


# Case Study - Multi-modal Biometric Authentication



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# Wells Fargo

- \$1.7 trillion in assets
- 70+ MM customers
- 24+ MM online banking customers
- 14+ MM mobile customers
- Ranks fourth in assets among U.S. banks
- World's most valuable bank by market capitalization

# Our Background in Biometrics

- 2007 internal password resets
- 2009 internal testing with iPhone
- 2010 internal testing with 700 employees
- 2013 Voice Wire implementation
- 2014 iPhone customer pilot

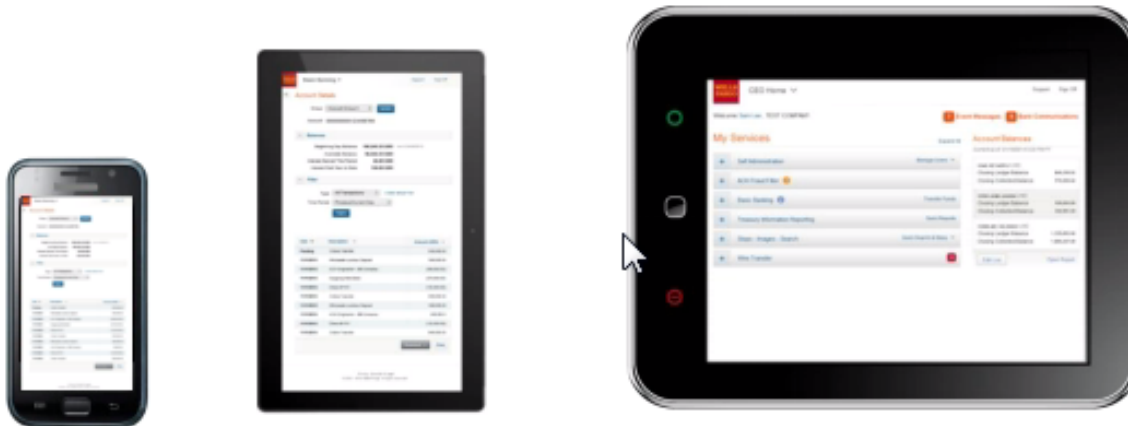


# Our General Approach

- Biometrics should be optional
- False reject rate must be comparable to token/password error rate
- Biometrics should not require special equipment

# Biometrics and Mobile Banking

- Complex passwords are difficult to type
- People expect frictionless experiences
- Sensors make it easier
- Tokens and mobile don't mix
- No cross channel issues







