



CRATER DOG  
TECHNOLOGIES™

# The Wearable Identity System™

*A Detailed Look*

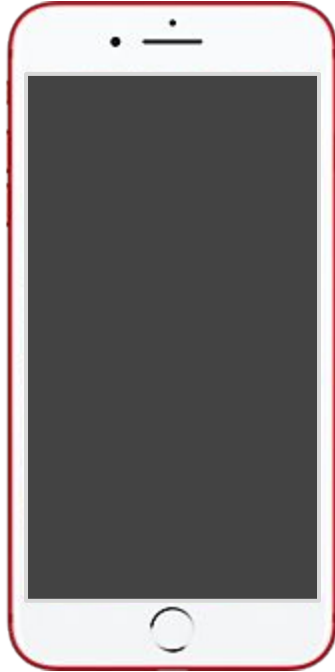
## ◆ Objectives ◆

1. Look in more detail at the patented **Wearable Identity System™**.
2. Walk through some typical scenarios that the system enables.
3. Better understand what is going on "under the hood".

# The "Actors"

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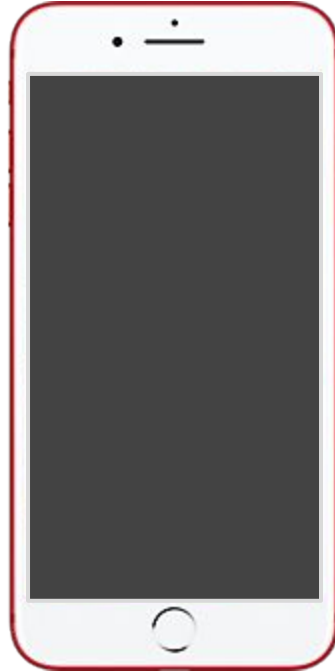
- a mobile device



# The "Actors"

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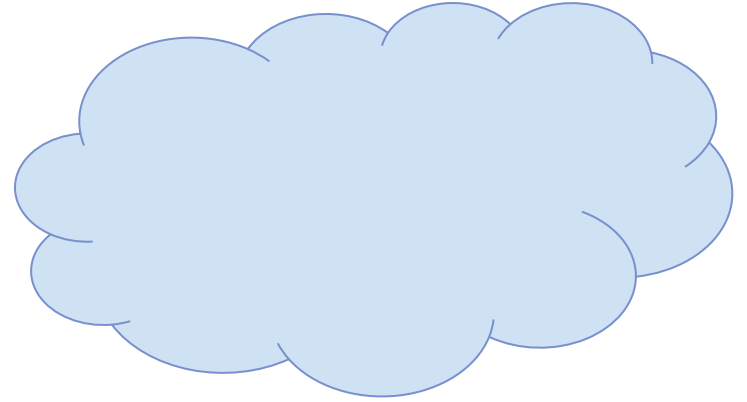
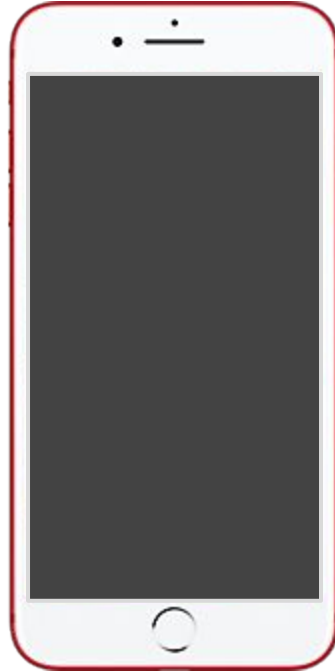
- a mobile device
- a wearable device



# The "Actors"

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- a mobile device
- a wearable device
- the cloud



