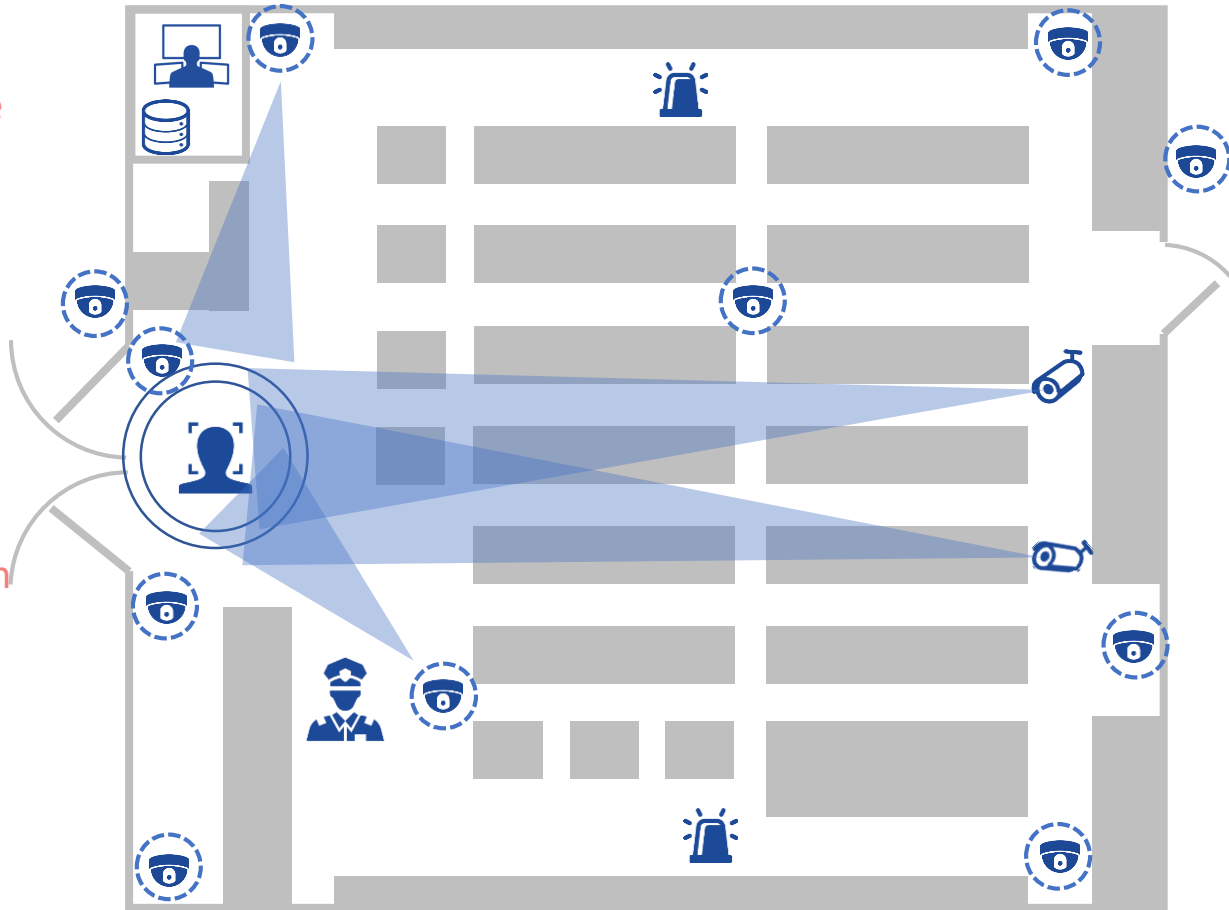




# HOW IT WORKS

## KNOWN THREAT DETECTION

- 1** A known criminal enters a facility equipped with face identification.
- 2** The individual is matched against a database of known criminals.
- 3** An alert is sent to local or onsite personnel showing the live image and the database image along with relevant data.
- 4** Onsite personnel employ their procedures and training to determine the best course of action.



Works with existing cameras

## VIP CUSTOMER EXPERIENCE

- 1** A VIP enters a facility equipped with face identification.
- 2** The individual is matched against a database of VIPs and/or loyal customers.
- 3** A customized text message is sent to the VIP with an invitation to a special offer or promotion.
- 4** Onsite personnel receive a notice along with profile information about that VIP and can then offer personalized service.