# Biometrics and Mobile Banking



# Comparing Biometric Modalities

## Voice

- Noise
- Silly phrases
- Liveness

## Face

- Lighting
- “Selfie”
- Liveness

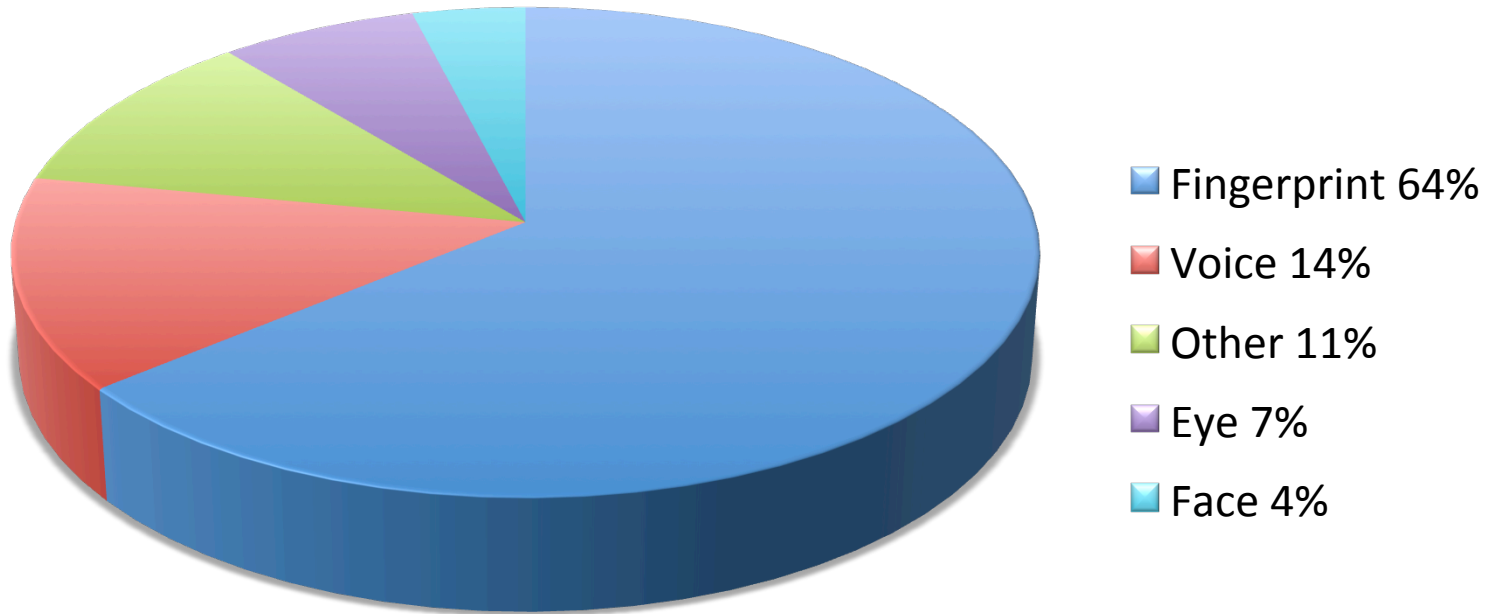
## Fingerprint

- Popular with users
- Hardware limitations
- No score, just “yes/no”