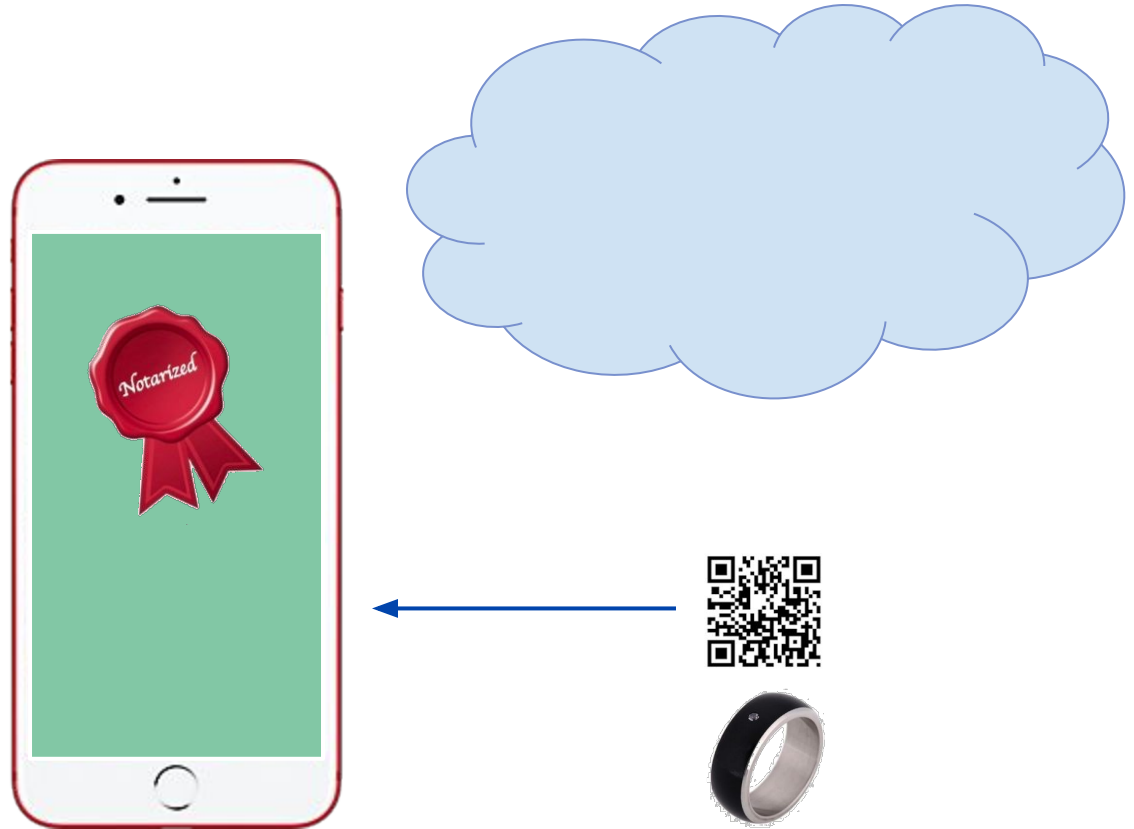
## ◆ A Play in Four Acts ◆

Let's walk through what is happening on these devices for the following scenarios...

- pairing the mobile and wearable devices
- unlocking the mobile device
- notarizing a financial transaction
- refreshing the notary key

