



**MDES**  
Ministry of Digital Economy and Society



**ETDA**

**THAILAND**

# Public Key Infrastructure and Digital Identity Development

**THONGCHAI SANGSIRI**

Electronic transactions development agency (ETDA)

Ministry of digital economy and society

# THAILAND

## Current Status

- Population: 69.8M
- 13-digit ID at birth (1984)
- Smartcard Citizen ID (2004)
- Mobile Subscribers: 118.03M
- Thais spend 10Hr 36Min online in 2021
- Moved up sixteen places to 57th out of 193 countries, according to the 2020 edition of in the UN E-Government Survey

# Digital Laws Landscape

<b>PROMOTE &amp; FUNDING</b>	<p>Enhance the Competitiveness of Targeted Industries Act</p> <p>(Enhance the Competitiveness of Targeted Industries Funds)</p> <p>Digital Economy Act (DE Funds)</p>	<b>International Agreement</b>
<b>TRADE FACILITATION</b>	<p>Licensing Facilitation Act    Electronic Transactions Act    Digital Government Act</p>	
<b>DIGITAL INFRASTRUCTURE</b>	<p>Organization to Assign Radio Frequency and to Regulate Broadcasting and Telecommunication Services and NBTC Act</p> <p>OTT and Regulatory Guidelines</p>	
<b>DIGITAL PAYMENT</b>	<p>Payment System Act    Royal Decree on Digital Asset Businesses    Revenue Code Amendment Act</p>	
<b>SECURE ECOSYSTEM</b>	<p>Cyber Crime Act    Personal Data Protection Act    Cybersecurity Act</p>	
<b>CONSUMER &amp; BUSINESS TRUST</b>	<p>Online Consumer Protection    Online Disputes Resolution    Intellectual Property Act    Trade Secret Act    Anti Competition Act</p>	
<b>SOFT LAW</b>	<p>Standard and Self-Regulation</p>	

- Digitalization of Public Administration and Service Delivery Act
- (Draft) Royal Decree on the Supervision of Services Related to Digital Identity Proofing and Authentication System Subjected to Prior License
- (Draft) Royal Decree on the supervision of Digital Platform Services subjected to prior notification