**325 < 1**  
**MILLION SECOND**

FaceFirst can scan a database of 325 million people and find a single person in less than one second.  
*(30x improvement vs 2017)*

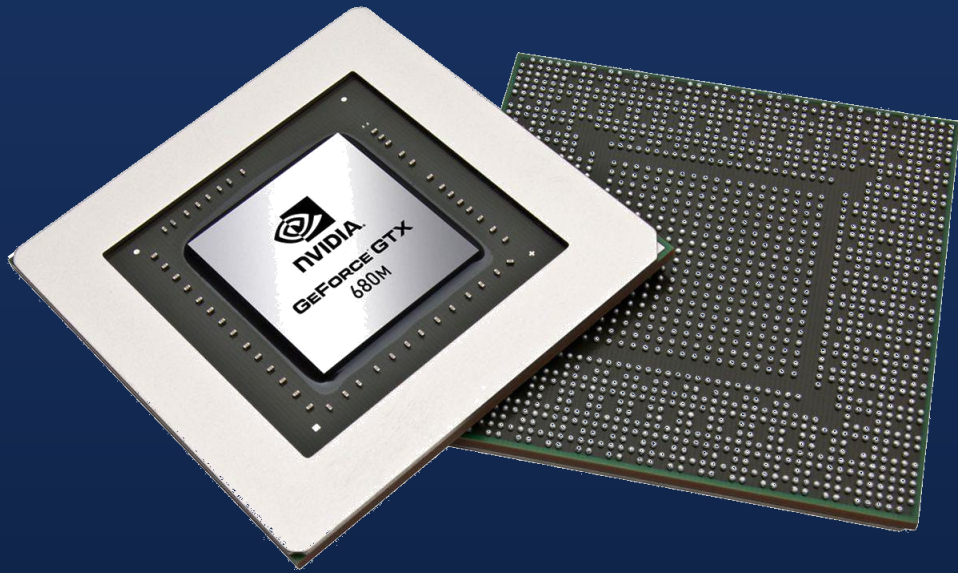
**99.8%**  
**ACCURACY**

FaceFirst can identify individuals in the “wild” with a 99.8% level of accuracy.  
*(10x decrease in false positives vs 2017)*



# WHY IS FACIAL RECOGNITION SO FAST & ACCURATE?

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**GPU Chips**



**True  
Artificial  
Intelligence**

## DEEP LEARNING NEEDS COMPUTE POWER

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"Deep learning is almost like the brain... It's unreasonably effective. You can teach it to do almost anything. But it had a huge handicap: It needs a massive amount of computation. And there we were with the GPU, a computing model almost ideal for deep learning."