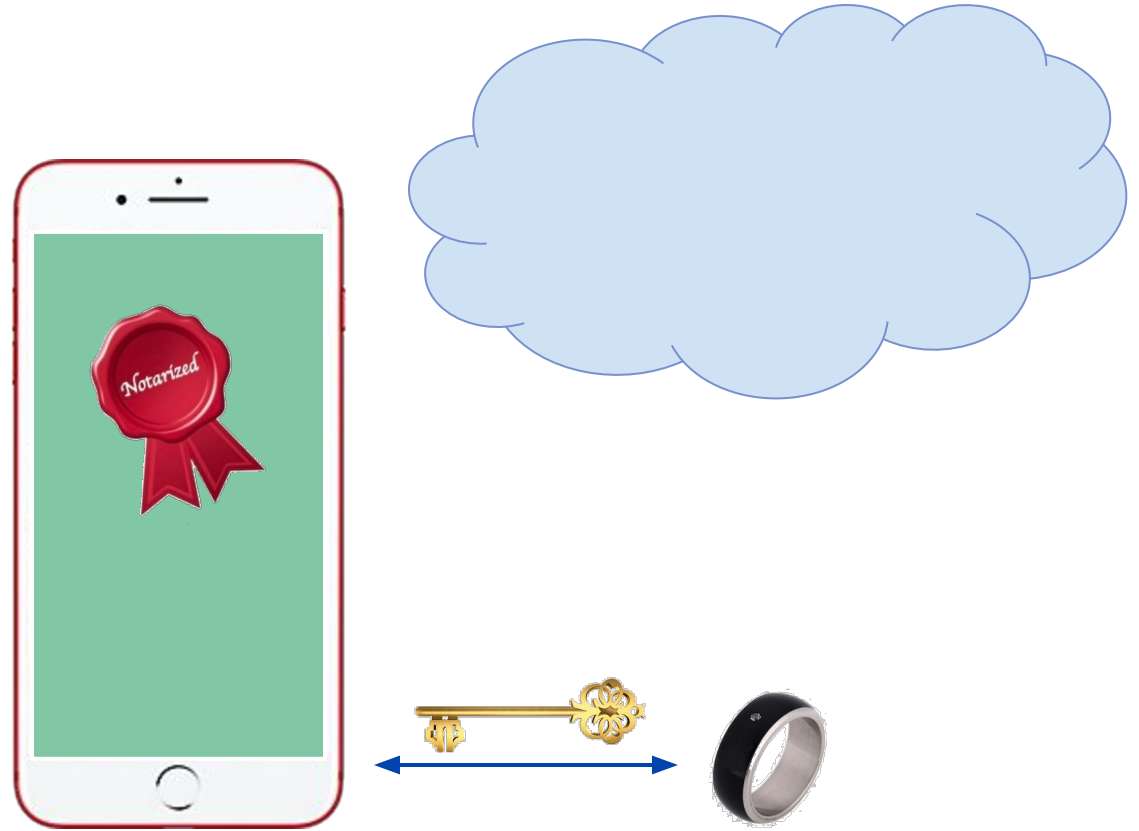
# Pairing the Devices

1. Scan the wearable's QR code



# Pairing the Devices

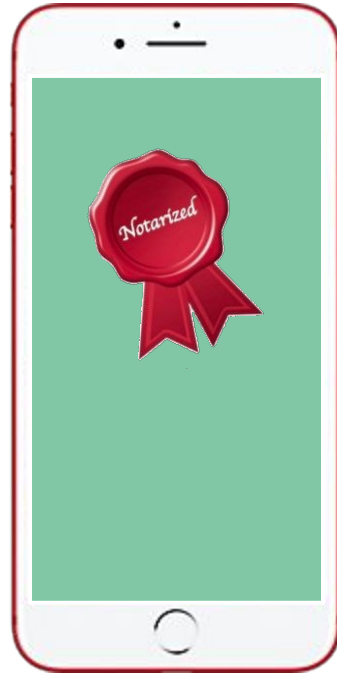
1. Scan the wearable's QR code
2. Generate a private notary key