# Current Development

- **PUBLIC KEY INFRASTRUCTURE**
- **DIGITAL IDENTITY**

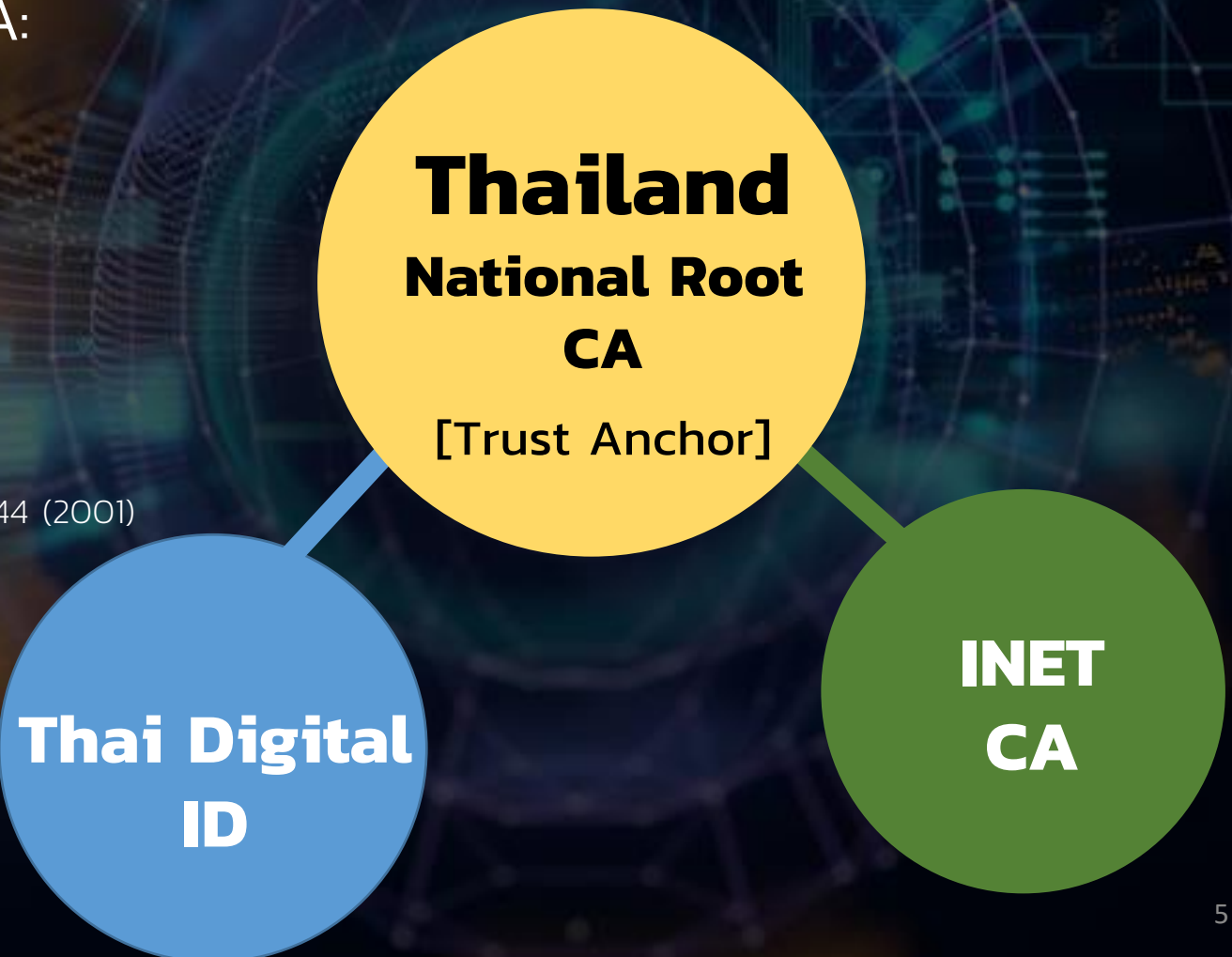
# PKI Framework

## Licensed CAs under Thailand NRCA:

1. Thai Digital ID (Private Sector CA)
2. INET CA (Private Sector CA)

## Requirements:

- Legal Requirement:
  - Legal entity in Thailand
  - Conform to Electronic Transactions Act B.E. 2544 (2001) section 27-29
- International Standard:
  - WebTrust for CAs
- Policy:
  - NRCA Certificate Policy



# PKI Application – National Single Window

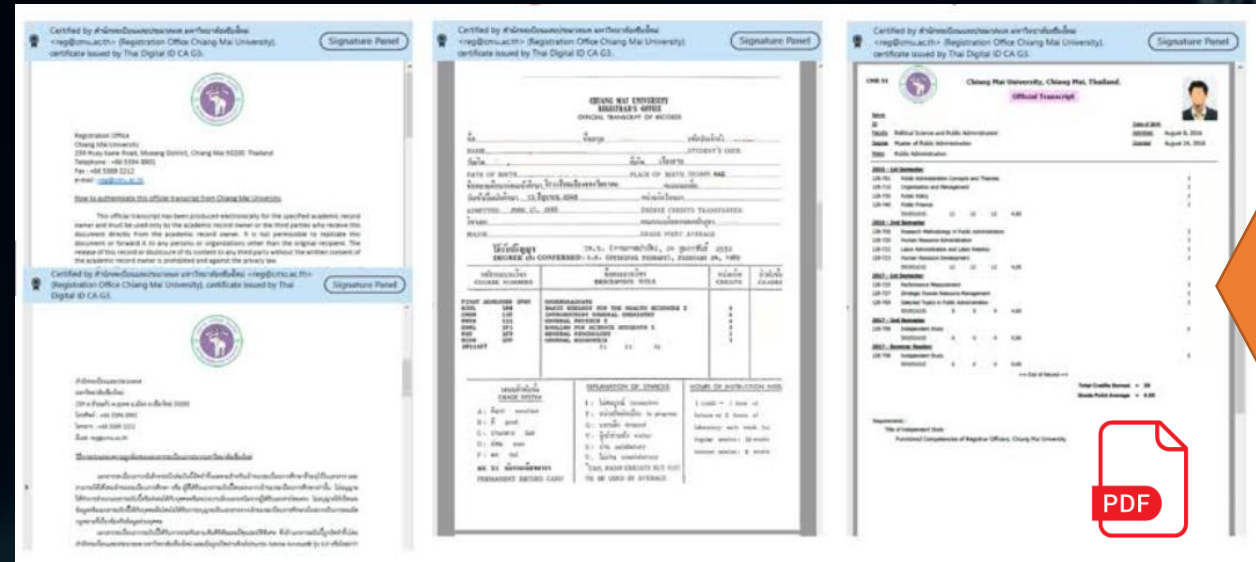


**N**ational Single Window, operated by the Custom Department, is the centralized data linkage between agencies involving in the import, export and logistics to strengthen the competitiveness on international trade.

