

AI: X-Factors for smart era

VIETTEL x NVIDIA

April 2023



AGENDA

01 AI overview

02 Viettel AI solutions

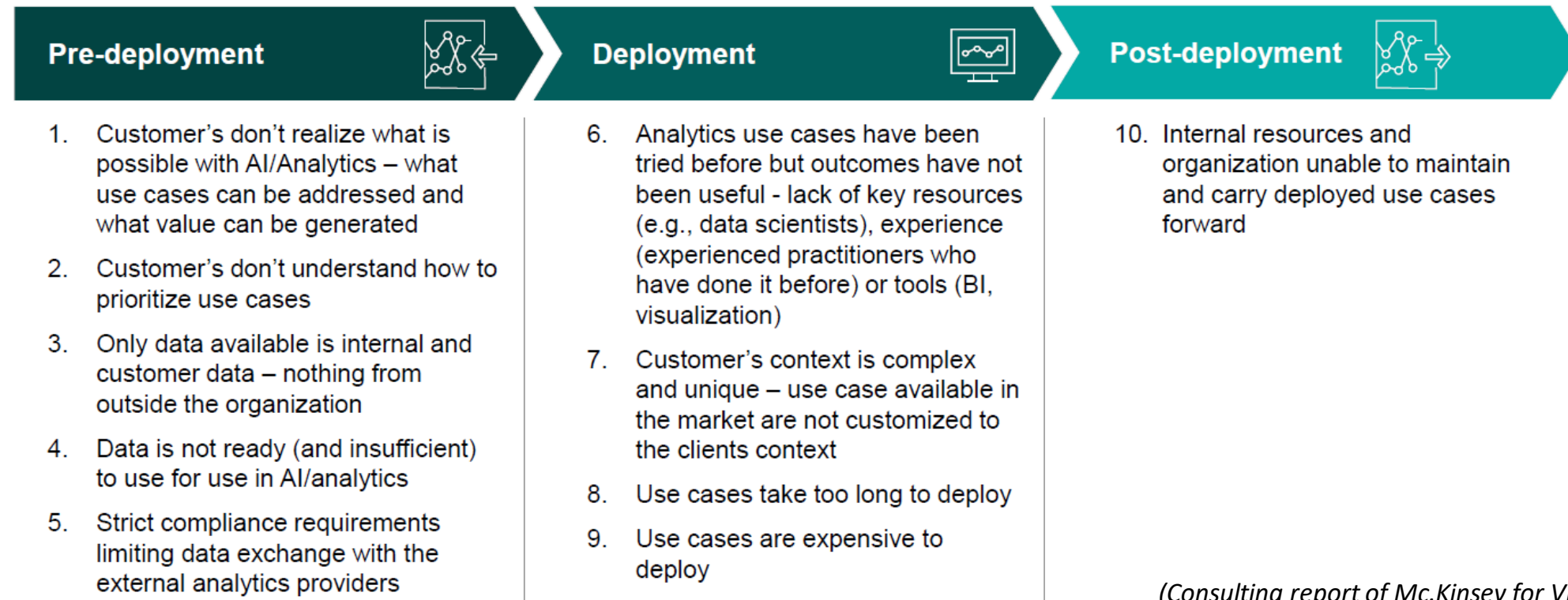
03 Q&A



1.1. AI/Analytics pain points

10 primary pain points and customer needs as enterprises embark on their AI/Analytics transformation journey

