



Conference

REMOTE SIGNING APPLIED IN HEALTHCARE AND EDUCATION IN VIETNAM

Ha Long, 10/2024





NGUYEN THANH PHONG

Product Development Manager

7 YEARS

Experience in researching, developing, and deploying digital solutions, data encryption on public key infrastructure at VNPT.

Master's degree in
Business Administration

20 YEARS

Experience in developing of software solutions in banking, finance, and enterprise management sectors.

Master's degree in
Information Technology



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Impacts and lessons

1.1 INTRODUCTION TO VNPT GROUP

Introduction to VNPT

Introduction to VNPT CA

Introduction to VNPT SmartCA





Vietnam Posts and Telecommunications Group

Owning a modern and nationwide telecommunications infrastructure, providing high-quality, convenient, and user-friendly products and services for everyone.

Vietnam's leading telecommunications, information technology, and media enterprise with over 70 years of construction and development.

In progress of transformation into a Digital Service Provider (DSP), focusing on developing innovative and breakthrough ICT products, services, and solutions.



The capability of VNPT

10

Top 10 Digital transformation
platforms services and IT
Solutions

5

Top 5 Cybersecurity
Enterprises

63/63

IT centers in 63/63
provinces/cities

100+

100+ experienced AI
experts

5000+

5000+ talented IT
engineers

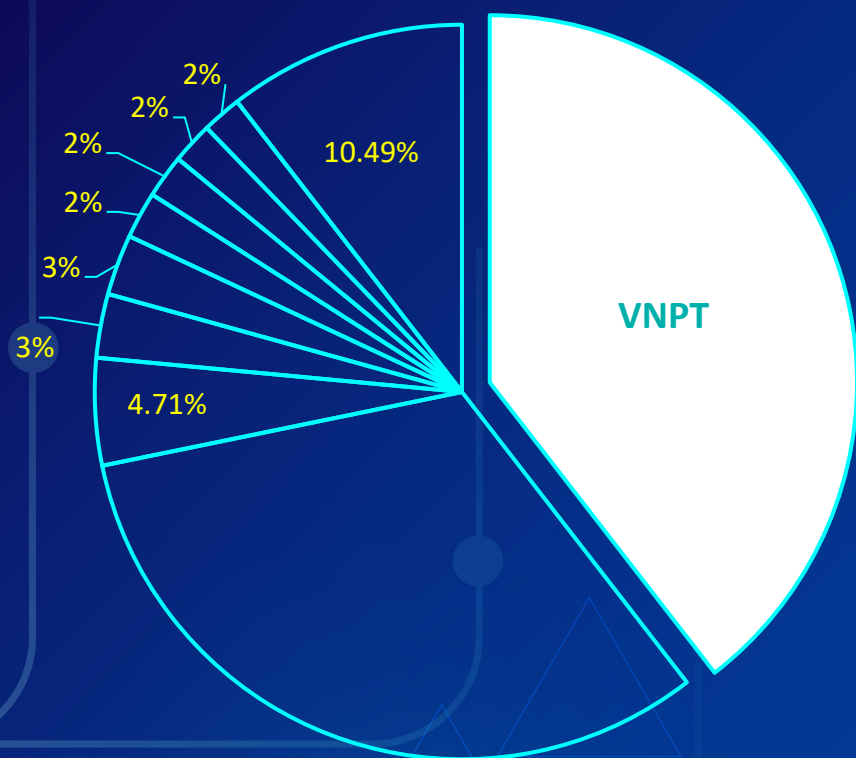


1.2 INTRODUCTION TO VNPT-CA



1.2 INTRODUCTION TO VNPT-CA

VNPT CA's market share



25

25 companies licensed to provide Remote Signing services

10

Enterprises have implemented Digital Sign

> 450,000

Active digital certificate

> 1,000,000

Active digital certificate

VNPT CA
An toàn từng giao dịch



VNPT SmartCA
An toàn - Linh hoạt - Không giới hạn

VNPT SMARTCA REMOTE SIGNING SERVICE

Overview (1/10)

VNPT SmartCA is the first digital signature service in Vietnam that was licensed by the Ministry of Information and Communications in October 2021



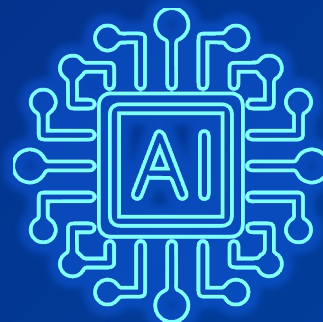
VNPT SMARTCA REMOTE SIGNING SERVICE

Overview (2/10)



Complies with Standards

- Electronic Transactions Law
- Decree 130/2018/ND-CP
- Circular 16/2019/TT-BTTTT
- European standard on Electronic Identification, Authentication and Trust Services (eIDAS)



4.0 Technology

The first CA unit to implement eKYC in customer identification process



Technology Mastery

100% of products are researched and developed by VNPT engineers

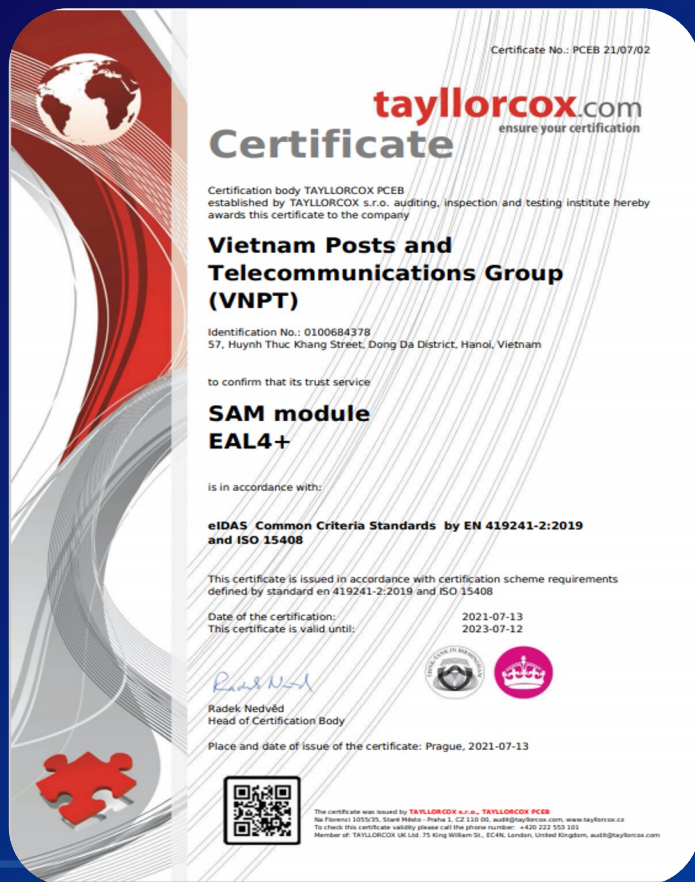


Advance security

- Ensures the system's security level reaches level
- Implements solutions to ensure user safety

VNPT SMARTCA REMOTE SIGNING SERVICE

Overview (3/10)



MASTER THE CORE TECHNOLOGY

VNPT is the only service provider in Vietnam that has self-developed the SAM Module and has been audited and certified by an international auditor to meet the ETSI EN 419 241-2 standard (Profile for QSCD for Server Signing).