## Eye Vein

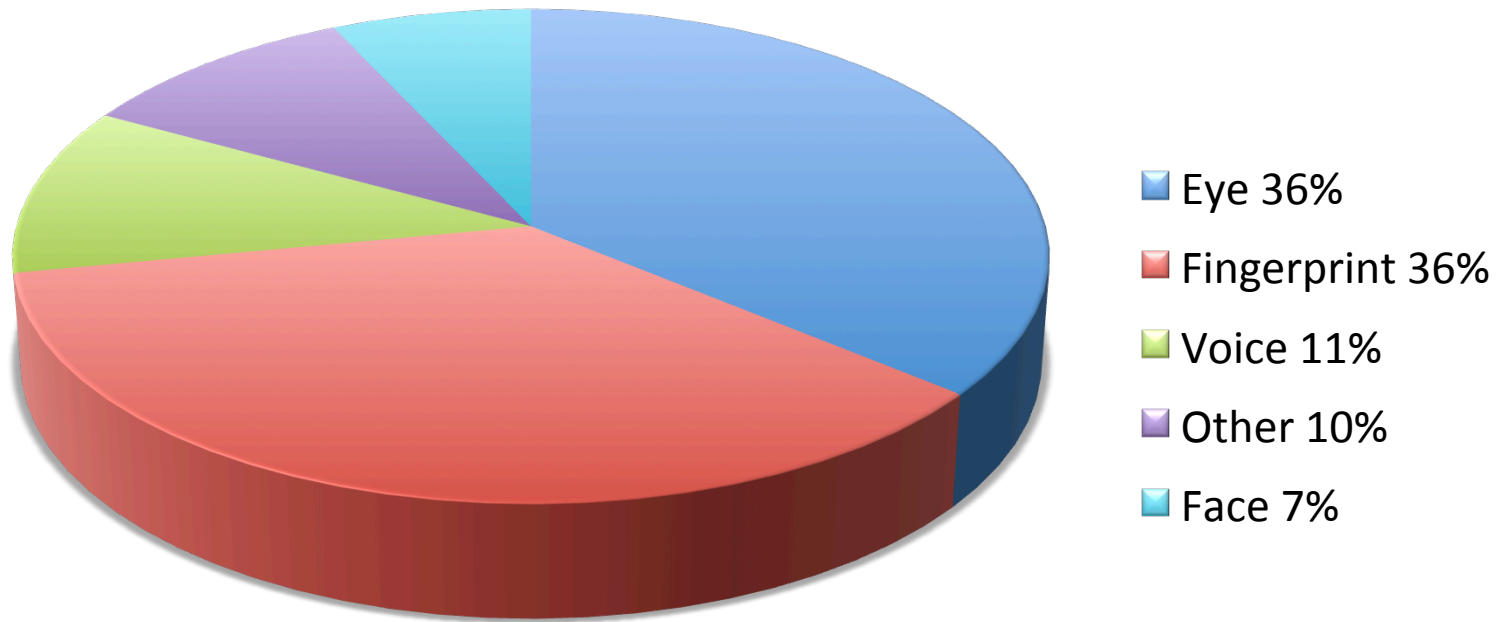
- Awkward
- Glasses
- Lighting

# Biometric Survey - Usability



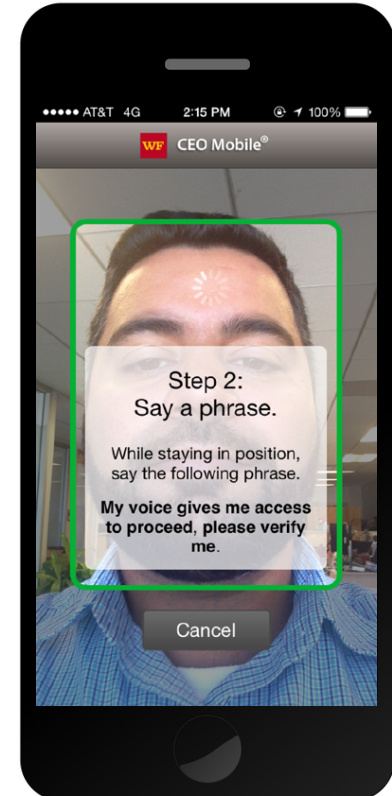


# Biometric Survey - Security



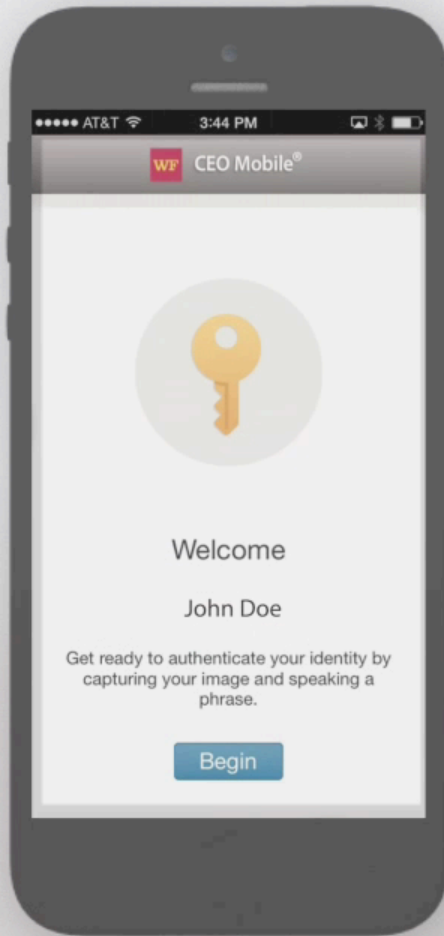
# Multi-modal Solution

- Partnered with SpeechPro
- Facial verification
- Dynamic voice passphrase verification
- Facial liveness detection
- Voice liveness detection
- First bank to deploy multi-modal, fused biometric authentication