**104M** transactions (import, export, and logistics transactions) through National Single Window in 2021 (95M transactions in 2020)

**8.9M** electronic Licenses and certificates issued in 2021 (7.8M Licenses in 2020)

# PKI Application – Digital Transcript



- A digital transcript is issued in PDF format.
- Digitally signing to ensure data integrity and original
- A digital transcript can be easily verified by Adobe Acrobat Reader.

- **39** Universities have joined the digital transcripts project.
- **>100K** digital transcripts issued in 2021
- **16** public and private organizations (e.g., the Thai Bankers' Association, the Federation of Thai Industries and the Thai Chamber of Commerce) have agreed to support members using digital transcripts for job applications.

# PKI Application – e-Tax Invoice

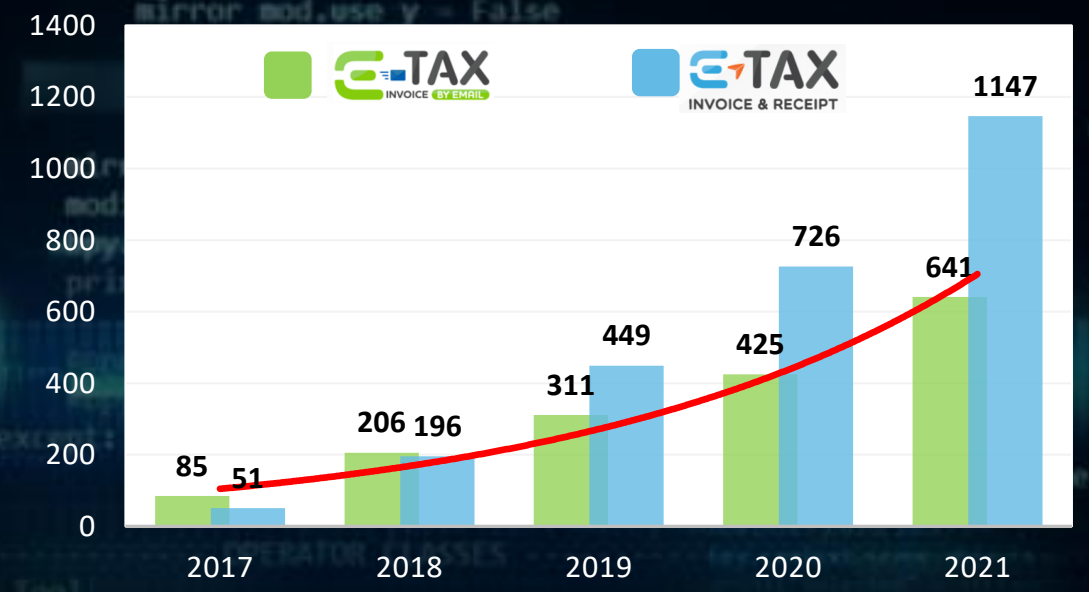
## – E-Tax Invoice by e-mail

- Invoices are delivered from sellers to Revenue department via emails
- **Timestamping** to prove the existence of invoices (*do not require a certificate for digital signature*)
- Only Companies with annual revenue less than 30 million THB

## – E-Tax Invoice & Receipt

- Invoices are delivered to Revenue department via:
  - 1) Host to Host via ebMS (ebXML format)
  - 2) Service providers
  - 3) Web browser
- **PKI digital signature** is applied (require a certificate issued by licensed CA)
- Applicable to every company

Number of companies





# Current Development

- **PUBLIC KEY INFRASTRUCTURE**
- **DIGITAL IDENTITY**

# Regulatory Measures Related to Digital Identity Development

**(Draft) Royal Decree on the Supervision of Services Related to Digital Identity Proofing and Authentication System Subjected to Prior License**

(Regulate and Ensure Trust in Digital ID Business)

**(Draft) Royal Decree on the supervision of Digital Platform Services subjected to prior notification**

(Regulate and Ensure Trust in Digital Platform Services)

**Digitalization of Public Administration and Services Delivery Act 2019**

(ID Authentication System for Accessing e-Services)

**Electronic Transactions Act (No.4) 2019**

(inc. Digital ID)

**Electronic Transactions Act 2000**

(Legal Certainty & Harmonization with International Rules  
inc. e-Signature, e-Doc, ...)