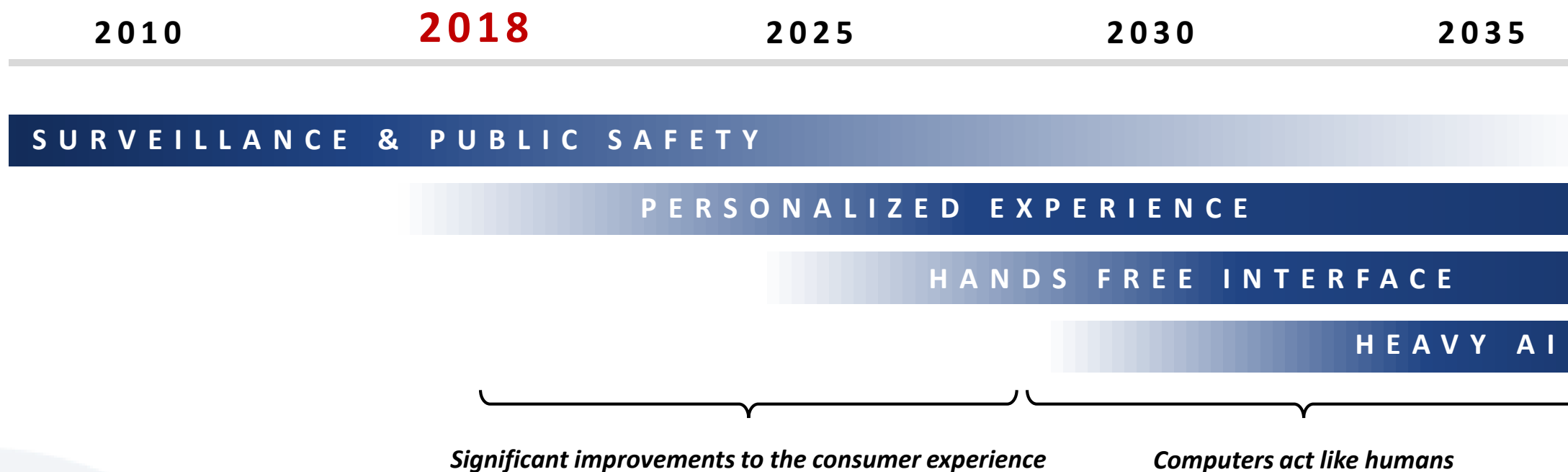


**nvidia®**

**Jen-Hsun Huang**  
CEO, NVidia



# THE EVOLUTION OF FACIAL RECOGNITION



By 2020, **95%** of all video capture will be analyzed by machines, not humans - Goldman Sachs



# TRENDING TOWARD BROADER ACCEPTANCE & USE

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## Forbes

More than half (**54%**) of Americans plan to use facial recognition to protect their personal data.



Just **25%** of Americans now believe that the federal government should strictly limit the use of facial recognition technology.

Just **24%** of Americans think facial recognition should be limited by the government if it means stores can't use it to reduce shoplifting

Just **18%** percent of Americans think facial recognition should be limited if it comes at the expense of public safety.

## THE VERGE

**Amazon** told employees it would continue to sell facial recognition software to law enforcement

## DIGITAL JOURNAL

A significant majority of consumers (**64%**) are in favor of implementing facial recognition to better guarantee their safety at retail outlets, sports venues, concert venues and airports.

## BUSINESS INSIDER

**Microsoft:** It would be cruel to stop government agencies using facial recognition software





## RECOGNIZE AND REWARD YOUR BEST CUSTOMERS

With in-store face recognition  
that is accurate, scalable,  
private and secure



### **VICTORIA STONE**

Opt-in Pet Rewards Member

Irish Wolf Hound: "Molly"

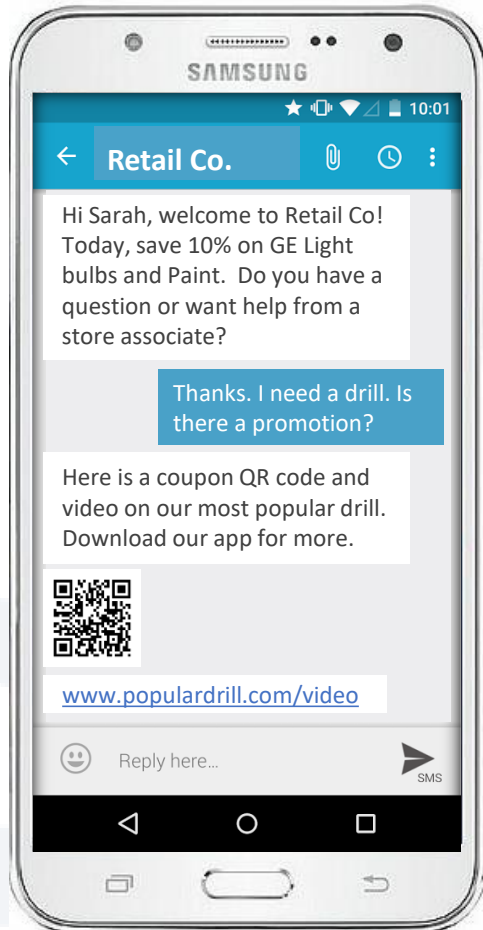
Online Purchase 4/13:

Organic dog treats

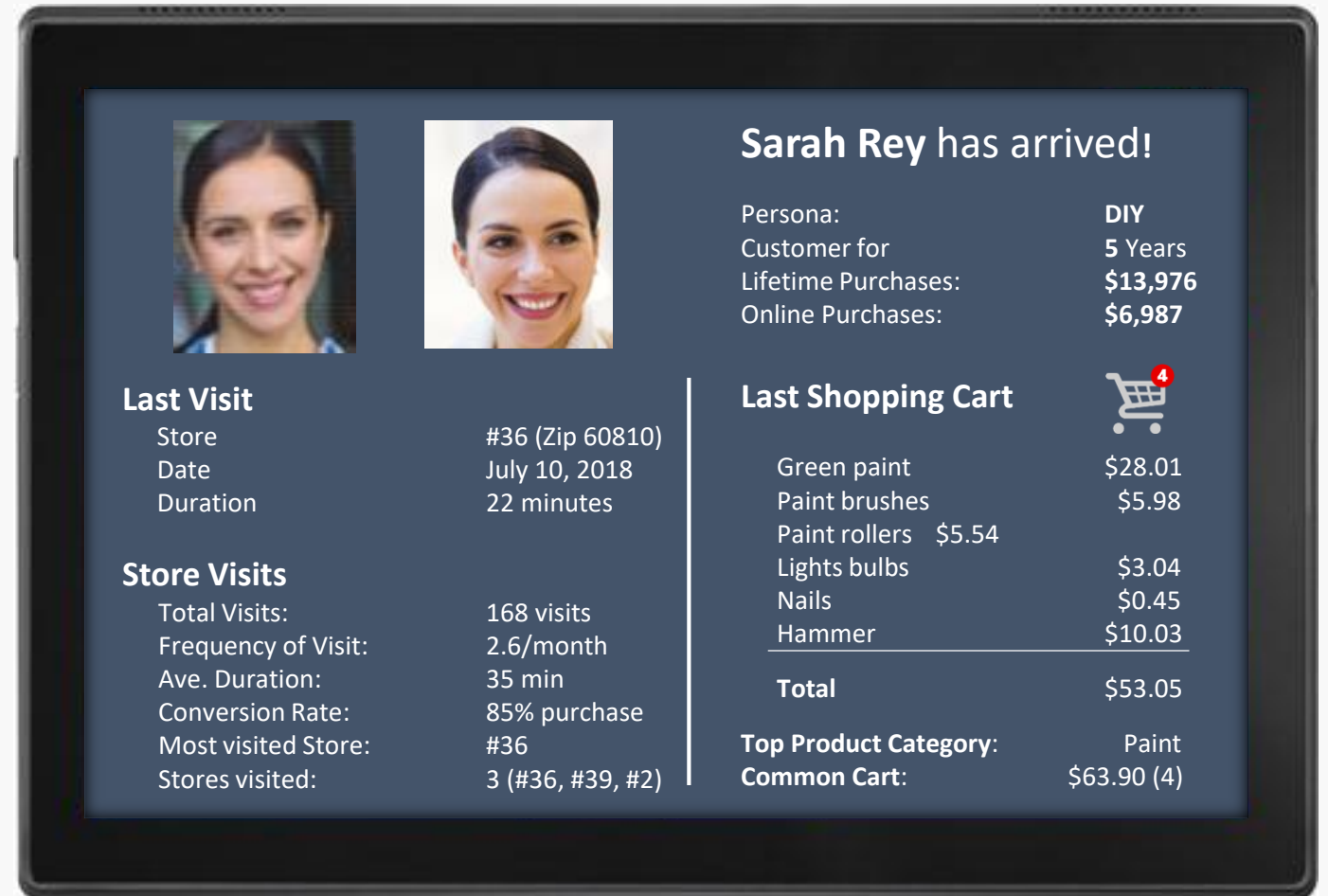
Offer onsite grooming service



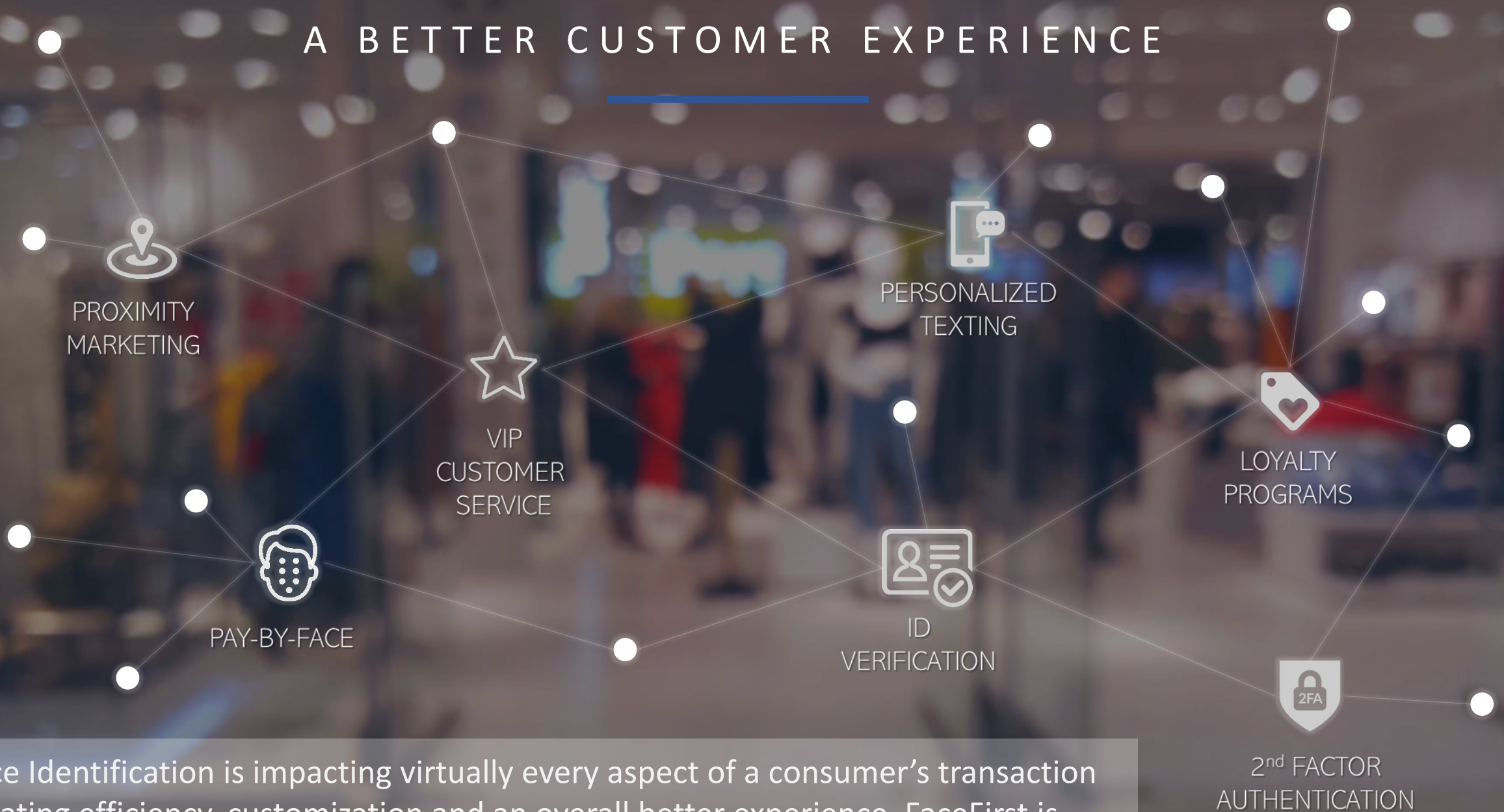
# CUSTOMER EXPERIENCE



# REAL-TIME ANALYTICS EMPLOYEE EXPERIENCE



# A BETTER CUSTOMER EXPERIENCE



Face Identification is impacting virtually every aspect of a consumer's transaction creating efficiency, customization and an overall better experience. FaceFirst is leading the way in developing and deploying the underlying technology.