Pain points faced by enterprises

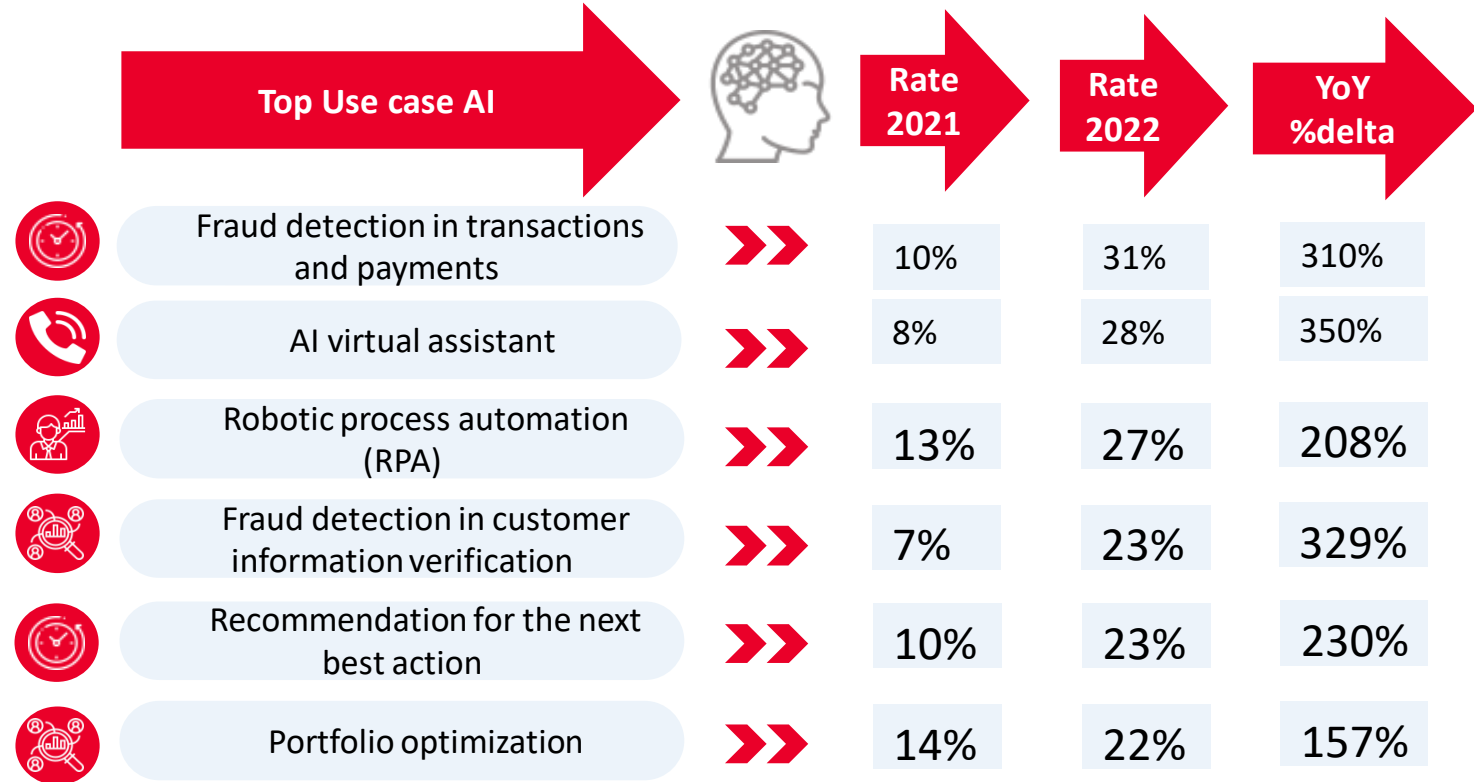


(Consulting report of Mc.Kinsey for Viettel)

1.2. Top Use Case AI

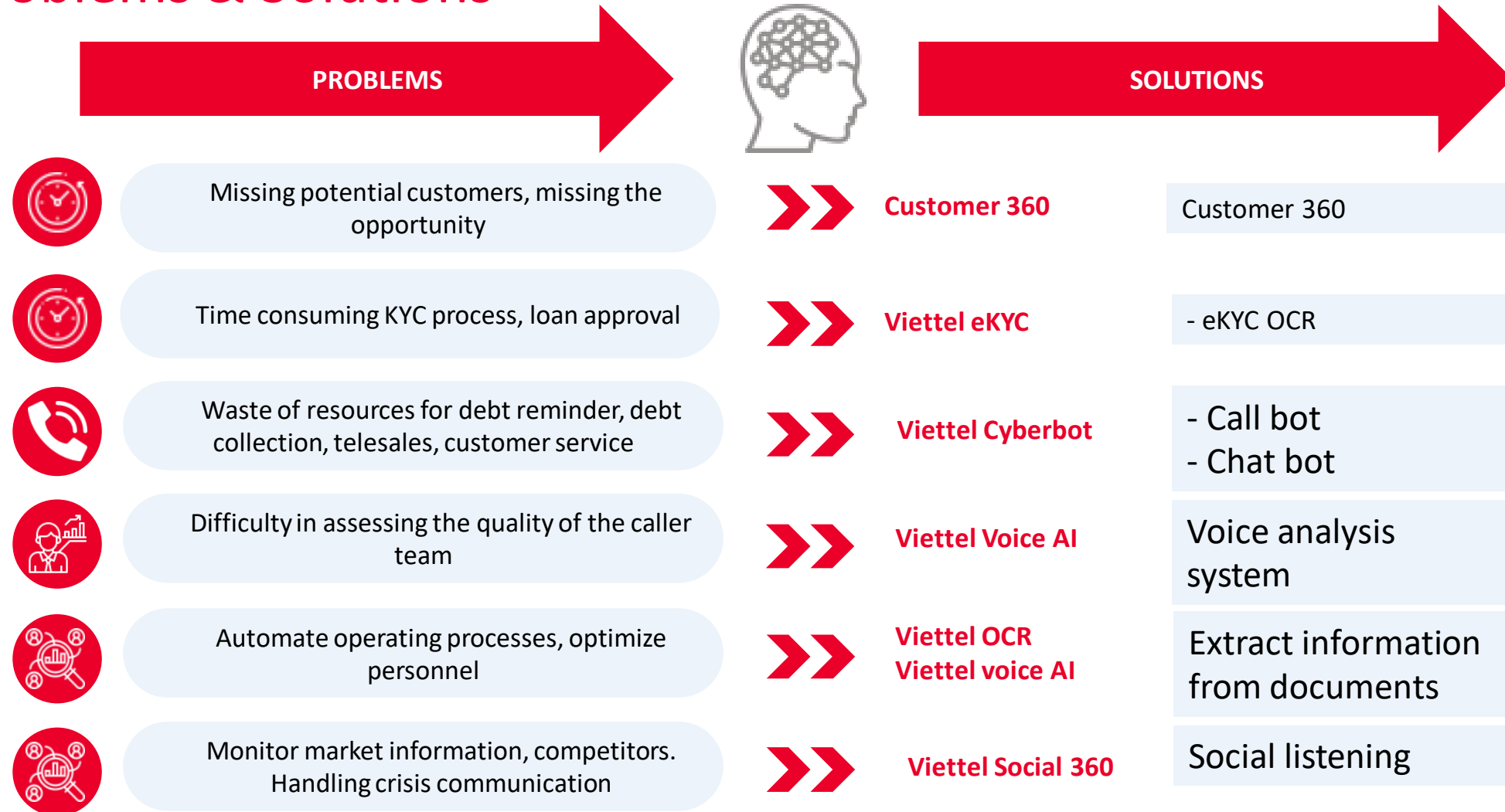
91% of BFSI companies have invested in AI.