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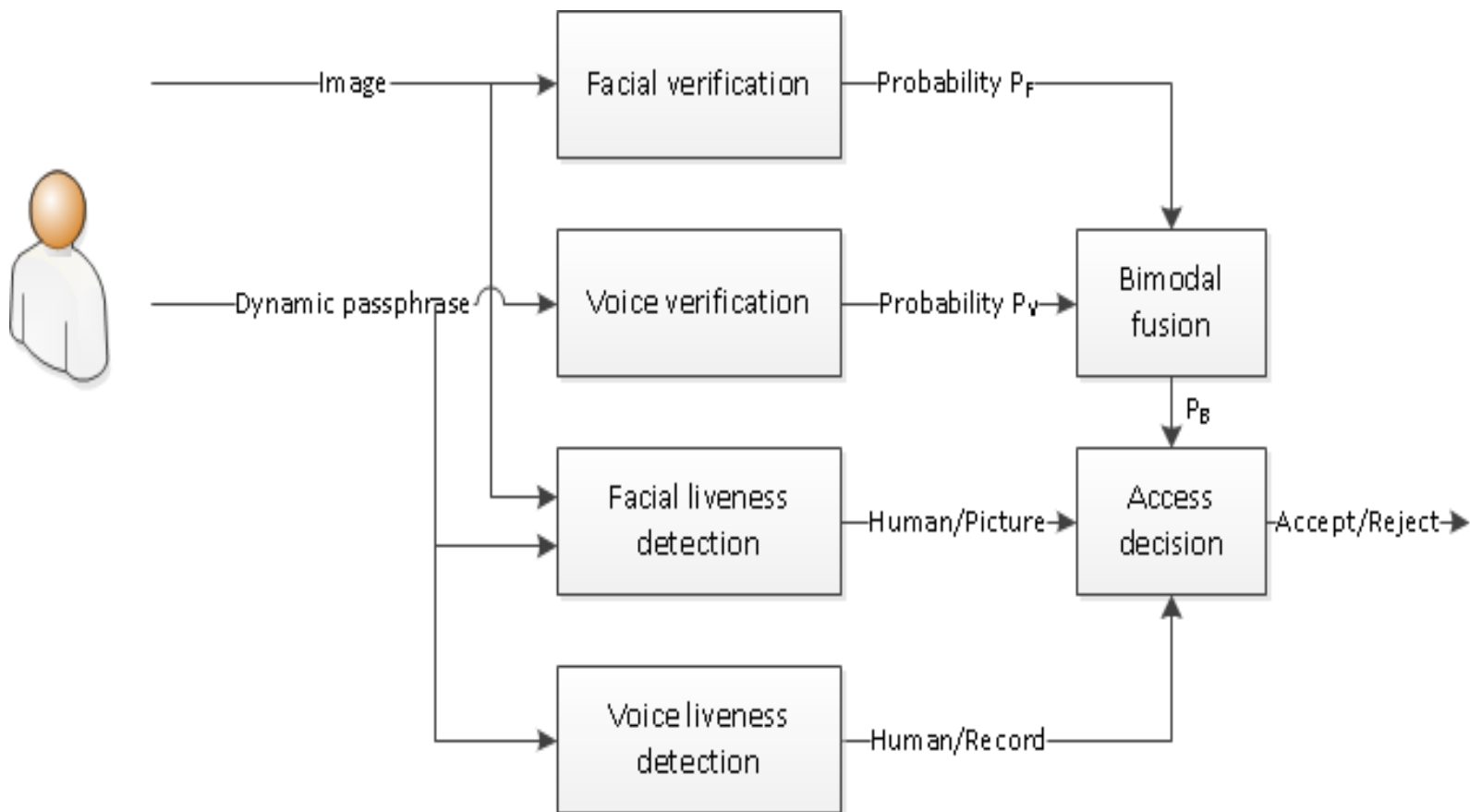
# CEO Mobile