VNPT SMARTCA REMOTE SIGNING SERVICE

Overview (4/10)



Wide coverage

Integrate with public service portals, education, healthcare and many other digital transaction systems



Flexible scalability

Scale horizontally as additional processing clusters are added to increase service capacity



International standard cloud computing environment

Focus on cloud computing environment in IDC meets Tier 3 standards



Diverse integration

- Digital signatures on web applications via API integration and mobile applications with SDK on iOS, Android

VNPT SMARTCA REMOTE SIGNING SERVICE

Overview (5/10)

EKYC INTRODUCTION

Identify and extract document information

Recognize and extract (OCR) most valid identification documents according to current Vietnamese law such as:

- Old and new citizen ID cards
- Citizen ID, citizen ID near chip
- Military ID card
- Passport (Vietnam, foreigner) Driver's license (old, new)



Identity verification of document owner

Immediately detect cases of fake portraits to warn promptly

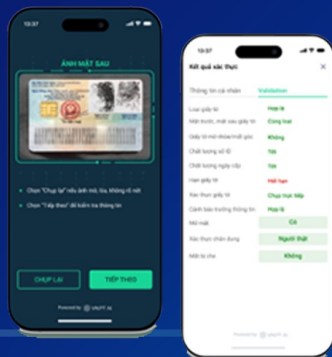
- Only verify customer photos taken in real time
- Able to authenticate the person's life and reject old faces (printed photos, photos displayed on electronic devices, 2D/3D masks and non-human faces)
- Detect faces that do not meet minimum requirements, faces that are obscured or eyes that are closed



Detecting non-compliant documents

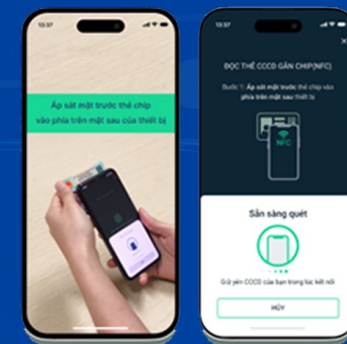
Ensure detection of documents that did not meet the requirements for information registration.

- Detect documents that are blurred, damaged, have corners cut off, have been erased, etc.
- Detect documents with pasted portrait photos, expired documents
- Detect fake documents (in case the input images are photocopied, scanned ID cards, etc.)
- Check the logic of information on documents to detect abnormalities



Reading information with NFC technology

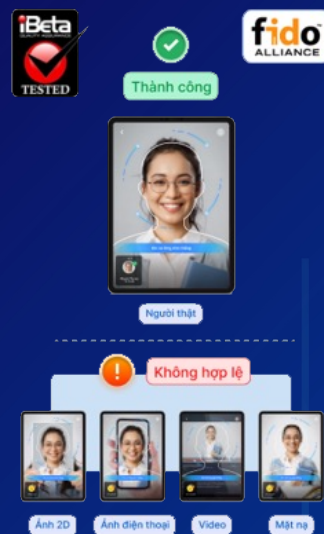
- Read new citizen ID chip cards via NFC communication technology
- Information is read completely and accurately, reducing the risk of document forgery compared to document authentication by image



VNPT SMARTCA REMOTE SIGNING SERVICE

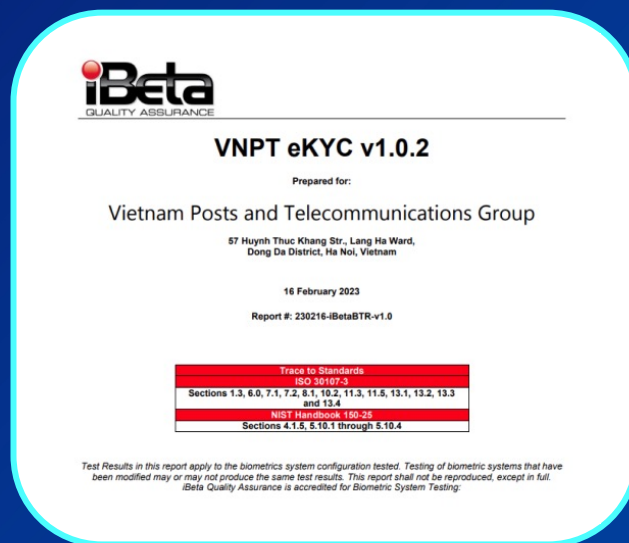
Overview (6/10)

FACIAL BIOMETRICS COMPLIANT WITH ISO-3017-3 (FIDO ALLIANCE)



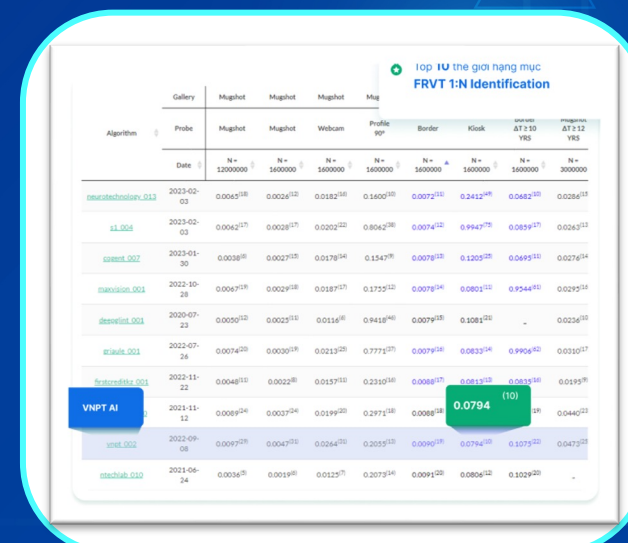
Excellently passed the Presentation

Attack Detection (PAD) test according to ISO/IEC 30107-3 standards by iBeta



VNPT's facial spoof detection technology

Meets the international ISO 30107-3 (PAD) standards, certified by iBeta (FIDO Alliance)



VNPT's facial recognition technology

RANKED IN THE WORLD'S TOP 10 (March 2023)

VNPT SMARTCA REMOTE SIGNING SERVICE

Overview (7/10)

FACIAL BIOMETRICS COMPLIANT WITH ISO-3017-3 (FIDO ALLIANCE)