The investment confirmation rate for AI this year all grew from 1.5 to 3.5 times last year



(survey of >500 experts in the global BFSI sector by NVIDIA 2022)

1.3. Problems & Solutions



AGENDA

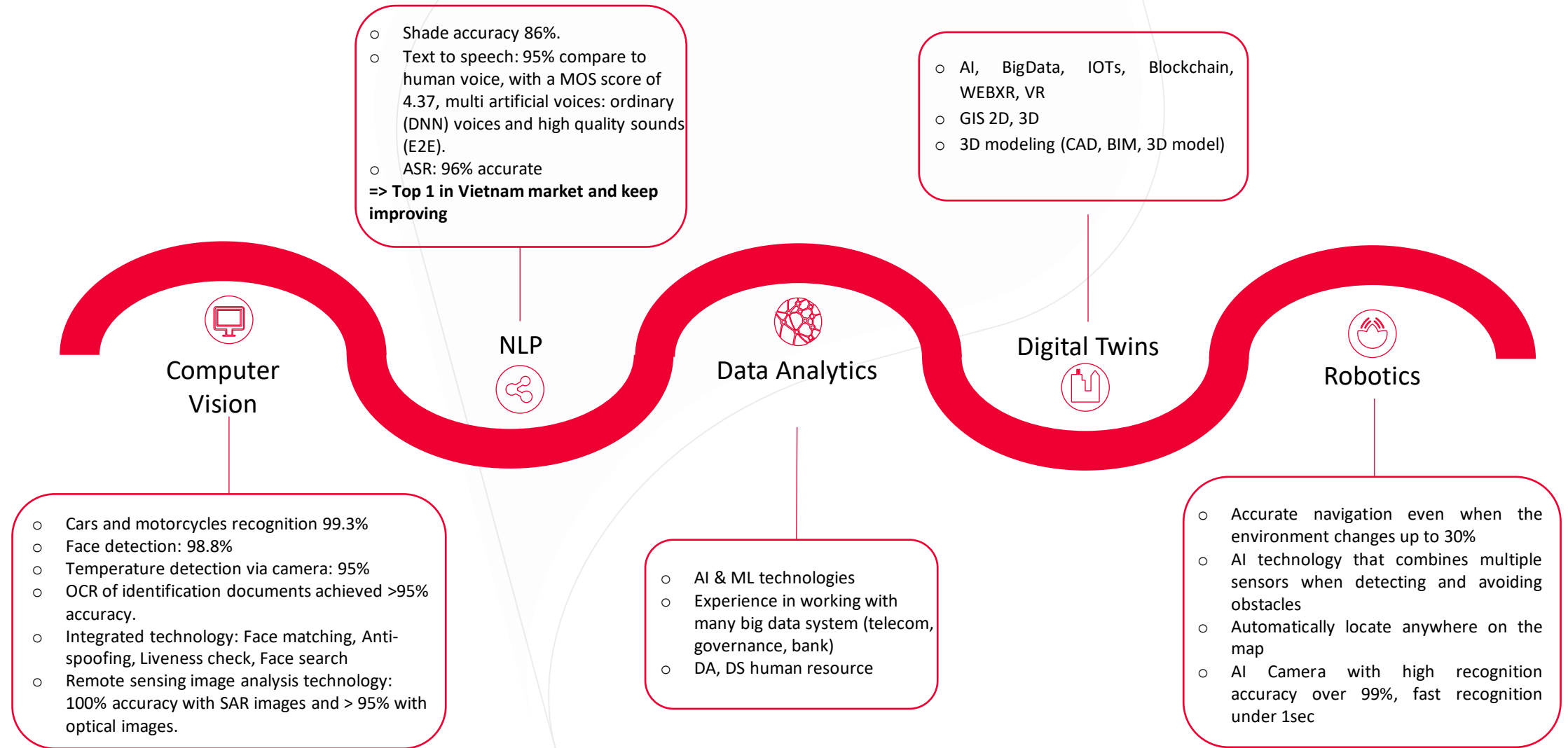
01 AI overview

02 **Viettel AI solutions**

03 Q&A



2.1. Viettel AI Technologies




Computer Vision


- Cars and motorcycles recognition 99.3%
- Face detection: 98.8%
- Temperature detection via camera: 95%
- OCR of identification documents achieved >95% accuracy.
- Integrated technology: Face matching, Anti-spoofing, Liveness check, Face search
- Remote sensing image analysis technology: 100% accuracy with SAR images and > 95% with optical images.