2021

**Cabinet Approval, July 2021**

Development of Digital ID through Face Verification Service

**(Draft) Digital ID Framework**

Digital ID Harmonization and Implementation Principles

**PromptPay Rollout 2017**

**National e-Payment Master Plan 2015**

**National Payment Message Standard 2015**

ISO 20022

**Intra-ASEAN Secure Transactions Framework 2014**

Secure Electronic Transactions and e-Authentication

2000

# Recommendation on ICT Standard for Electronic Transactions

No. 28/2021 Electronic Privacy Notices and Consent

No. 27/2021 Core Component Specification for Data Interoperability

No. 24/2021 Data Structure of Verifiable Credentials and Presentations

No. 23/2020 Electronic Signature Guideline

No. 22/2020 Message Standard for Government Receipt

No. 20/2021 Digital Identity – Authentication Requirements (Ver 2.0)

No. 19/2021 Digital Identity – Identity Proofing Requirements (Ver 2.0)

No. 18/2021 Digital Identity – Framework (Ver 2.0)

# Level of Assurance and Mechanisms

1. Assurance Levels and Risk Assessments

Assurance Level	Description
LoA1	Little or no confidence in the asserted identity's validity
LoA2	Some confidence in the asserted identity's validity
LoA3	High confidence in the asserted identity's validity
LoA4	Very high confidence in the asserted identity's validity

Source: ISO/IEC 29115: 2013

2. Identity Proofing and Verification

3. Authentication Mechanism

LoA	Registration		Authentication Mechanism					
	In-Person	Remote	Memorized Secret Token	Single-factor One-Time Password Token	Single-factor Cryptographic Token	Multi-factor Software Cryptographic Token	Multi-factor One-Time Password Token	Multi-factor Hardware Cryptographic Token
LoA1	N/A	email	✓					
LoA2	N/A	email and mobile phone	✓	✓	✓			
LoA3	corroborating information	corroborating information				✓		
LoA4	corroborating information	N/A					✓	✓



**Intra - ASEAN**  
Secure Transactions Framework  
Final Report | July 2014

# Identity Assurance Level: IAL

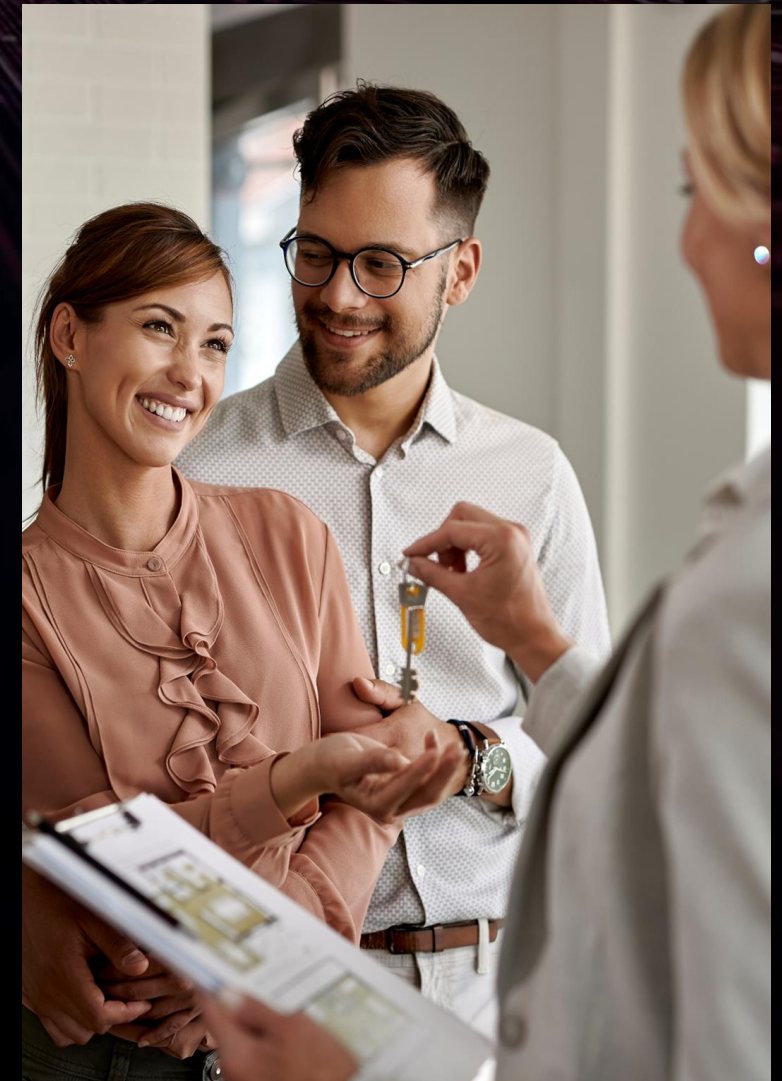
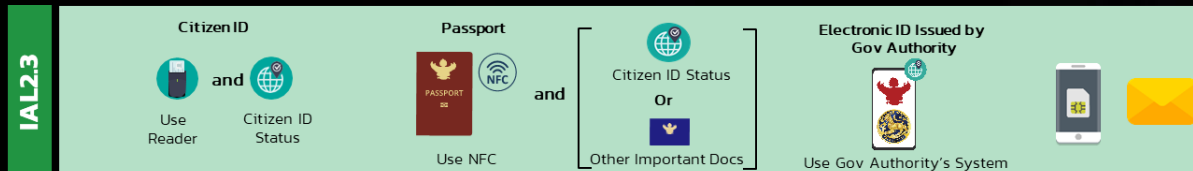
ETDA Recommendation on ICT Standard for Electronic Transactions No. 19/2021 Digital Identity – Identity Proofing Requirements Ver.2.0