VNPT eKYC has proudly achieved prestigious awards

	3rd Prize "Nhan tai Dat Viet"		Golden Key Award
	Asia Communication Awards		Gold Medal Cyber Security Excellence Awards
	Bronze Award "Stevie Awards"		Top 10 global KiOSK-FRVT 1:N
	Made in Vietnam		Facial biometrics compliant with ISO-3017-3 (FIDO Alliance)
	"Sao Khue"		
	Top 10 Vietnamese Information Technology Enterprise 2020		Gold Medal Globee IT World Awards

*As a market pioneer since 2019, VNPT eKYC has the experience to **advise** and **address** major customer needs:*

100+

Trusted and satisfied
customers

50.000

Hours of
implementation

1 billions

Requests for identity
verification



VNPT SMARTCA REMOTE SIGNING SERVICE

Overview (8/10)



63/63

Provinces/cities

↑ 1,5 Million

Users with over 65 million signed transactions

↑ 1 Million

Digital certificates for citizens to access online public services

↑ 450 Thousand

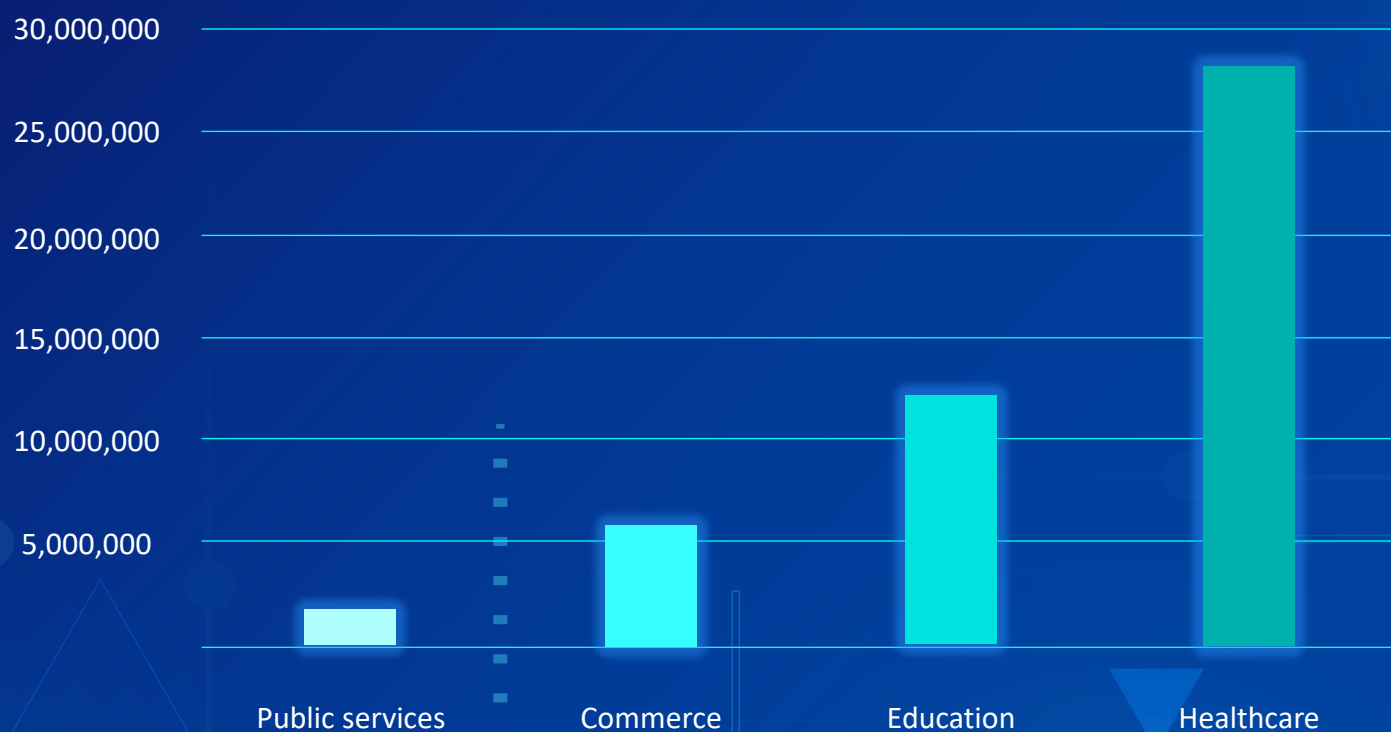
Digital certificates for public servants, teachers, and doctors



VNPT SMARTCA REMOTE SIGNING SERVICE

Overview (9/10)

Statistics on the number of digitally signed transactions in 2024



VNPT SMARTCA REMOTE SIGNING SERVICE

Overview (10/10)





2. APPLYING SMARTCA IN THE MEDICAL FIELD

Introducing VNPT OneHealth service system

Using SmartCA to Sign medical records

Results



"VNPT OneHealth is an ecosystem of digital medical solutions that help comprehensively transform the healthcare sector"

Fully compliant with all legal requirements of the government regulatory agency:

- Circular 54/2015/TT-BYT of the Ministry of Health
- Circular 46/2018/TT-BYT of the Ministry of Health



Hospitals



Health authorities



Patients



Healthcare Centres



Medical stations



Pharmacies

70
Millions

Medical Check-ups

20
Millions

Patients

30
Millions

Medical Records



Comprehensive
government management
system



Health record
software



Clinic and family
doctor management
system



Electronic medical record
(EMR) system



Personal health care
support app



Laboratory information
management system
(LIMS)



Healthcare information
management system
(HIMS)



Medical diagnostic
information system



Healthcare service
management system

7,800 medical facilities are using VNPT's products and services

730
district-level medical
facilities

170
provincial and central
medical facilities

7,000
medical stations

45%

35%

66%

USING SMARTCA TO SIGN MEDICAL RECORDS (1/6)



USING SMARTCA TO SIGN MEDICAL RECORDS (2/6)