NLP


- Shade accuracy 86%.
- Text to speech: 95% compare to human voice, with a MOS score of 4.37, multi artificial voices: ordinary (DNN) voices and high quality sounds (E2E).
- ASR: 96% accurate
- => Top 1 in Vietnam market and keep improving**


Data Analytics

- AI & ML technologies
- Experience in working with many big data system (telecom, governance, bank)
- DA, DS human resource

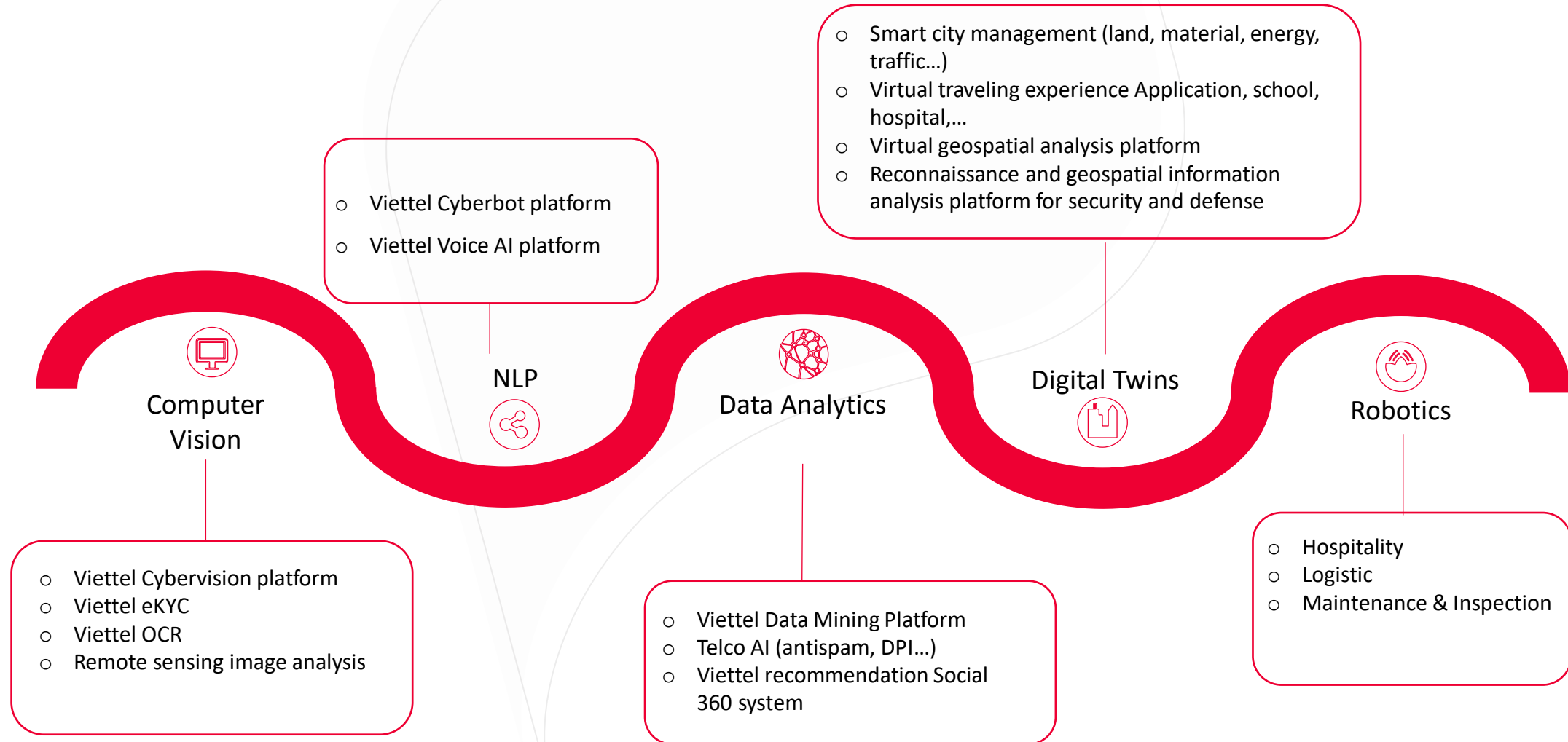
Digital Twins


- AI, BigData, IOTs, Blockchain, WEBXR, VR
- GIS 2D, 3D
- 3D modeling (CAD, BIM, 3D model)

Robotics


- Accurate navigation even when the environment changes up to 30%
- AI technology that combines multiple sensors when detecting and avoiding obstacles
- Automatically locate anywhere on the map
- AI Camera with high recognition accuracy over 99%, fast recognition under 1sec

2.2. Viettel AI Ecosystems



2.3. Awards/Certifications



VTCC has achieved prestigious awards:

- IT WORLD AWARDS
- AI CITY CHALLENGE
- EVOLUTIONARY MULTITASK OPTIMIZATION
- MAKE IN VIETNAM
- SAO KHUE
- SMART CITY 2021
- TOP 10 ICT COMPANIES



First Prize in Vietnamese Speech Recognition Technology; Second Prize in Speech Synthesis Technology at the 9th International Conference on Vietnamese Speech and Language Processing (VLSP 2022)



First prize in AI City Challenge with Natural driving analysis 2022

VIRTUAL ASSISTANT SOLUTION: VIETTEL CYBERBOT



Virtual Assistant support Judges of Vietnam Supreme People's Court

Respond to **800,000 precedent judgements**, explore all legislation documents.



