Chainway handheld computers with abundant functions cater to the needs of multiple industries, helping streamline workflows, enhance efficiency and contain operating costs.

Until now, we have provided industrial PDAs and intelligent solutions to over 4000 clients from over 100 countries worldwide in transportation, logistics, healthcare, manufacturing, finance, livestock and etc.
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BACKGROUND
WAEC (West African Examination Council) hold unified examination annually within its member countries, namely, Nigeria, Ghana, Senegal, Liberia, and Sierra Leone. Every spring and summer, about 2.2 million candidates take examinations in 15,000 test centers in Nigeria. The Council needs to develop a series of plans about location, time, subjects and frequency of examinations for each region to manage candidates. In the absence of an effective management system and supervision mechanism, the work of WAEC becomes complicated, inefficient, and unable to prevent problems like cheating and substitute examining, which seriously affected the normal work of WAEC.

CHALLENGES AHEAD
1. There is no system to record subjects, time and other information of examinations, making it difficult for each region to arrange exams reasonably.
2. Invigilators need compare candidates’ photos on the paper with their faces artificially to confirm that nobody substitutes others to take the exam, but the paper may be tampered with.
3. The system does not automatically create exam records, which is not conducive to the follow-up statistical analysis.

SOLUTIONS
With functions of RFID reading and writing and mobile data communication, Chainway PDA realizes real-time access to the backend system. It helps achieve systematic storage and management of data such as subjects, time and location of examinations. It also realizes intelligent candidate identification so that invigilators can efficiently and precisely identify the candidates. This way can prevent candidates from cheating, substituting others to take in exams, and then upgrade the fairness of examinations.

APPLICATION EFFECT
1. The information management system helped the Council properly make plans and efficiently arrange exams for each region.
2. It effectively reduced substitute examining and cheating.
3. The collected information about the number and school of candidates contributed to streamline workflow.
4. It promoted a comprehensive assessment of the candidates by making a detailed record of each candidate’s examination information, including their cheating behaviors.
5. It eliminated the use of paper-based registration forms after the application of RFID technology, which saved costs.

INDUSTRY APPLICATION: Education
REGION: West Africa
MODEL: C2000 Handheld Computer

PDA CONFIGURATION
P/N: C2000
Functions: HF RFID, GPRS
# INTELLIGENT DRIVING SCHOOL PROJECT IN CHINA

## Industry Application:
- Education

## Region:
- China

## Model: CWJ500/V600
- Vehicle-mounted Computer

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### BACKGROUND
Most of driving schools in China have adopted information technologies to further strengthen the management of driving schools, to regulate driving training processes and to improve training quality. Until now, over 2000 domestic driving schools have chosen Chainway’s solution.

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### CHALLENGES
1. The school management is complicated and efficiency low.
2. It is hard to record training hours and driving mileage of students.
3. Identity fraud cannot be avoided due to the lack of an efficient way to verify student identity.
4. The driver training processes cannot be monitored and managed in real time.

### SOLUTIONS
Integrating functions such as HF RFID reading & writing, fingerprint recognition, camera, etc., Chainway solution which covers software and hardware enables driving schools to monitor the whole training process in real time.

- **Identity verification:** fingerprint recognition or IC card authentication make sure that students and instructor identity can be verified quickly and accurately, effectively reduced identity fraud.
- **Timing management:** Students need to swipe cards and verify their fingerprints every time they start training. The system will automatically recognize and record the hours and mileage, etc., and upload them to the management platform. Trainees can also check their training hours and driving mileage online at any time by logging in their ID account.
- **Real-time monitoring:** the intelligent vehicle computers can timely monitor the current state of the vehicle (moving / stop / flameout / current location/speed). Additionally, GPS can monitor and playback the vehicle moving track.

### Online Learning:
Chainway has established an online learning system so that the students can learn by themselves on web page or APP already downloaded, giving them more freedom and convenience.

### EFFECTS
1. It simplified workflows of driving training and tests, reduced unnecessary waste of resources.
2. All the records can be transmitted to the backend system in real-time. Records about instructor workload can be an indicator for performance assessment; those about student training status and school work progress facilitated the overall management of driving schools.

