Slide 1

Digital Identity in LINE

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Head of Cyber Security Dept.
LINE

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Slide 3

LINE 2011

June, 23

LINE

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Slide 2

Naohisa ICHIHARA / 市原尚久
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サイバーセキュリティ室 室長

- Late 90s~2007:
    - Developer (Smart Card OS & Security, CC EAL5+, ..)
    - Juki-Card, e-Passport, My Number Card

- 2005〜
    - NFC, Mobile/Web Security, FIDO related Projects
    - Major MNO's Consumer Identity Security

- 2015〜 : LINE SECURITY
    - LINE's Account Spec/Security
    - Trust & Safety Team in LINE and LINE Pay
    - FIDO Alliance Board member, ..

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Global Messaging App "LINE"

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Today's Talk

1: New era of Data & Digital Identity

2: Case of LINE
(1) Account Hijack
(2) Spam, Abuse & Fraud
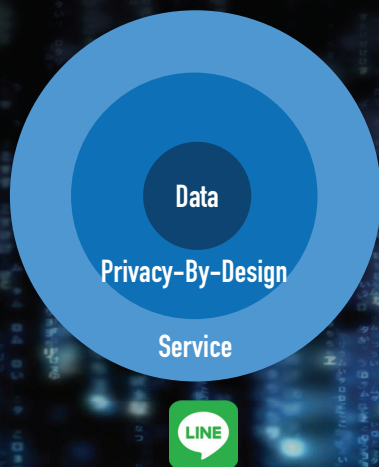(3) e-KYC
(4) FIDO in LINE Pay
(5) Fact Check Service

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Mobility
Autonomic
AI
Big Data

New Era of DATA

IoT
Robotics
Virtualization
Cloud

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1: New era of Data & Digital Identity

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New EX
Compliance
Ad
Privacy
Data Bank
DATA
Ethics
Scoring
Discrimination

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Slide 9

Data Governance in LINE

- Data
- Privacy-By-Design
- Service

LINE

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Slide 11

Digital Identity

NIST SP 800-63-3 "Digital Identity Guidelines"

– Enrollment and Identity Proofing

Applicant

1 Resolution — Core attributes and evidence collected

Individual uniquely distinguished among a given population or context

2 Validation — Evidence validated

Authenticity, validity, and accuracy of identity information determined and related to a real-life subject

3 Verification — Evidence verified

Linkage between claimed identity and real-life existence of subject presenting evidence confirmed and established

Subscriber

"The Identity Proofing User Journey"

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Digital Identity

NIST SP 800-63-3 "Digital Identity Guidelines"

- – Enrollment and Identity Proofing
- – Authentication and Lifecycle Management
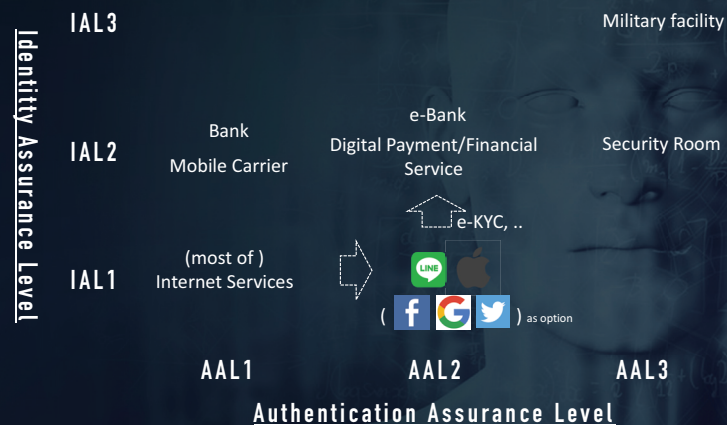- – Federation and Assertions

IAL: Identity Assurance Level (1~3)
AAL: Authentication Assurance Level (1~3)
FAL: Federation Assurance Level (1~3)

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Digital Identity

Identity Assurance Level

IAL3 — Military facility

IAL2 — Bank / Mobile Carrier — e-Bank / Digital Payment/Financial Service — Security Room

e-KYC, ..