Call Center about the Covid-19 epidemic in Thai Binh province

Simultaneously receive and process **600 calls**, **20 times more than** the previous capacity



Call Center reminds people to install Bluezone – a national application for health report during COVID-19 epidemic

Made nearly **2 million calls** in 1 day, productivity **increases 3.4x** compared to using human agents.



Callbot application in BFSI Customer Service Center

~20,000 calls every day are made within these tasks: Debt reminder, limit disbursement, service introduction, etc.

22,000 calls are made every day to support information about order delivery.



Callbot application in Viettel Telecom Customer Service Center

- The adoption of Callbot showed **200-time-greater** productivity than human agents.
- Customer satisfaction when served by a Callbot can reach up to **96 percent**.

VIETTEL VOICE AI SOLUTION

Text-to-Speech



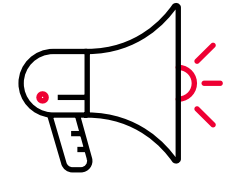
Audio books



Automatic customer care system



Automatic telesale



Announcements

Automated Speech Recognition



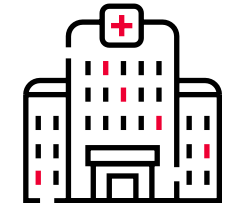
Smart devices



Smart Home



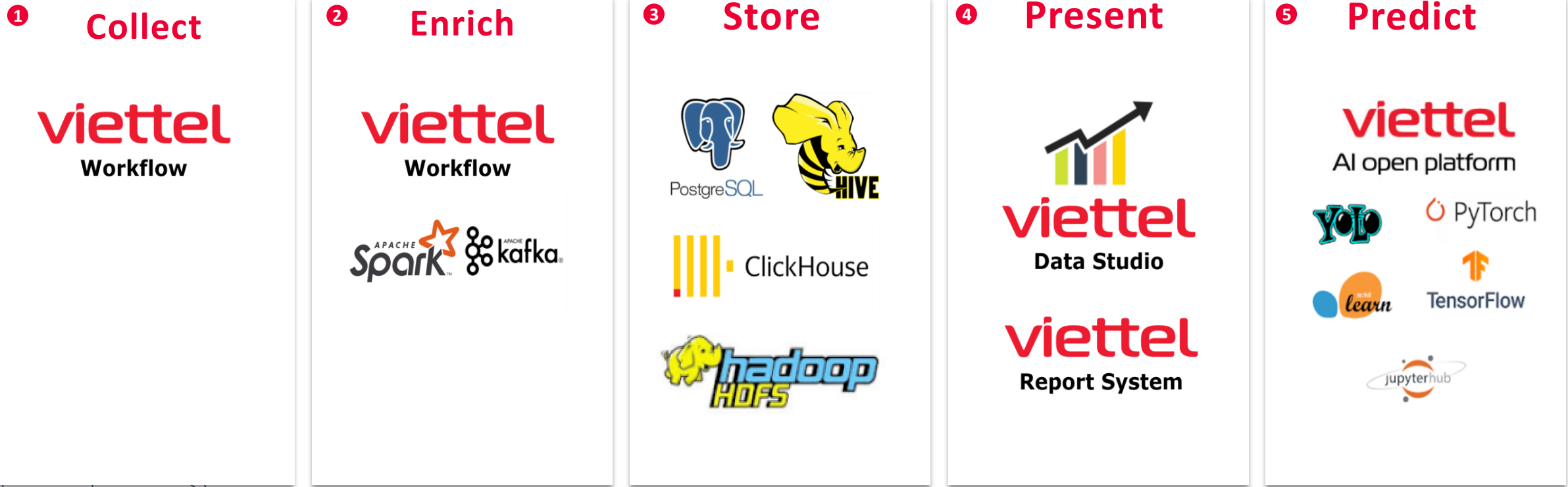
Meeting note, interview record



Medical records, Medicine,...

Project: Ministry of Public Security, BFSI (Vpbank, MB, mCredit...), online newspaper (dantri.com.vn, ictnews.vietnamnet.vn...), **>300k personal users.**

3 VIETTEL DATA MINING PLATFORM



Use cases: data lake, data warehouse, integrated in Smart City platform

- Internet monitor at Ministry of National Defence, Ministry of Information and Communications
- The Supreme People's Court of The Socialist Republic of Vietnam, Vietnam E-commerce and Digital Economy Agency and Operation center of 13 provinces

VIETTEL SOCIAL 360

Social listening solution

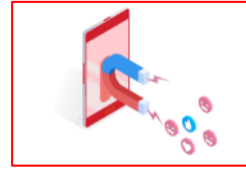
Brand evaluation



✓ Monitor brand health



✓ Prevent the risk of communication crisis



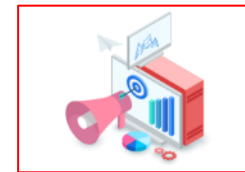
✓ Catch up on social media trends

Customer care



✓ Collect instant, omnichannel customer feedback

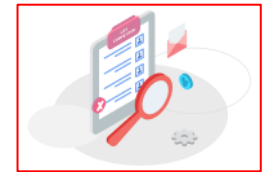
Marketing



✓ Report and evaluate effectiveness of marketing campaigns



✓ Market research and planning



✓ Understanding the market and competitors

150+

Market analysis report

300+

Articles published
using data from Viettel Social 360

200+

Customers/partners



- Antispam call
- Antispam sms, USSD, mms
- Spam, fraud detection
- A2P message management
- Block fishing call (apply ASR technology)

- Process real-time 10.000 messages per second.
- High availability: 99.999%.
- Handle 120 TB of stored data.
- Massive scalability.
- Maximum delay of 1 call: 500 ms.