### PDA CONFIGURATION
- **P/N:** CWJ500/V600
- **Functions:** RFID, Fingerprint, GPRS

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**CHALLENGES**
1. The school management is complicated and efficiency low.
2. It is hard to record training hours and driving mileage of students.
3. Identity fraud cannot be avoided due to the lack of an efficient way to verify student identity.
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**PDA CONFIGURATION**
- **P/N:** CWJ500/V600
- **Functions:** RFID, Fingerprint, GPRS
BACKGROUND
Mexican Ministry of Social Development is committed to offering social welfare and social relief to the crowd in need so as to achieve country’s common prosperity. However, due to heavy funded population, the manual match during distribution is inefficient and cases like falsely claim and repeating receipt often occur, so that the sponsorship cost is often beyond the financial budget. Chainway’s sustentation system adopted fingerprint recognition technology to achieve automatic match, so that the Ministry can carry out work in order.

CHALLENGES AHEAD
1. The traditional method of manual recording to collect information results in heavy workload and low efficiency.
2. The pictorial information cannot be collected; recorded information is not comprehensive.
3. The artificial match to identity verification is time-consuming and error-prone, and phenomena like falsely claim and repeating receipt often occur.
4. Heavy funded population makes management complicated and cost uncontrollable.
Chainway Helps Mexican Ministry of Social Development to Establish the Intelligent Sustentation System

**SOLUTIONS**

Chainway helps the Mexican Ministry of Social Development set up a sound sustentation system and database by adopting fingerprint recognition technology and applying it to the C4000 handheld computers, which not only solved the problems like personal identity verification and comprehensive information collection, but also improved the mobility and reduced the cost of relief supplies.

**APPLICATION IMPLEMENTATION**

- **Electronic information management**
  With a handheld PDA, application form can be quickly completed, comprehensive information including portrait, fingerprint, photographs of home environment, and home address can be collected, which is quite convenient and swift, accurate and reliable.

- **Real-time information management**
  The 3G network enables real-time transmission of the applicant information to the background, exempting from manual entry, which greatly improves work efficiency and shortens approval time.

- **Intelligent identification management**
  When distributing subsidies, fingerprint recognition technology is adopted to identify the funded, realizing automatic match more quickly and accurately.

- **Jurisdictions positioning management**
  Via GPS, the handheld computer can quickly judge whether the funded belong to the jurisdiction, avoiding repeating receipt in multiple jurisdictions and helping save costs.

**APPLICATION EFFECT**

1. The application of fingerprint recognition technology solved the problem of personal identity verification fast and precisely, and eliminated effectively the cases like falsely claim and repeating receipt.
2. The collection of applicant information became more convenient and comprehensive through mobile computers.
3. The wireless enabled real-time transmission and storage of the applicant information and created detailed profile to facilitate future query and management.
4. The handheld computer is small and portable, which greatly facilitated the sustentation for people in remote mountainous areas.
5. The handheld computer significantly improved the sustentation system, optimized the sustentation process, increased management efficiency, and reduced sustentation costs.

**PDA CONFIGURATION**

P/N: C4000
Functions: Fingerprint, GPS, 3G, Camera
PROMOTE SOCIAL HARMONY AND STABILITY IN TAMIL NADU STATE

BACKGROUND
Tamil Nadu state government set up several fair-price shops from which low-income citizens can purchase a quota of foodstuffs, daily necessities and other living goods at a lower price. This move is committed to offering social welfare to the crowd in need so as to narrow the gap between the rich and the poor, and thus achieving the state’s common prosperity. However, due to heavy funded population and the complexity of the local population structure, manual identity verification during purchase activities is inefficient. And phenomena like identity fraud and excessive purchase often occur, so that cost often exceeds the financial budget.

CHALLENGES
1. As the state’s population structure is complex, and they live dispersely, it’s quite challenging to identify members from low-income families. Traditional manual data capture and match results in heavy workload, high labor cost, low efficiency and high error rate.
2. It cannot achieve accurate poverty alleviation. It’s difficult to save and inquire relevant family information and procurement records.
3. It is hard for the government to carry out a comprehensive analysis of data and information like what kind of supplies citizens need most or how many they need each month. Therefore the government can’t adjust the supply in time or make a better subsidy plan.

SOLUTIONS
Chainway helps come up with a sound identity verification solution by adopting barcode technology and applying it to the C4000 handheld computers, which not only solved the problems like personal identity verification and comprehensive information collection, but also improved the mobility and controlled government spending under the budget line.