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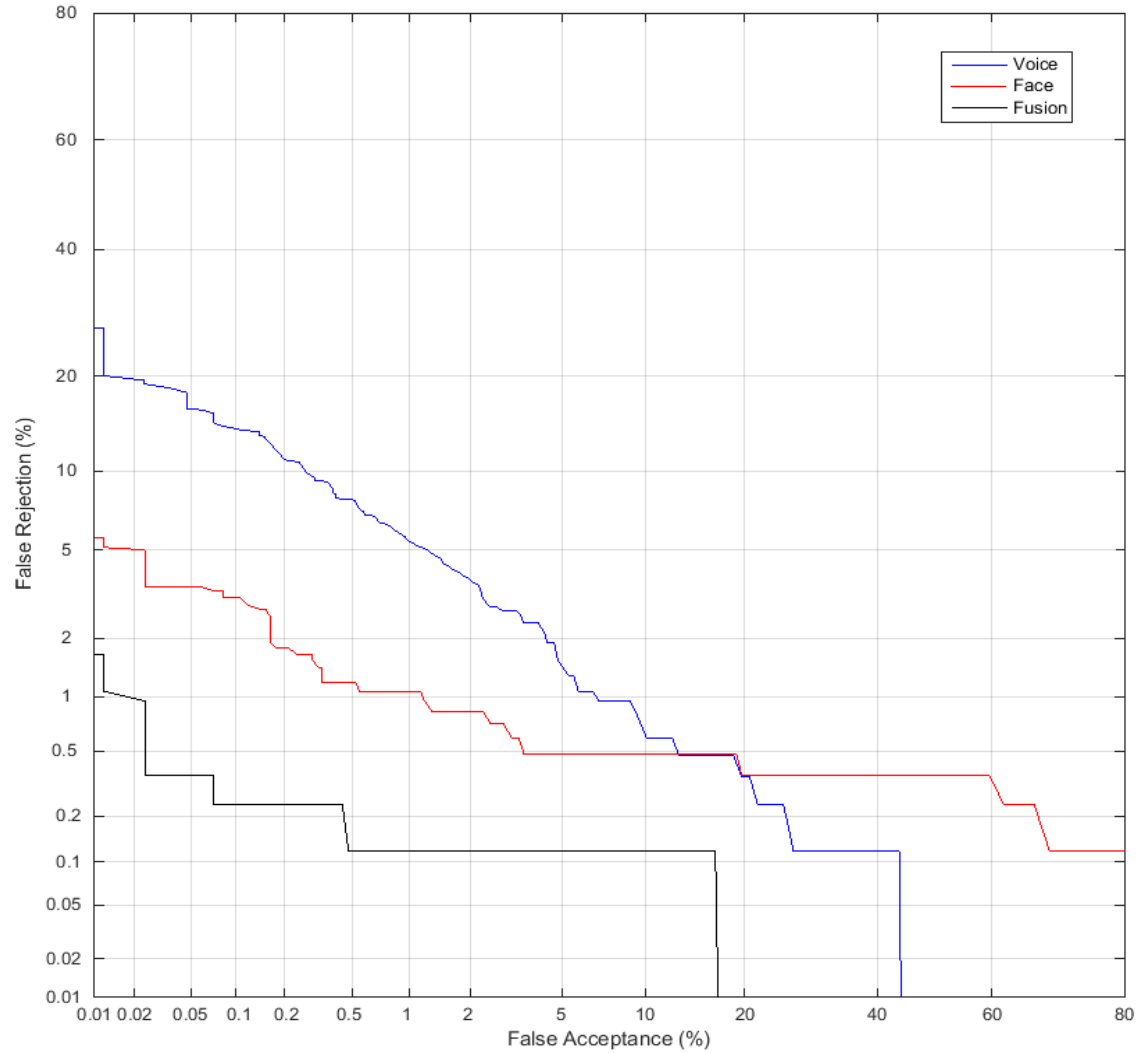
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# How it works





# Performance



# Pilot Feedback

- Most customers thought that Biometrics was an easier and more consistent sign on experience
- Most thought it was more secure than carrying a token which can be lost
- Users got better with practice
- Face was preferred over voice, which is seen as awkward, and hard to use in public settings





# Next Steps

- UX and technology enhancements
- Production release late 2015
- Template storage and match on device
- Test other modalities

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# Questions

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