Hospital and Clinic management



Doctors, Medical staff



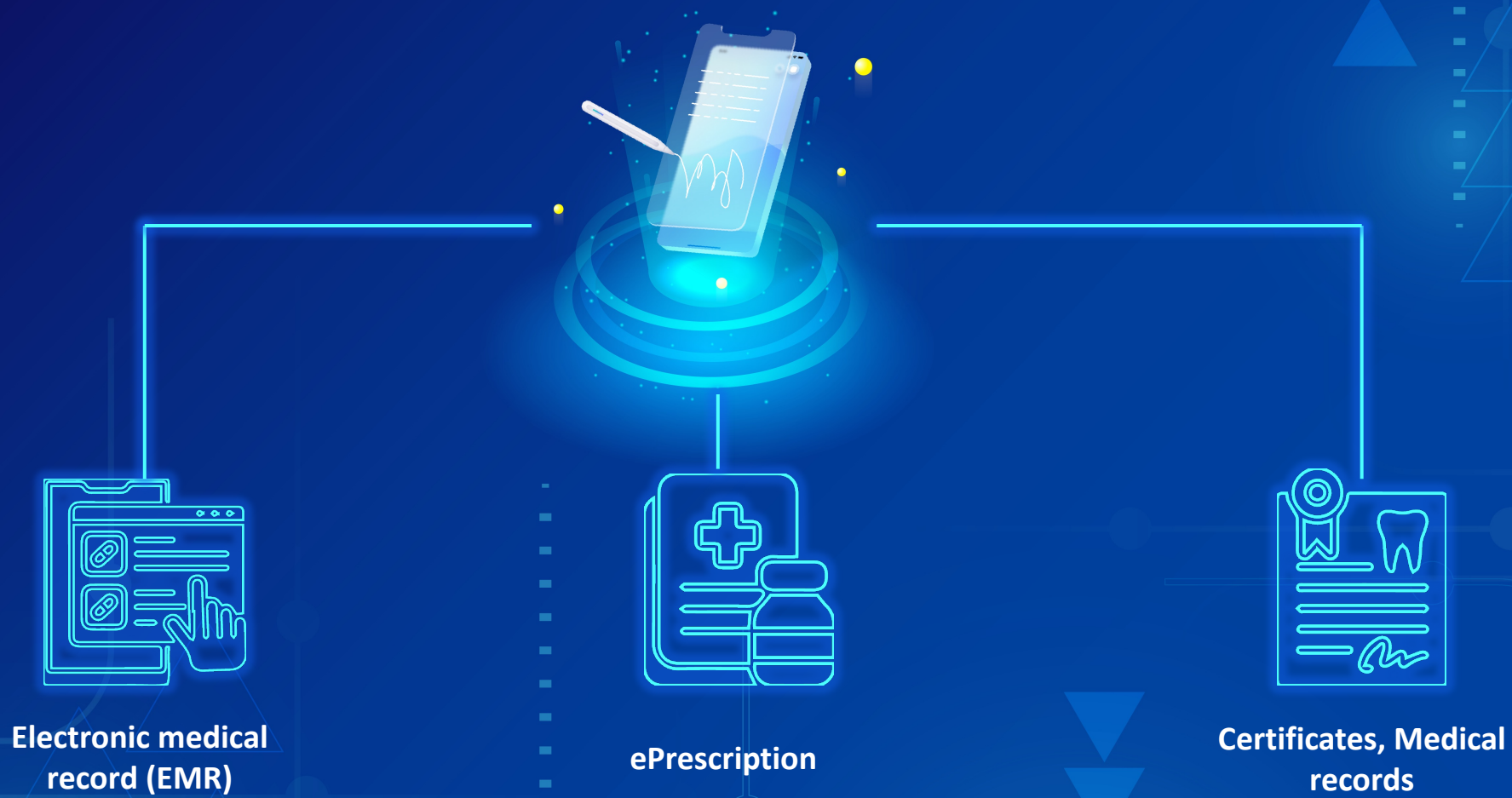
Functional Software interfaces



Pharmacy

Pharmacists, managers

USING SMARTCA TO SIGN MEDICAL RECORDS (3/6)



ELECTRONIC MEDICAL RECORD (EMR)



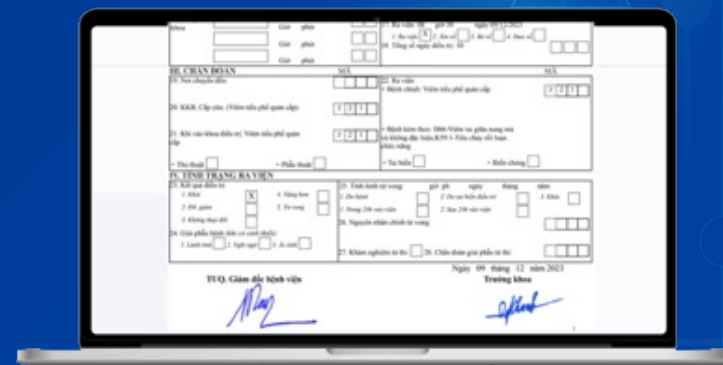
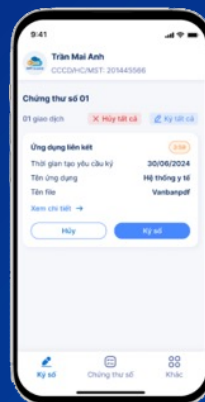
HỆ THỐNG PHẦN MỀM QUẢN LÝ BỆNH VIỆN