IAL1 — (most of) Internet Services

(f G 🐦) as option

AAL1   AAL2   AAL3

Authentication Assurance Level

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Digital Identity

Captcha
Biometrics w/ AI
e-KYC
Voice Recognition
Human Recognition
Scoring
:

Account Hijack
Fake Account
Captcha Attack
e-KYC Abuse
Deep Fake
SMS Hijacking
Digital Money Laundering
Generative Adversary Network
:

Privacy
Mass Surveillance
Discrimination
Human Rights Violations
:

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2: Case of LINE

(1) Account Hijack in LINE
(2) Spam, Abuse & Fraud in LINE
(3) e-KYC in LINE Pay/Credit
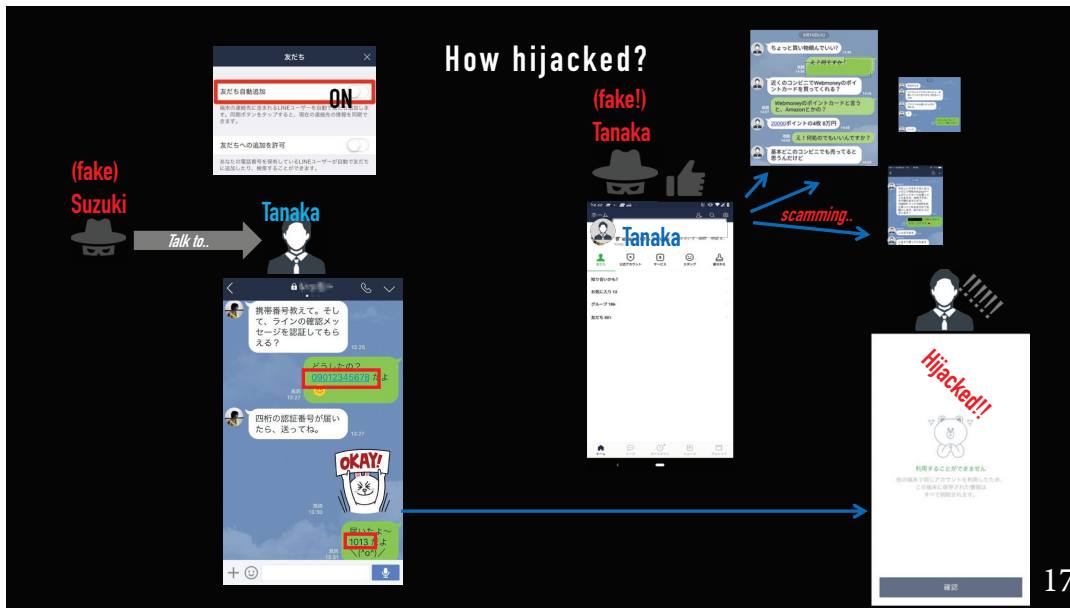(4) FIDO in LINE Pay
(5) Fact Check Service in LINE Taiwan

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(1) Account Hijack in LINE

Direct Hijack
Phishing
Social Engineering

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Slide 16

Account Model of LINE

<<Identity Attribute>>

*Phone
*Password
Email
FB

LINE

1   0..*

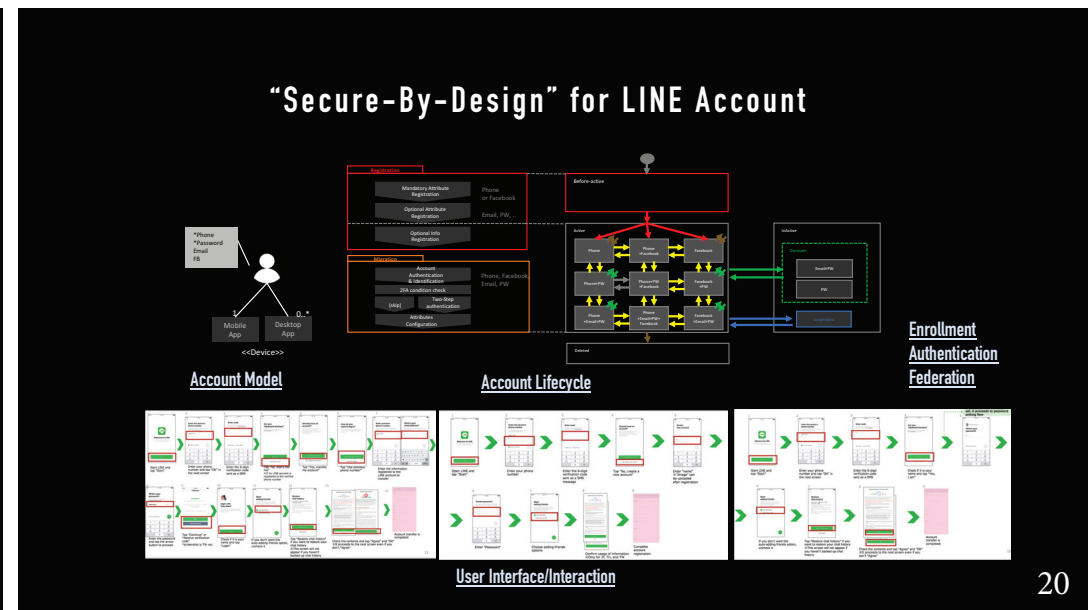Mobile App   Desktop App

<<Device>>

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How hijacked?