VIETTEL CYBERVISION (Smart City Center)

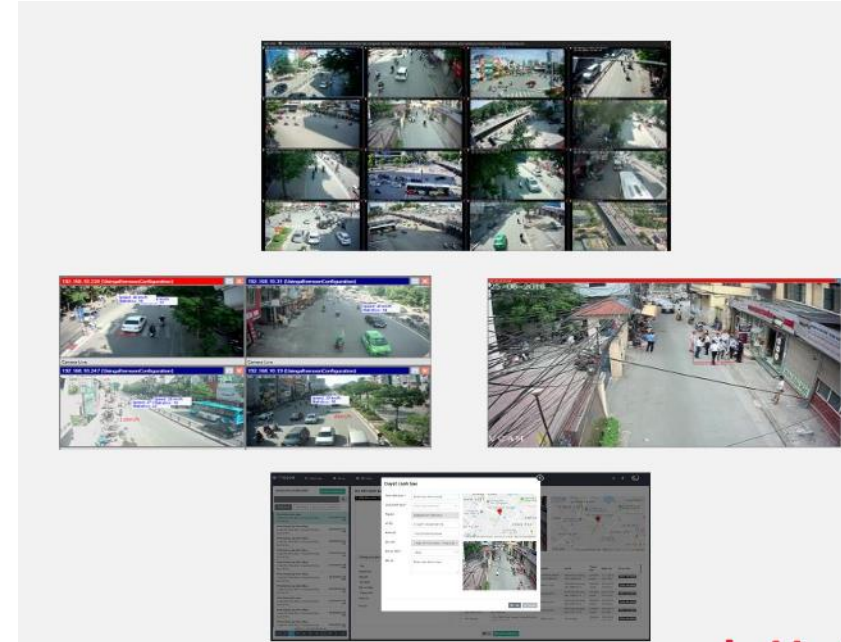
TRAFFIC MANAGEMENT (>20 Provinces)

- Vehicle classification, traffic jam report
- Vehicle license plate recognition
- Detect & document process all violation cases (Red light, Going in the opposite direction, Illegal parking, Wrong lane, Oversized vehicle, Not wearing a helmet, riding a motorbike with 3 people, etc)

SECURITY/ABNORMAL SITUATION MANAGEMENT

- Intrusion, blacklist, whitelist.
- Drunk/fainting alert
- Crowd gathering alert

Customers: >20 Provinces, Aquacity Novaland, Hungthinh Group...



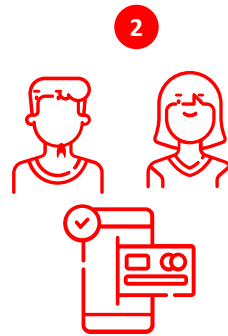
Application in Public Administration (deployed 4 Provinces, PoC 10 Provinces)



Upload profile

Customers upload personal documents (ID card, CCCD, Passport, Driver's License, ...) into the online form via Website/App/...

OCR



Selfie

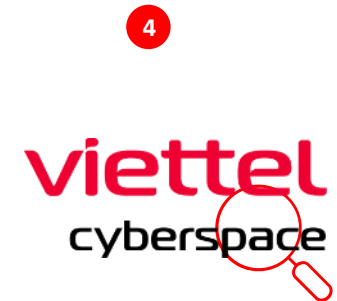
Customers take portraits/videos on the Online platform

Face Matching



Successful submission

Successful transaction, customer has submitted documents for approval



Profile lookup

The customer takes a photo of his face and sends it to the system, the system will return the current status and result of the application