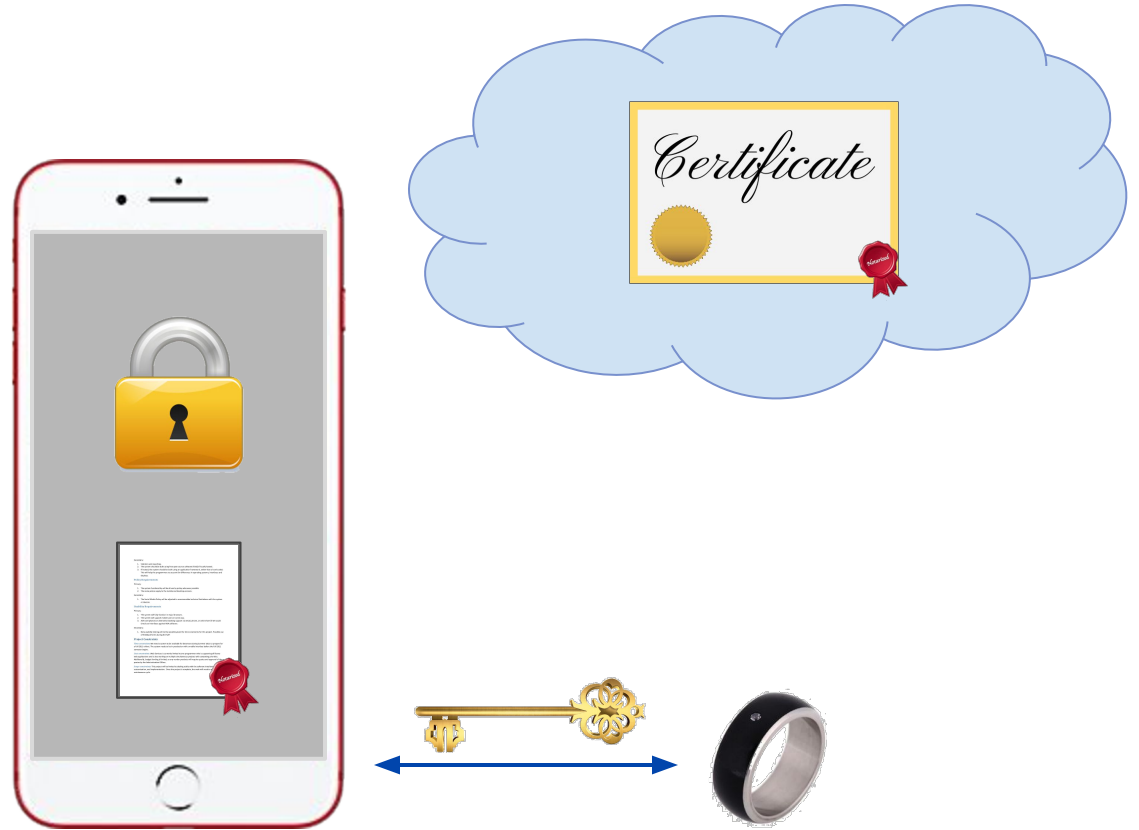
# Pairing the Devices

1. Scan the wearable's QR code
2. Generate a private notary key
3. Publish the corresponding public certificate



# Unlocking a Device

## 1. Notarize a login request



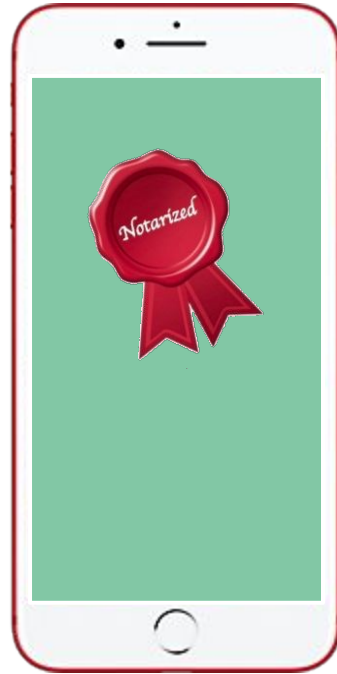
# Unlocking a Device

1. Notarize a login request
2. Validate the notary seal



# Unlocking a Device

1. Notarize a login request
2. Validate the notary seal
3. **Unlock the mobile device**