Verification of Identity-related Information				Verification of Identity Ownership	
IAL2	IAL3	<p><b>Citizen ID</b></p> <p>Use Reader and Citizen ID Status and Verification with Other Gov Authority's Data Source</p>	<p><b>Electronic Citizen ID</b></p> <p>DOPA's Verification System and Verification with Other Gov Authority's Data Source</p>	<p><b>Verify Contact Channels</b></p> <p>phone, email, etc</p>	<p>Face-to-face <u>Only</u></p> <p>or</p> <p>Biometric Comparison with</p> <ul style="list-style-type: none"> <li>Biometric data from chip or trusted data from identity evidence</li> <li>Biometric system of gov authority</li> </ul>
	IAL2.3	<p><b>Citizen ID</b></p> <p>Use Reader and Citizen ID Status</p>	<p><b>Passport</b></p> <p>Use NFC and Citizen ID Status Or Other Important Docs</p>	<p><b>Electronic ID Issued by Gov Authority</b></p> <p>Use Gov Authority's System</p>	<p>Face-to-face or Non-face-to-face</p> <p>or</p> <p>Biometric Comparison with</p> <ul style="list-style-type: none"> <li>Biometric data from chip or trusted data from identity evidence</li> <li>Biometric system of gov authority</li> </ul>
	IAL2.2	<p>Use Reader Or Previous Verification by IDP at IAL2.3 and Citizen ID Status</p>	<p><b>Passport</b></p> <p>Use NFC and Citizen ID Status Or Other Important Docs</p>	<p><b>Electronic ID Issued by Gov Authority</b></p> <p>User Gov Authority's System</p>	<p>Face-to-face or Non-face-to-face</p> <p>or</p> <p>Visual Comparison with</p> <ul style="list-style-type: none"> <li>Facial picture from chip of identity evidence</li> <li>Facial picture from IdP at IAL2.3</li> </ul>
	IAL2.1	<p>Use Reader Or Previous Verification by IDP at IAL2.3</p>	<p><b>Passport</b></p> <p>Use NFC</p>		<p>Face-to-face or Non-face-to-face</p> <p>or</p> <p>Visual Comparison with</p> <ul style="list-style-type: none"> <li>Facial picture from chip of identity evidence</li> <li>Facial picture from IdP at IAL2.3</li> </ul>
IAL1	May collect identity information <b>without</b> verifying identity nor identity ownership				

# Examples of Identity Assurance Level

## Assurance Level 2.3 Usage in Financial Sector

- ✓ Opening bank account via online mean
- ✓ Performing e-KYC function
- ✓ Verifying Digital ID in accordance with IAL recommendations
- ✓ Fulfilling KYC and e-KYC requirements



**THANK YOU**