VNPT SmartCA
Ký số từ xa, an toàn tối đa



VNPT HIS
HỆ THỐNG PHẦN MỀM QUẢN LÝ BỆNH VIỆN



01

Signing

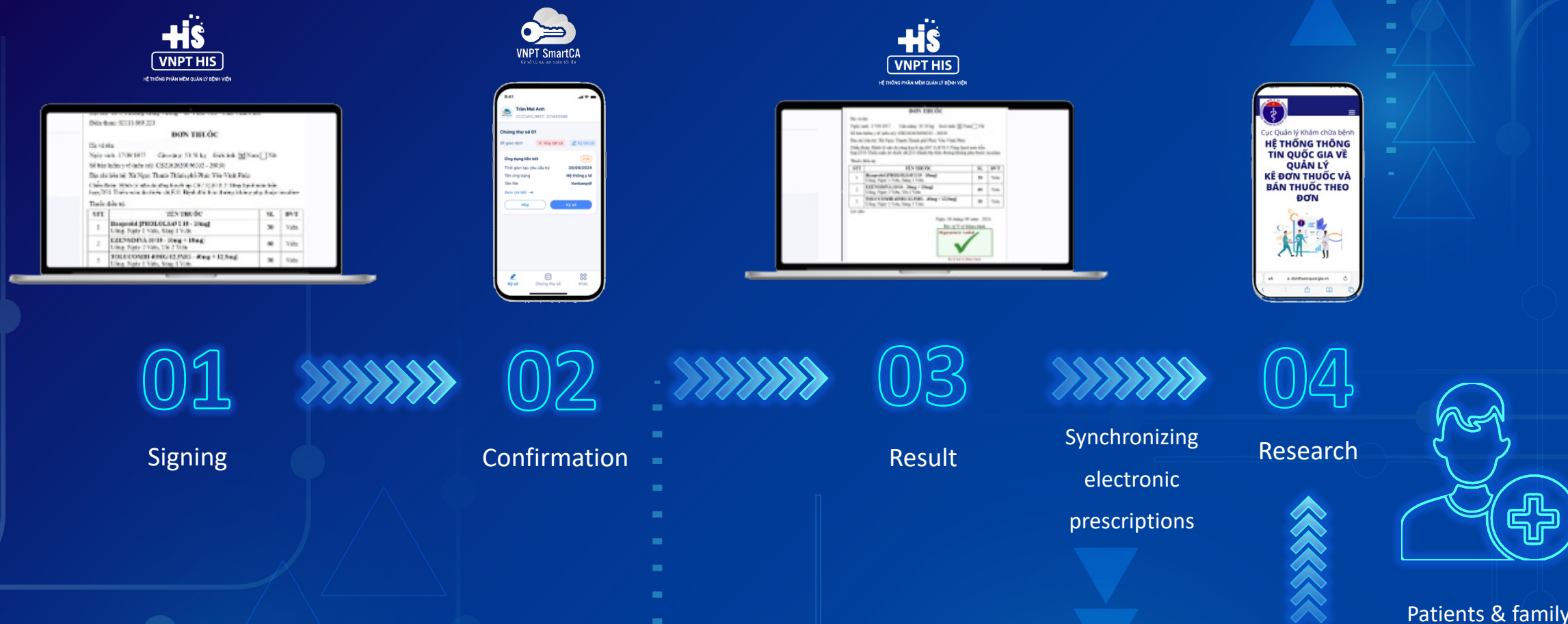
02

Confirmation

03

Result

DIGITAL PRESCRIPTION



MEDICAL DATA



HỆ THỐNG PHẦN MỀM QUẢN LÝ BỆNH VIỆN

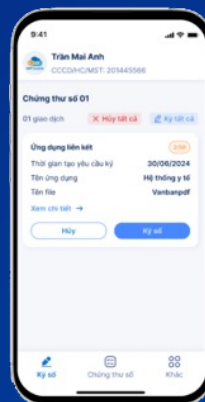


VNPT SmartCA
Ký số từ xa, an toàn tối đa



VNPT HIS

HỆ THỐNG PHẦN MỀM QUẢN LÝ BỆNH VIỆN



01

Signing



02

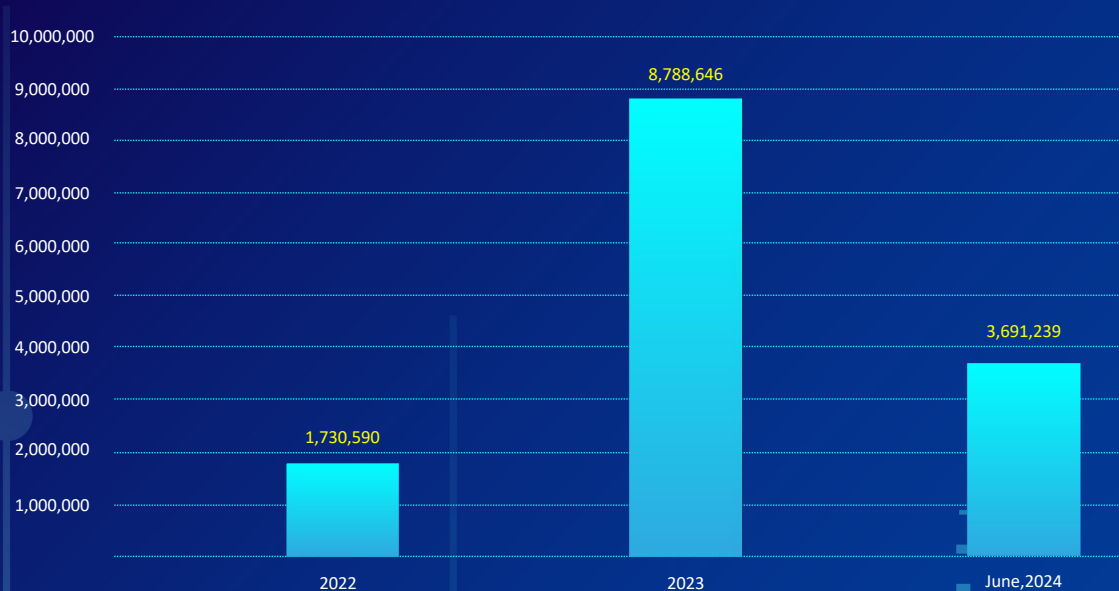
Confirmation



03

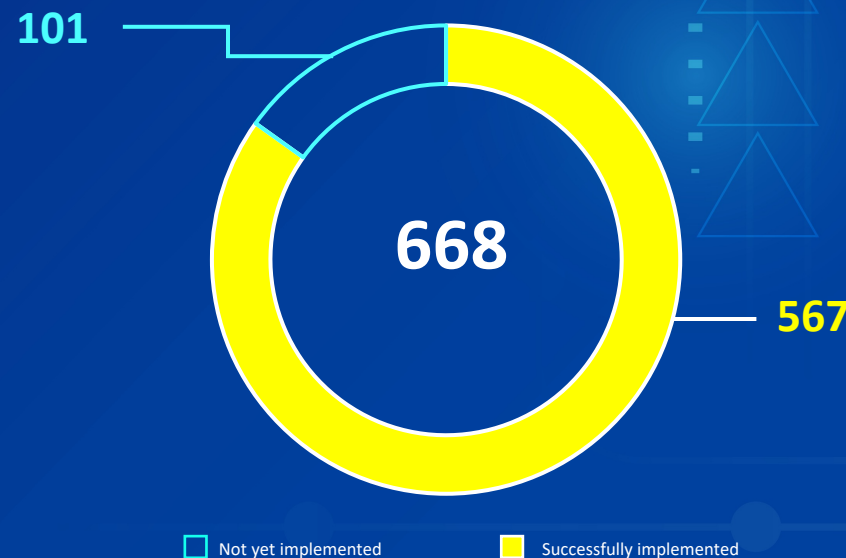
Result

Numbers of signed transactions on oneHealth system



In 2023, the total number of digital transactions on the VNPT oneHealth system reached 8,950,287, a fivefold increase compared to 2022.

Hospitals/Medical centers using VNPT oneHealth with SmartCA



As of June 2024, 567 out of 668 hospitals and medical centers have been using digital signatures to sign on the VNPT oneHealth system.