# SECURE TRANSACTIONS & OMNI-CHANNEL

## 1 Order Online, Securely and Conveniently Pick-Up In-Store

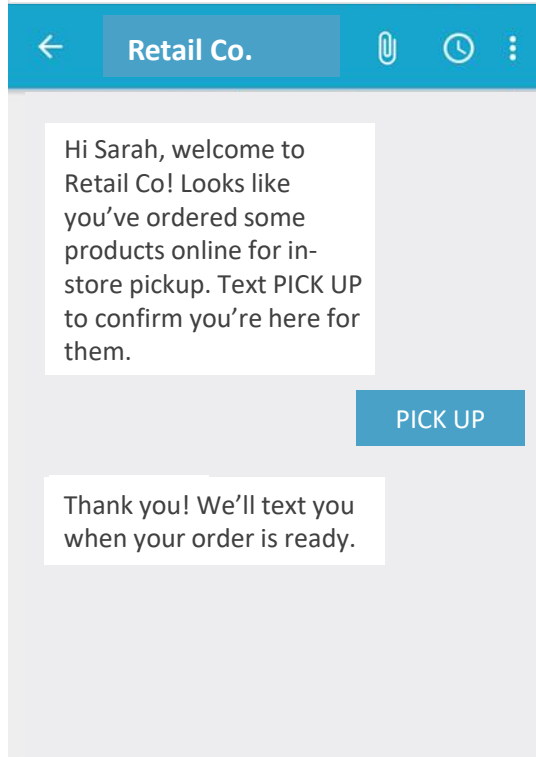
### Step 1

Order products online for pick up in-store



### Step 2

In store, Customer verifies ID via positive face match + text (2FA)



### Step 3

Customer Service representative receives positive match alert



**Sarah Rey**

Customer Persona:  
**Do It Yourself**

Customer for 5 Years

Order #: 6FUZ96G

Total: \$53.05

### Step 4

Customer picks up shopping cart at Customer Service desk.