EFFECTS
1. The application of barcode technology has solved the problem of personal identity verification quickly and precisely, and has eliminated the phenomena like excessive purchase.
2. Information collection becomes more convenient and comprehensive through portable mobile computers.
3. 3G network enables real-time transmission and storage of the data captured. The backend database facilitates future information inquiry and management.
4. It provides basis for the government to formulate policies to further narrow the gap between the rich and the poor, which is beneficial to social harmony and stability.

PDA CONFIGURATION
P/N: C4000
Functions: 1D, 3G
EUROPEAN GOVERNMENT AGENCY MANAGES LIVESTOCK WITH CHAINWAY HANDHELD COMPUTERS

BACKGROUND
With social economy development, people have higher requirements for living quality, especially the requirement for animal food safety, and the new EU food legal system also established food traceability rules. To enhance animal management and set up animal food traceability system, the Agricultural and Husbandry sector of a European country introduced intelligent RFID technology from Chainway that can record and manage information about animal feeding, transportation, processing, etc. Shenzhen Chainway helps build an efficient system of animal management that provides animal food with a complete “from-table-to-farm” traceability, which effectively ensures the safety of animal foods.

CHALLENGES AHEAD
1. Using cards to manually record animal feeding information is inefficient and error-prone;
2. Paper records are difficult to store and time-consuming to inquire;
3. There are difficulties for traceability when food safety incidents happen.

SOLUTIONS
With RFID technology, Chainway establishes a unique ID code for each animal, what we usually call animal label, and records the species’ identity information such as type, date of birth, feeding pattern and feed ratio, etc. to the label. During animal feeding and management, simply use the handheld computers to scan labels, then there is quick access to animal information in bulk and it is efficient to upload information to the database. In later processes, information such as feeding, epidemic prevention, transportation and slaughtering will also be collected through the handheld computers and uploaded to the database, forming a complete foods traceability system.

APPLICATION EFFECT
1. It improves efficiency and reduces error rate;
2. It can provide large data storage space, store for a long period and query historical data at any time;
3. It provides complete and accurate historical information traceability;
4. The safety of all foods, animal feed and feed ingredient can be ensured through effective control in the whole process from farm to table;
5. It systematically records and manages information like animal breeding, transportation, processing etc., making it convenient to query and trace;
6. It promotes openness, transparency, greenness, and safety of farm and pasture products in the whole process from growth to processing.

PDA CONFIGURATION
P/N: C3000 X2
Functions: LF RFID, Barcode Scanning, WiFi, GPRS
ANIMAL MANAGEMENT FOR THAI ROYALS

BACKGROUND
The Thai royal family has numerous animals to be raised. It’s essential to strengthen the management of animals. That means animal breeders need to keep abreast of animals’ real-time growth conditions, conduct regular physical examination to ensure their health. With the help of Chainway, it is able to introduce an intelligent RFID system to head for a more comprehensive, efficient and convenient animal management.

CHALLENGES
1. Manual operations to record animal feeding information is of low efficiency and high probability of error.
2. Paper records are not easy to save. It is also time-consuming to find out animal information required.
3. It is extremely inconvenient to share animal information with others.
4. Identifying each animal by eyes is time-consuming and error-prone. For example, it is hard to tell which had been given vaccine and which not without an electronic unique tag.

SOLUTIONS
Each animal is attached with a unique RFID tag, just like human’s ID card, passport or driving license. When it comes to data capture, just use a handheld terminal to scan the tag, and then input key information. These key animal information can be easily recorded and transmitted to the database system through 3G network. When it comes to information inquiry, simply wave the handheld computer to scan animal tags to quickly extract all information, including birth date, physical condition, breeder information, etc.

EFFECTS
1. It improves the efficiency of animal information collection, and reduces error rate;
2. Large storage space allows a mass of data to be saved, so that administrators can get any historical data they want;
3. Breeders can easily scan the electronic tags to obtain animal DNA, blood type, place of birth and other related information, which facilitates the royal’s overall monitoring of animals.

PDA CONFIGURATION
P/N: C4000
Functions: 1D, LF RFID, 3G

Industry Application: Livestock management
Region: Thailand
Model: C4000 Handheld Computer
ASSET MANAGEMENT FOR A STATE BANK

BACKGROUND

A Chinese state-owned bank generates substantial cash flow both in its bank vault and between its outlets every day. To choose a bank-specific barcode scanner with reliable performance is essential. Chainway handheld computers with barcode scanning technology and powerful information storage capacity are perfect to meet the demand for financial escort management, so that the bank can track where its cashboxes are, who has its cashboxes, and when its cashboxes are due for arrival. To optimize cashbox escort processes, they have adopted Chainway’s handheld computers to help them improve efficiency and enhance finance security.