RESULTS (2/2)



Doctors, patients and their families use personal digital signatures in medical records, prescriptions, and document confirmations



Saving **80%** of the time spent processing medical records, documents, prescriptions for doctors and medical staff



Saving **85%** of the time spent creating, compiling, searching for files, documents, and certificates



Data is signed and sent between systems of hospitals and insurance agencies, helping to save time and costs in transportation and imaging

3. APPLYING SMARTCA IN THE EDUCATION FIELD

VnEdu system

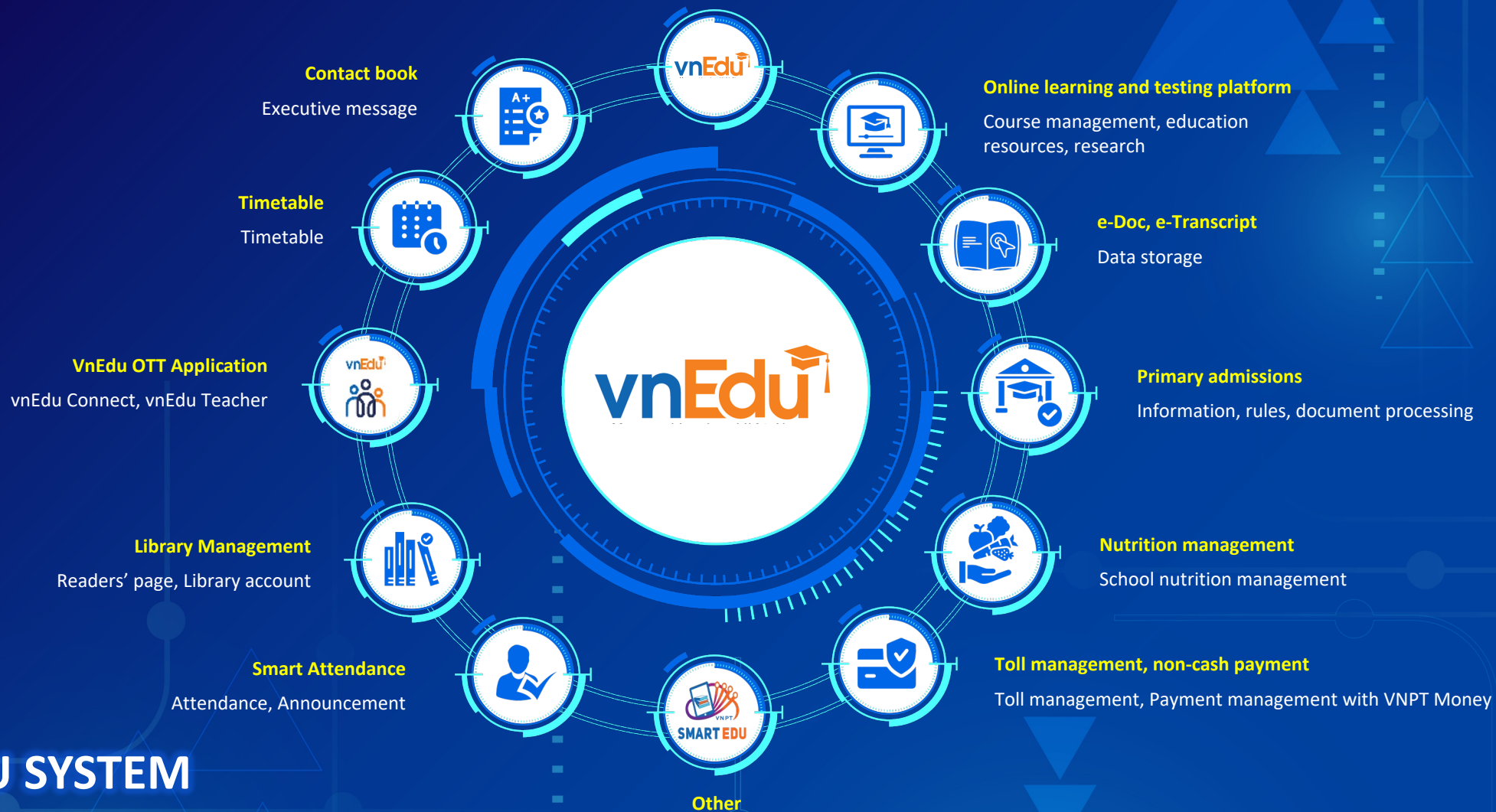
Using SmartCA to sign document in VNeDu System

Results



Ecosystem of Software solutions in School Management

Classroom, Staff, Teachers, Learning Outcomes, Industry Database Connection



VNEDU SYSTEM

63/63

Provinces/cities

30K+

Schools

8M+

Pupil Profiles

800K+

Teachers

3K+

Portal



- ✓ Gold Stevie Award AP 2021
- ✓ Silver Asean ICT Award 2021
- ✓ Winning Prize - Make in VietNam 2020
- ✓ Smart City Award 2020
- ✓ Vietnam Digital Award
- ✓ Silver IT World Award
- ✓ Top 10 Sao Khuê
- ✓ Vietnam's No. 1 Education App on the App Store
- ✓ "Nhan Tai Dat Viet" Award

USING SMARTCA TO SIGN DOCUMENT IN VNEDU SYSTEM (1/7)



USING SMARTCA TO SIGN DOCUMENT IN VNEDU SYSTEM (2/7)



Gradebook, E-lesson
plan,...