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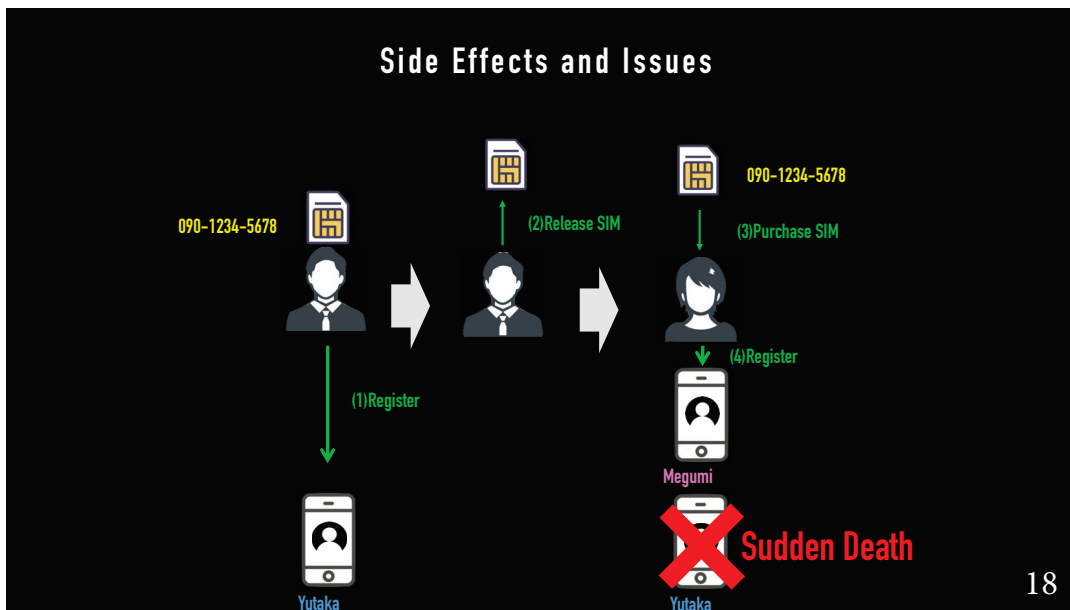**Side Effects and Issues**

Account Recovery Issue

Forget Password
Lost Device
Stole Device
Initialized OS
Doesn't have registered SIM
Not registered SIM
Not registered Email, ..

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Side Effects and Issues

090-1234-5678

(2)Release SIM

090-1234-5678

(3)Purchase SIM

(1)Register

(4)Register

Megumi

Yutaka

Sudden Death

Yutaka

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"Secure-By-Design" for LINE Account

Account Model

Account Lifecycle

Enrollment
Authentication
Federation

User Interface/Interaction

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"Secure-By-Design" for LINE Account
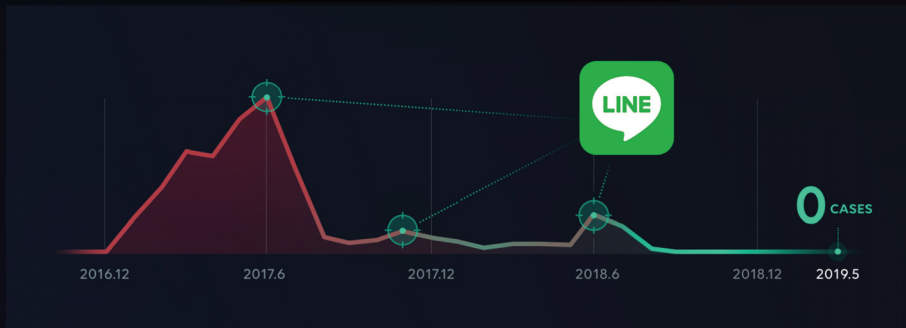
1. New Migration Spec

☺ Anti Account Hijack (Direct hijack)   ☺ Recoverable after Dead Lock   ☺ Anti Reverse Brute-Force Attack

2. Machine Learning (ML)

Analysis (of Abuser's behavior) → Develop Block Rule → Bypassed → Analysis → Develop .. ☹

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(2) SPAM, Abuse and Fraud

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Slide 22

ML x Security (1)
against Social engineered
Account Hijack

0 CASES

2016.12   2017.6   2017.12   2018.6   2018.12   **2019.5**

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Spam in LINE
in Talk, OA, Timeline, Open Chat, Profile, Note, …

Machine Learning (ML)

Analysis (of Spam Contents) → Develop Block Rule → Bypassed → Analysis → Develop .. ☹

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