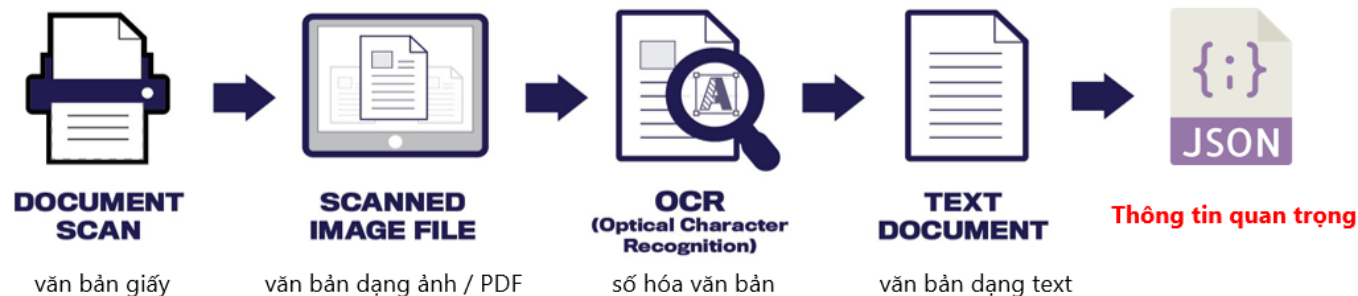
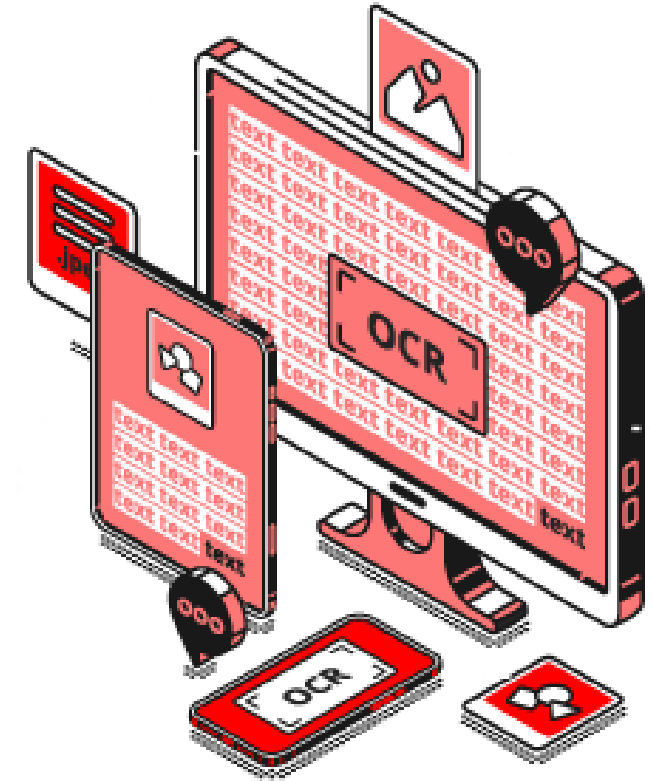
Face Searching

VIETTEL OCR – Input for RPA

VIETTEL OCR is a solution that applies artificial intelligence to automatically extract the specific information in paper documents, photos, scanned files, and PDFs.

Applications:

- Automatically import information from photos or scanned files into the database.
Total >100 forms, focus on BFSI, public sector.
- Automatically categorize documents.
- Automatically approve file: check all required documents, check the **consistency** of information among documents.
- **Benefits:** 50x faster than manual input, Save up to 80% on approval time, Digitize millions of records in stock in few days.
- **Advantages:** Accuracy up to 99% leading the market, fast processing time under 2s for a page of documents.



Any document, any race, any language (include hand writing)