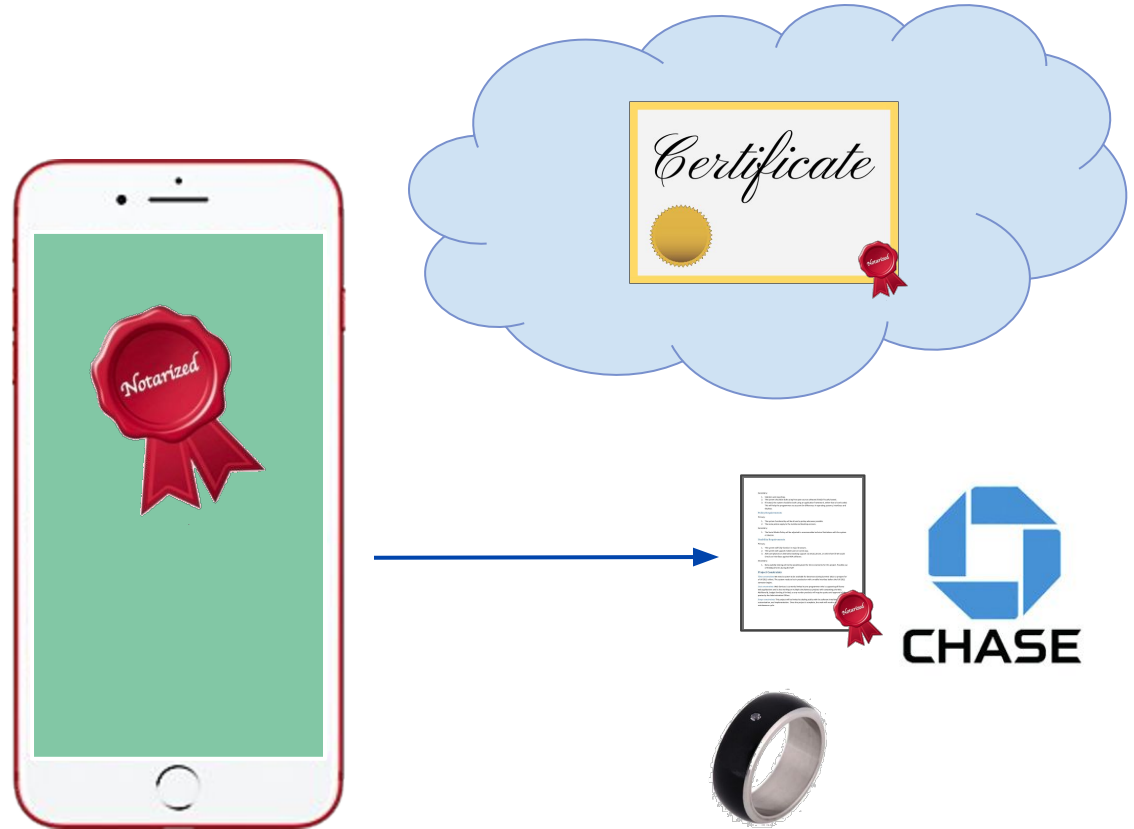
# Financial Transaction

1. Notarize a financial transaction



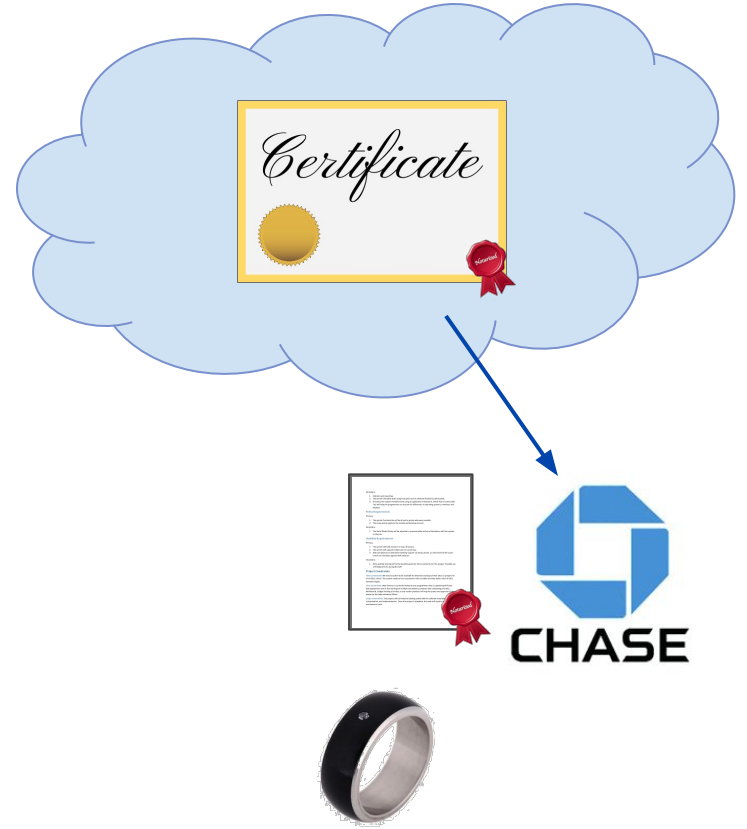
# Financial Transaction

1. Notarize a financial transaction
2. Send the transaction to the bank



# Financial Transaction

1. Notarize a financial transaction
2. Send the transaction to the bank
3. **Validate the notary seal**



# Financial Transaction

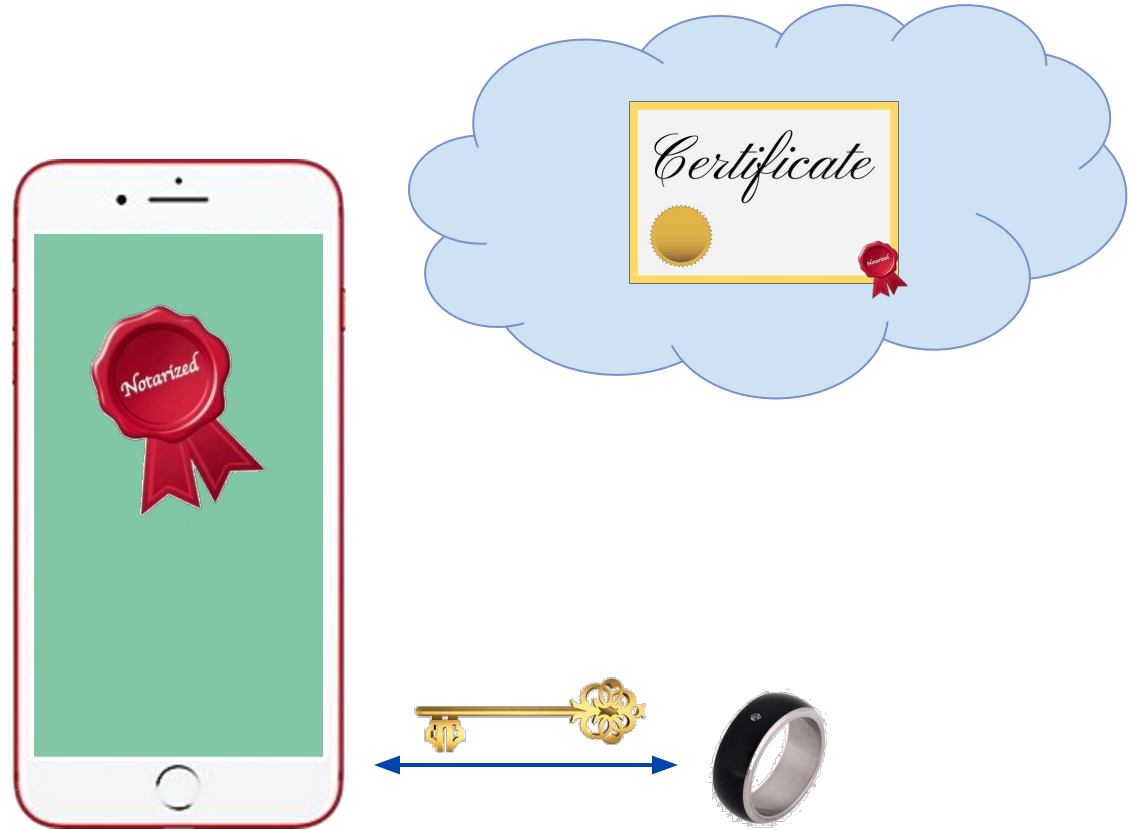