# SECURE TRANSACTIONS

2

## Two-Factor Authentication for Convenient Payment at Self Check-Out or Just Walk Out

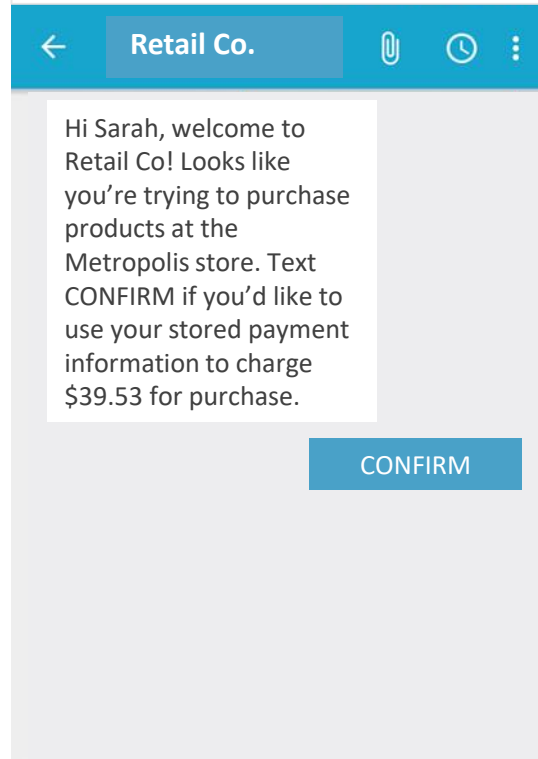
### Step 1

Customer shops in-store and scans items at self-check-out



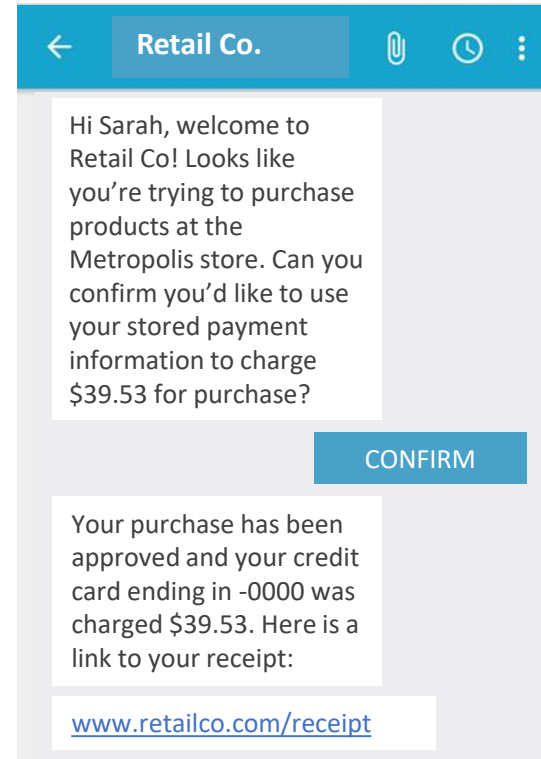
### Step 2

Customer authorizes payment via positive face match and text



### Step 3

Customer is notified that stored payment was used for purchase.



### Step 4

Customer walks out without presenting payment or ID.





# FRICITONLESS ORDERING AND PERSONALIZATION

3

Fully frictionless order, pay and eat or pick up using identity  
(only face, no text/app/kiosk/cashier)

## Step 1

Customer opts into no friction order and pay for her lunch

PAY

STORES

GIFT



**Sarah Rey**

Account & Settings

### Loyalty Program (Opt-In) Settings

Opt-In to Identity	Yes
Text promotions (arrival)	Yes
App promotions (arrival)	No
Personal Customer Service	Yes
Auto-order	On
Auto-order time	11-1pm
Payment 2FA	None
Receipt	Text

## Step 2

Customer arrives and sits at local Restaurant at 11:30am



## Step 3

Employee receives alert with customer profile and auto-order



**Sarah Rey** has arrived!

Customer for 5 years

Pref. Payment -5892 (Visa)

### Customer Order:

**Hamburger and Fries** \$5.63  
**Payment** **Confirmed**

## Step 4

Employee greets and provides Customer order. Receipt is sent.





# BOOK SIGNING + Q&A

Immediately after presentation

Today 5:00 – 5:45 pm

GTC Conference Bookstore