Digitizing personal documents
ID/License/Passport



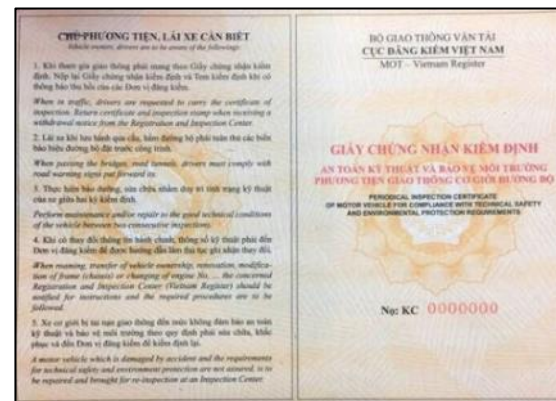
Digitizing administrative documents



Digitizing Insurance Book /Health insurance card



Digitizing business registration



Digitizing registration



Digitizing vehicle registration

VIETTEL AUTOMATED VIDEO MODERATION & VIETTEL RECOMMENDATION SYSTEM



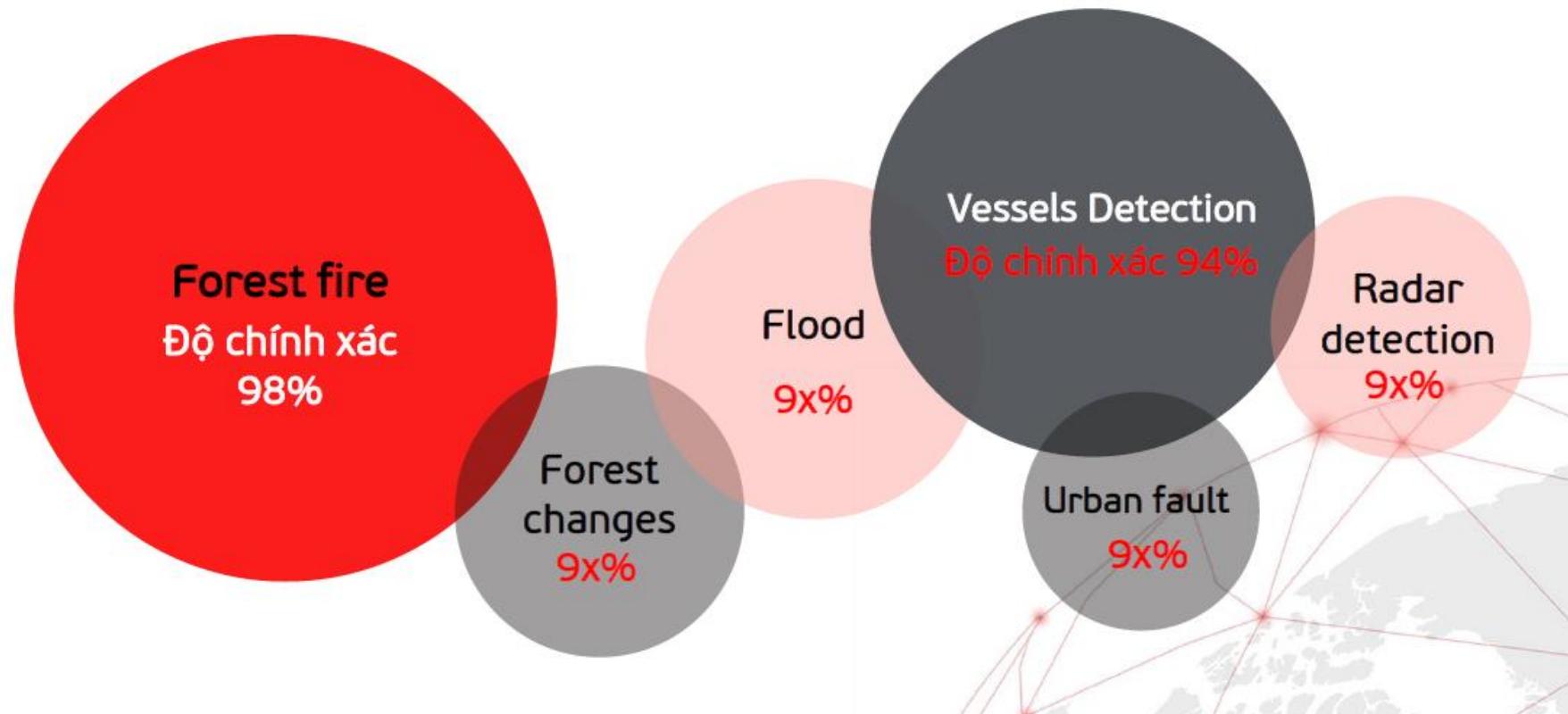
- Copyright of song, film,...
- Political content
- Prohibited content
- Pornography, sex



- Movies, music, video...
- Food, shopping
- Fashion

Project: MyClip – Vietnamese video social network with 2 mil users;

TV360.vn – Application with >10 mil active users



- Vessels detection & classify
- Landscape change analysis

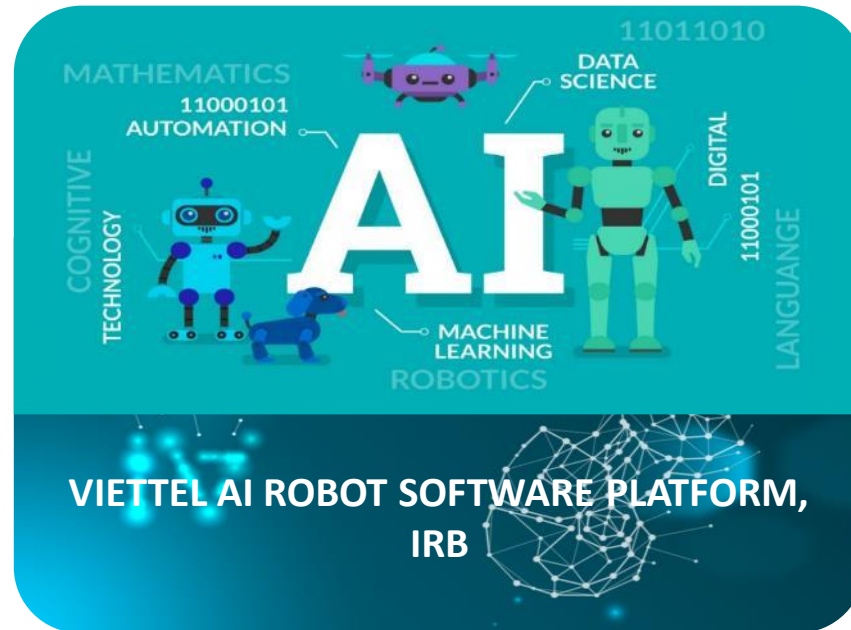
- Forest fire detection
- Radar location detection



- Hospitality



- Fulfillment Robot



- Specific purpose Robot



- Maintenance and inspection



Project: Thu Duc City – HCM City

- Completed 3D-textured models of tall buildings.
- Mastering Digital Twin platforms/technology: The 3DCityDB platform manages a large number of 3D objects; 3D GIS technology; Web3D Technology; Integrated platform, multi-source data flow management (from IoT devices, existing databases).

- Smart city management (land, material, energy, traffic...)
- Virtual traveling experience Application, school, hospital,...
- Virtual geospatial analysis platform
- Reconnaissance and geospatial information analysis platform for security and defense



viettel
cyberspace



3

Q&A Time

THANK YOU!

Viettel Cyberspace Center

Address: National Innovation Center (NIC) Building, No. 7 Ton That Thuyet Street, Cau Giay District, Hanoi

Website: viettelai.vn Email: viettelai@viettel.com.vn