CHALLENGES

In the absence of the use of barcode scanners, the traditional manual method is laborious, inefficient, inconvenient and above all insecure, which is reflected in processes of asset management (cashbox identifying and tracking) and identity verification of cashbox escort personnel.

SOLUTIONS

The bank has deployed Chainway’s C3000 UHF handheld computers. Each cashbox first is equipped with a 2D barcode or a RFID tag that each contains unique information (total amount inside, all the serial number on the note, where the money is from and to, whom this batch of money will be handed to). By an easy wave, the unique information can be read and automatically transmitted to the backend database, enabling convenient and accurate record of the movement of bank cashboxes.

To verify and confirm the ID of personnel for cashbox escort efficiently and accurately, Chainway mobile computer will first record the fingerprint of the personnel; or in another way, each personnel is first assigned a unique RFID tag. What they need to do is put their fingers on the PDA or use PDA to scan their tags to verify their identity, which is much more reliable than the traditional verifications, ensuring the secure and smooth handover, and dealing with the emergency during the escort.

EFFECTS

It changed the traditional manual operation mode of financial escort. That PDA can verify identity of escort personnel avoided human error. Administrators can check real-time information like automatically generated statements and tracking records of cashboxes so as to prevent potential security risks and improve the scientific management level.

PDA CONFIGURATION

P/N: C3000
Functions: 2D, UHF RFID

Industry Application:
Finance
Region:
China
Model:
C3000 UHF RFID Reader
MOBILE BANK MANAGEMENT IN INDIAN RURAL AREAS

BACKGROUND
Remote rural areas in India is underdeveloped in electricity power industry, thus fixed ATMs cannot be supported. In order to provide basic bank service (account opening, cash withdrawing, transferring and balance inquiry) in these areas, India Post decided to use handheld terminals and solar power to replace ATM. After comprehensive consideration, India Post chose Chainway to build up mobile bank in rural areas.

CHALLENGES
Because of lacking stable electricity in remote areas of India, ATMs cannot be supported. Simple basic bank services like opening an account or inquiry balance cannot be realized.

SOLUTIONS
To solve these challenges, Chainway customizes the handhelds for India Post. 2D barcode and fingerprint are configured together. Also, USB OTG function enables the handheld to be connected to a printer which has a swipe card reader and a keyboard. With 2D barcode and fingerprint, client’s identity can be identified, then account can be opened. With swipe card reader and keyboard, balance and other account information can be inquired. With printer, transaction receipt can be printed. With a mobile charger of solar power, all these operations can be finished and managed.

EFFECTS
1. Chainway helps India Post establish a mobile bank system in Indian rural areas. It facilitates citizens’ life there.
2. Handhelds are portable to carry and use, with low operational cost. Chainway seizes the market before our competitors ever finding out.

PDA CONFIGURATION
P/N: C3000
Functions: 2D, Fingerprint, USB
TICKET INSPECTION FOR THE 16th ST. PETERSBURG INTERNATIONAL ECONOMIC FORUM

BACKGROUND
The St. Petersburg International Economic Forum (SPIEF) is an annual Russian business event for the economic sector, which has been held in St. Petersburg since 1997, and under the auspices of the Russian President since 2005. Each year, more than 4,000 people from over 60 different countries take part the forum, a distinguished platform for elites to have a discussion about global economy. The 16th forum in 2012 brought together Russian President Vladimir Putin, the chief executives of major Russian and international companies, experts, eminent businessmen, heads of state, political leaders, prime ministers, deputy prime ministers, departmental ministers, and governors. The key purpose of the Forum is to provide a practical tool for business, helping to overcome the barriers, both geographical and informational, dividing Russia and other countries. To ensure the public security, the forum needs to verify every attendee’s identity.

CHALLENGES
1. This forum is one of Russia’s most important international economic forums. All VIP attendees are elites from their sectors, thus elite equipment is needed for identity checking and ticket inspection.
2. To check the identity of more than 4,000 attendees from over 60 countries and their tickets is a heavy and complicated workload.
3. That there are a large amount of people passing through each entry during a certain period of time needs an efficient checking.

SOLUTIONS
Chainway Information Technology Co., Ltd. has developed a set of effective electronic ticket validation solutions. Combined with the application of bar code and RFID technology, Chainway C5000 handheld terminals help to improve efficiency and quality of service when checking tickets for VIP attendees.