Academic records

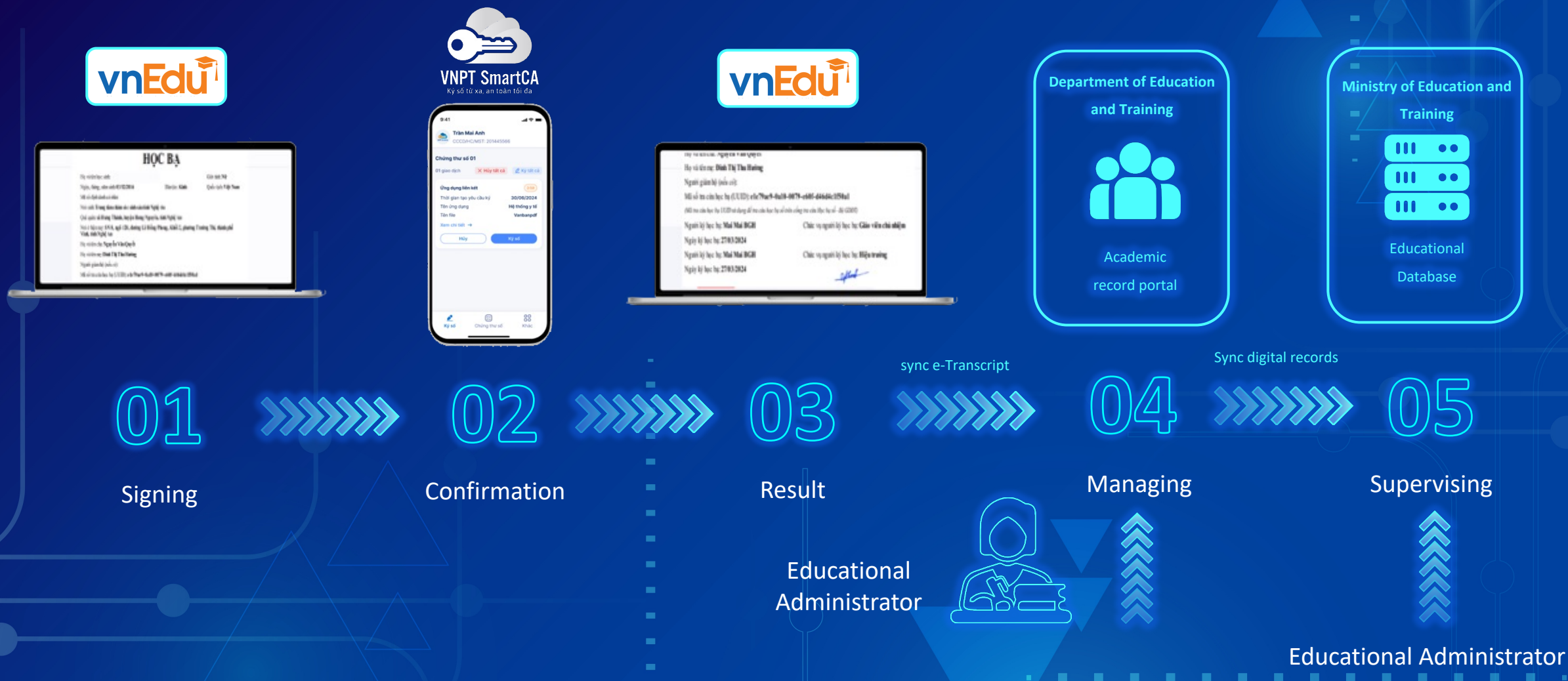
Certificate of
Graduation

Educational
documents

Administrative reports and
papers

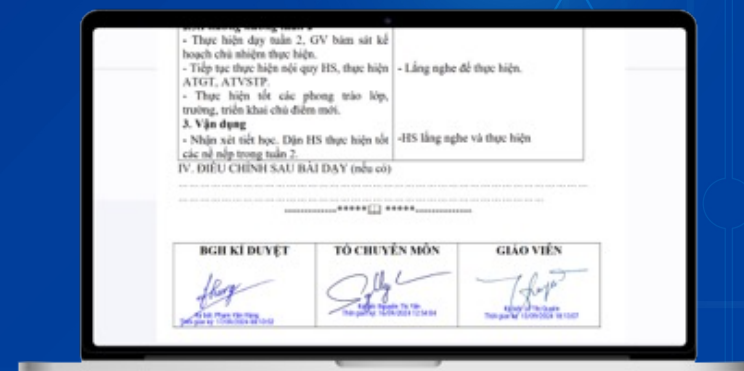
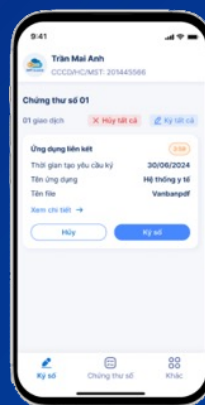
USING SMARTCA TO SIGN DOCUMENT IN VNEDU SYSTEM (3/7)

E-TRANSCRIPT



APPLICATION OF VNPT SMARTCA REMOTE SIGNING ON VNPT VNEDU SYSTEM (4/7)

GRADEBOOK AND LESSON PLAN



01

Signing



02

Confirmation

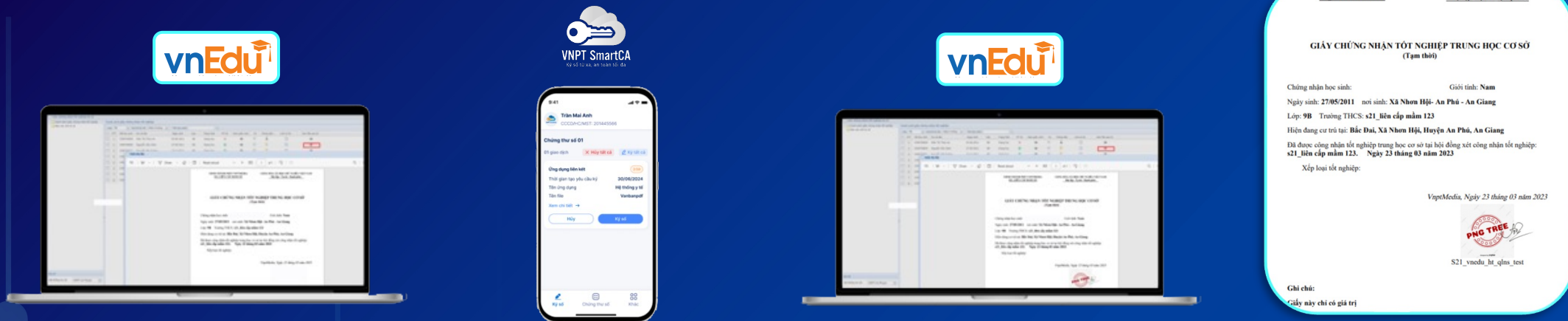


03

Result

USING SMARTCA TO SIGN DOCUMENT IN VNEDU SYSTEM (5/7)

CERTIFICATE OF GRADUATION



01

Signing



02

Confirmation



03

Result



Send Signed
certificate via email

04

Review



Parents

USING SMARTCA TO SIGN DOCUMENT IN VNEDU SYSTEM (6/7)

ASSESSMENT REPORT



01

Signing

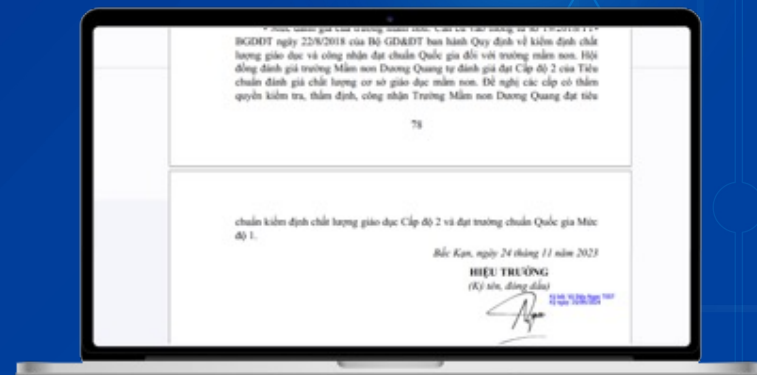


VNPT SmartCA
Ký số từ xa, an toàn tối đa



02

Confirmation



03

Result

APPLICATION OF VNPT SMARTCA REMOTE SIGNING ON VNPT VNEDU SYSTEM (7/7)