1. Notarize a financial transaction
2. Send the transaction to the bank
3. Validate the notary seal
4. Approve the transaction





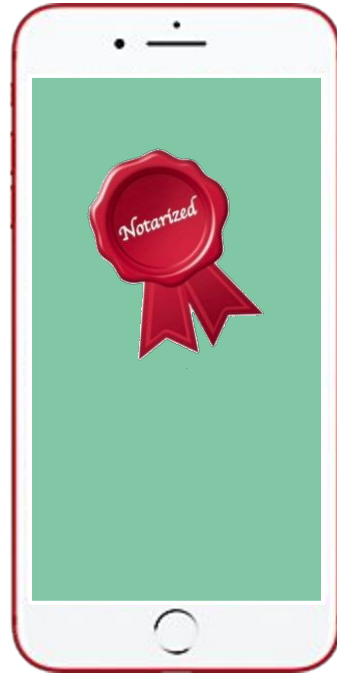
# Refresh Notary Key

1. Generate a new private notary key



# Refresh Notary Key

1. Generate a new private notary key
2. Publish the new public certificate

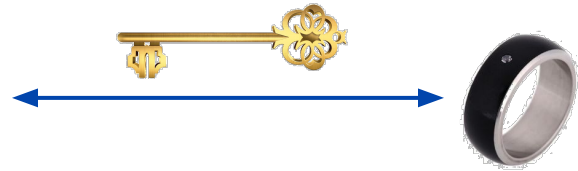


# The "Secret Sauce"

- US Patent 9,853,813



How does the notarization work?