EFFECTS
1. Replacing traditional manual checking with intelligent validation system improves efficiency and shortens the entering time of VIP members.
2. Tickets with barcodes or RFID tags effectively reduced counterfeit tickets and identity fraud.
3. All information collected by the portable PDAs can be conveniently and automatically transmitted to the backstage management system. Administrators can have real-time visibility into the recorded information about VIP attendees.
4. It ensured the high quality and efficient operation of the ticket affairs; effectively promoted smooth and successful development of the 16th St. Petersburg International Economic Forum.

PDA CONFIGURATION
P/N: C5000
Functions: 1D, HF RFID, WiFi, GPRS
EXIT AND ENTRY ADMINISTRATION FOR THE 16TH ASIAN GAMES

BACKGROUND
The 2010 Asian Games, a multi-sport event celebrated in Guangzhou, received a total of 9,704 overseas athletes from 45 National Olympic Committees (NOCs). 258,000 AD cards were issued and 2 million tickets were sold, making it the largest event in the history of the Games. Controls have been tightened on road, water, air and railway traffic. Some 56 public security inspection stations have been set up around the province and 76 throughout the host city and co-host cities. Additionally, 26 water traffic control stations and 24 railway check stations have been established. On this occasion, the Committee chose Chainway PDAs to verify identity and credentials of entry-exit personnel in those inspection stations, aiming to maintain order at competition venues.

SOLUTIONS
With extensive functions and superb performance, Chainway C5000 are preferred by the committee. The security staff uses Chainway PDAs to scan credentials and read identity information of entry-exit personnel. By connecting to the backend database via wireless network, real-time inquiry and verification can be realized. The patrol police can carry the portable computer anywhere and anytime in the whole process. The police headquarter or command center can log in the backend system to monitor inspections.

EFFECTS
1. The intelligent recognition rather than manual check greatly shortened time of border exit and entry.
2. The intelligent system put an end to forged documents and identity fraud.
3. The real-time supervision strengthened the management of inspection work.
4. Security check was achieved with high accuracy and efficiency, ensuring a successful Asian Games.

PDA CONFIGURATION
P/N: C5000
Functions: Barcode scanning, RFID, WiFi, GPRS

Industry Application:
Access Control & Security Check
Region: China
Model: C5000 Handheld Computer
TICKET VALIDATION FOR 2013 EUROVISION SONG CONTEST IN SWEDEN

BACKGROUND
The Eurovision Song Contest is the longest-running annual international TV song competition, held, primarily, among the member countries of the European Broadcasting Union (EBU) since 1956. It is also one of the most watched non-sporting events in the world, with audience figures having been quoted in recent years as anything between 100 million and 600 million internationally. The Eurovision Song Contest 2013 was the 58th edition contest taking place in Malmö, Sweden. Thirty-nine countries participated and the winner that year was Denmark with the song "Only Teardrops" by Emmelie de Forest.

CHALLENGES
1. This grand event receives various competitors from a total of thirty-nine countries. It is quite challenging to manage all the participants well.
2. That players come from different countries has high technical requirements for ticket inspection.
3. Relying on inspectors’ naked eyes to check tickets results in low efficiency and low accuracy.
4. There is no access to know the real-time attendance of the contestants. This may affect the contest process.

SOLUTIONS
With Chainway C2000 data capture terminals, the whole ticket validation becomes more efficient. By easily scanning the contestants’ tickets with unique 1D bar codes, the speed of identity verification has obviously been accelerated. At the same time, all information collected can be transmitted to the backend database via Wi-Fi, which brings great convenience for personnel management.

EFFECTS
1. Intelligent identification system instead of the traditional manual operations brings a substantial increase in efficiency, greatly shortened competitors’ admission time.
2. Barcodes scanning effectively reduces forged tickets, identity fraud and so on.
3. Management personnel can have real-time access to information like how many contestants have been admitted, how many haven’t, who are them and so on, making overall management more convenient.
4. It ensures that admission tickets are checked with high precision and efficiency, thus contributing to a safe and smooth Eurovision Song Contest.