EDUCATIONAL DOCUMENTS

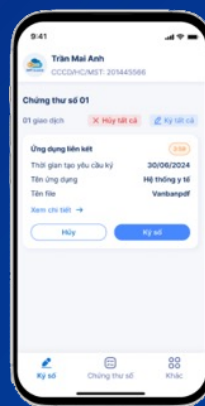


01

Signing

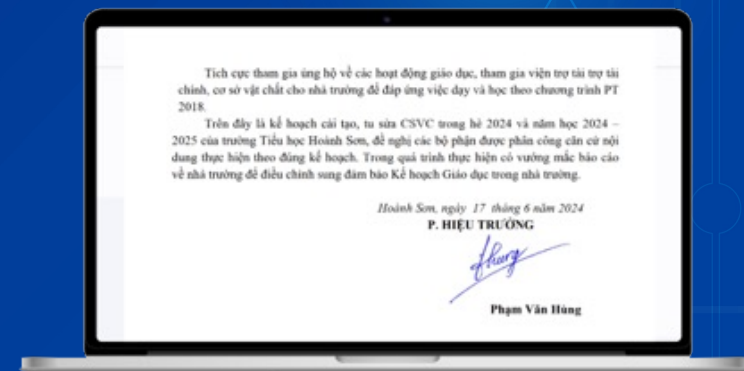


VNPT SmartCA
Ký số tư xa, an toàn tối đa



02

Confirmation



03

Result

RESULTS (1/3)

Minimize costs:

- The cost is equivalent to 1-2 cups of coffee per year per user

High security:

- Biometric Authentication



Minimize costs:

- No HSM Hardware, USB Token, SIM PKI,...
- Most economical
- No IT staff required

High security:

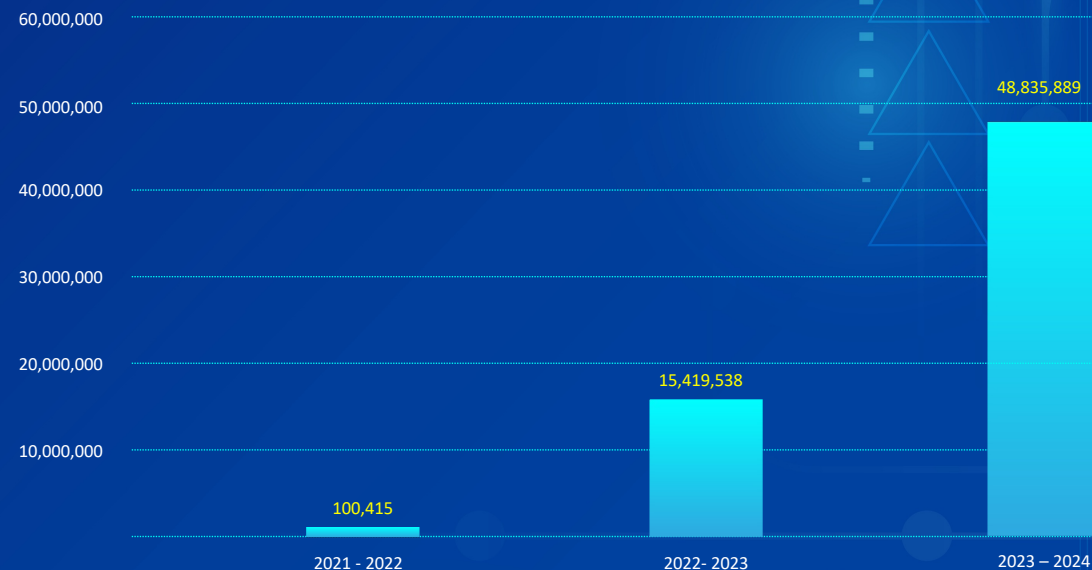
- Biometric Integration
- Digital signing with SmartCA

Number of schools using SmartCA to sign on VNeDU System



In the 2023-2024 school year, the total number of schools using digital signatures on VnEdu reached 10,903 schools and educational institutions. An increase of 5 times compared to the 2022-2023 year.

Number of signed transactions on VNeDU System



The number of digitally signed transactions in 2023-2024 was tripled compared to the 2022-2023 school year.

RESULTS (3/3)



Teachers use SmartCA to sign: Electronic report cards, lesson plans, grade books, etc



Save 90% on document management costs



Save 90% of time creating, searching for records, costs of storing and preserving documents, certificates, etc



Data is authenticated by digital signature and managed centrally and consistently from the Ministry to the Department and Department of Education at the local level

4. IMPACTS EVALUATION AND LESSON LEARNED

The impact of digital signatures on the healthcare and education sectors

Impact on e-government in Vietnam

Lessons learned and development orientation



IMPACT EVALUATION OF DIGITAL SIGNATURE ON EDUCATIONAL AND MEDICAL FIELD (1/2)

MEDICAL SECTOR

Using SmartCA creates big changes in the medical field in Vietnam with the advantage of shortening the implementation process, ensuring confidentiality and helping to smoothly manage medical information from the Ministry and Department of Health to local medical facilities

01

Accuracy and Security

Digital signatures help ensure the integrity and security of electronic medical records, from prescriptions, test results to related administrative documents. This minimizes the risks associated with information leakage or falsification.

02

Saving time and Money

Administrative processes such as signing medical records, confirming prescriptions or signing contracts with patients can be done remotely, reducing travel time and costs for both doctors and patients.

03

Developing remote care services

Digital signatures support the provision of remote medical services more conveniently and securely. Doctors can diagnose and prescribe for patients electronically quickly, while ensuring legality.

04

Reduce the load on hospital

Thanks to digital signatures, a large part of administrative processes can be carried out electronically, helping to reduce pressure on hospitals and medical centers.

IMPACT EVALUATION OF DIGITAL SIGNATURE ON EDUCATIONAL AND MEDICAL SECTORS (2/2)

EDUCATIONAL FIELD

Using SmartCA helps to thoroughly and comprehensively digitize business activities in the Vietnamese education system: saving time, costs and promoting the development of online education

2. Improve the effectiveness of educational national management.

Help education management agencies monitor, inspect and approve educational activities quickly and transparently.

4. Promote digital transformation in the education system

Digital signatures enable the deployment and development of online public education services such as issuing learning certificates, registering and managing online courses, signing labor contracts with teachers, or processing electronic administrative records safely and legally.



1. Enhance the legality and security of digital education activities

Digital signature allows authentication and ensures the legality of documents such as transcripts, lesson plans, records, and electronic transactions in education.

3. Time and cost savings in educational management

Using digital signatures helps educational institutions save time and costs by digitizing management and administrative processes.

LESSONS LEARNED DURING IMPLEMENTATION

Using SmartCA in the healthcare and education field has a direct and positive impact on the development of e-government in Vietnam



- 01 Raising awareness of digital signatures for medical staff and teachers
- 02 Upgrading and synchronizing Information technology infrastructure
- 03 Ensuring security and privacy
- 04 Converting the use of digital signatures gradually by a clear roadmap for teachers and doctors
- 05 Strengthening cooperation between private and public agencies to share resources, especially in building technology infrastructure, training and technical advice



SPECIAL THANKS

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