# The "Secret Sauce"

- mobile key



Generate a random mobile key.

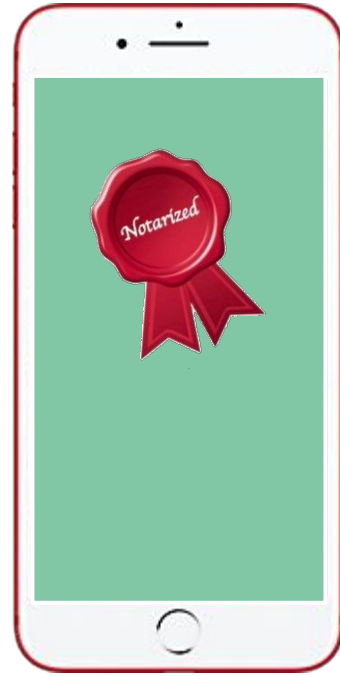
mobile key

0 0 1 0 ... 1 0



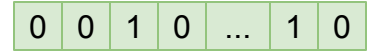
# The "Secret Sauce"

- mobile key



Pass the key to the wearable.

mobile key



mobile key



# The "Secret Sauce"

- mobile key
- notary key



Generate a private notary key.

mobile key

|   |   |   |   |     |   |   |
|---|---|---|---|-----|---|---|
| 0 | 0 | 1 | 0 | ... | 1 | 0 |
|---|---|---|---|-----|---|---|

notary key

|   |   |   |   |     |   |   |
|---|---|---|---|-----|---|---|
| 1 | 0 | 0 | 1 | ... | 1 | 1 |
|---|---|---|---|-----|---|---|

mobile key

|   |   |   |   |     |   |   |
|---|---|---|---|-----|---|---|
| 0 | 0 | 1 | 0 | ... | 1 | 0 |
|---|---|---|---|-----|---|---|



# The "Secret Sauce"

- mobile key
- notary key
- wearable key



mobile key

0 0 1 0 ... 1 0

Derive the wearable key.

0 0 1 0 ... 1 0

XOR

1 0 0 1 ... 1 1



1 0 1 1 ... 0 1

wearable key



# The "Secret Sauce"

- mobile key
- wearable key



mobile key

0 0 1 0 ... 1 0

Save only the wearable key.



wearable key

1 0 1 1 ... 0 1



# The "Secret Sauce"

- mobile key



Initiate a notarization request.

mobile key



mobile key



wearable key



# The "Secret Sauce"

- mobile key
- wearable key



mobile key

0 0 1 0 ... 1 0

Load the saved wearable key.

mobile key

0 0 1 0 ... 1 0

wearable key

1 0 1 1 ... 0 1



wearable key

1 0 1 1 ... 0 1

# The "Secret Sauce"

- mobile key
- wearable key
- **notary key**



mobile key

0 0 1 0 ... 1 0

Derive the private notary key.

0 0 1 0 ... 1 0

XOR

1 0 1 1 ... 0 1



1 0 0 1 ... 1 1

notary key



wearable key

1 0 1 1 ... 0 1

# The "Secret Sauce"

- mobile key
- wearable key
- notary key
- **notary seal**



mobile key

0 0 1 0 ... 1 0

Generate the public notary seal.

notary seal

0 1 0 0 ... 1 0



1 0 0 1 ... 1 1

notary key



wearable key

1 0 1 1 ... 0 1

# The "Secret Sauce"

- mobile key
- wearable key
- **notary key**
- notary seal



Return the notary seal.

notary seal



mobile key



wearable key



# The "Secret Sauce"

- mobile key
- wearable key



Ready for the next request.

mobile key

0 0 1 0 ... 1 0



wearable key

1 0 1 1 ... 0 1

## ◆ In Summary ◆

The patented **Wearable Identity System™** provides a simple and secure way to prove your identity using your mobile device by digitally notarizing any document enabling the:

- **automatic** unlocking of your computer or mobile device
- execution of **fraud-proof** financial transactions with merchants or banks

## ◆ More Information ◆

patent: <https://patents.google.com/patent/US9853813>

website: <https://craterdog.com>

eMail: [craterdog@gmail.com](mailto:craterdog@gmail.com)