PDA CONFIGURATION
P/N: C2000
Functions: HF RFID, 1D, WiFi
BACKGROUND
The 2014 Winter Olympics, organized by the Sochi Organizing Committee (SOOC), officially called the 22nd Olympic Winter Games and commonly known as Sochi 2014, were a major international multi-sport event held from 7 to 23 February 2014 in Sochi, Russia. It was the first Olympics in Russia since the breakup of the Soviet Union in 1991. A total of 98 events in 15 winter sport disciplines were held during the Games. A record of 88 nations were qualified to compete, which beat the previous record of 82 set at the previous Winter Olympics in Vancouver. With so many athletes attending the Game, the Committee reached cooperation with Chainway and deployed C5000 handheld readers for ticket validation, which improved efficiency of athlete entering the arena and enhanced accuracy of athlete identity verification.

CHALLENGES
1. The traditional paper tickets without any anti-fake mark are easy to be forged.
2. It is inefficient, time-consuming as well as error-prone if tickets are checked by working staff’s naked eyes.
3. Lack of real-time ticket checking data brings difficulty to the follow-up analysis and management.

SOLUTIONS
Chainway solution integrated Internet of Things and computing technologies, replaced traditional paper tickets with electronic RFID tickets. Configured with barcode scanning and RFID reading and writing functions, C5000 can read ticket information immediately when spectators hold tickets to enter the playing field. At the same time an automatic match of information in background database is proceeded via wireless networks. Compared with the traditional manual recognition, this way realizes fast and accurate ticket validation, almost eliminates fake tickets, and ensures a smooth and successful Winter Olympics.

EFFECTS
1. Intelligent identification system instead of the traditional manual recognition brings a substantial increase in efficiency, greatly shortened athletes’ admission time.
2. Electronic RFID tickets effectively put an end to forged paper tickets, identity fraud and so on.
3. Through backend system, administrators can have an overall visibility of ticket inspection in real time.
4. It ensures that admission tickets are checked with high quality and efficiency, thus contributing to a safe and smooth Olympic Games.

PDA CONFIGURATION
P/N: C5000
Functions: 1D, HF RFID
TICKET VALIDATION FOR VIPS IN CHINA OPEN

BACKGROUND
The China Open, approved by International Tennis Association since 2004, is an annual professional tennis tournament held in Beijing, China. It is part of the ATP 500 Series of the 2011 ATP World Tour. As there are a crowd of spectators and multiple types of tickets, the requirements for ticket validation are quite high. As a result, Chainway C5000 mobile computers had been adopted to validate tickets in the China Open from 2010 to 2015. This solution contributed to a well-organized event, and was highly appraised by the organizer.

CHALLENGES
1. Disorder sometimes happened during ticket validation as there were too many spectators and multiple types of tickets.
2. Traditional way of checking tickets resulted in high labor cost and low efficiency.
3. The anti-counterfeiting performance of traditional tickets was not satisfying. It was not easy for ticket inspectors to find out counterfeit tickets.
4. That information could not be automatically transmitted to the background database was not convenient for overall management.

SOLUTIONS
Configured with two-dimensional barcode scanning and high-frequency RFID reading and writing functions, Chainway C5000 upgrades both inspectors’ and spectators’ experience. Chainway solution also integrated ticketing system, inspection system, billing system, ticket management system, membership management system, IC card spending systems and other subsystems. When VIP spectators take out their electronic tickets with RFID tags, automatic ticket validation is done quickly by weaving C5000 mobile computers. If the ticket is valid, the screen shows a sign that allows passing and the spectator can get into the venue, or text and voice warnings will be issued.

EFFECTS
1. The PDAs play an important role in establishing an automatic, standardized and modern Ticket Management System for this event.
2. Using handheld computers to automatically validate tickets has enhanced the staff’s productivity, as well as saved labor costs.
3. This lightweight and pocketable handheld reader is comfortable to carry and easy to operate. It always delivers smooth and stable operation.
4. All information during ticket inspection can be transmitted to the system via Wi-Fi in real time. The background system then can sum up the number of spectators admitted at each VIP entrance.
5. Speed of ticket validation and quality of service are greatly improved, so the audience’s satisfaction has also been improved.

PDA CONFIGURATION
P/N: C5000
Functions: 2D, HF RFID, WiFi
**Ticket Checking Management in Hong Kong Mass Transit Railway**

**BACKGROUND**
Hong Kong Mass Transit Railway (MTR) stands out for its safety, reliability and good service. To hold or even enhance this strength, MTR works with Chainway to introduce handheld terminals into the ticket checking system.

**CHALLENGES**
1. Traditional way to check tickets was slow, inefficient and of high labor cost. Both MTR and passengers did not find satisfaction in this process.
2. Traditional way to check tickets was hard to identify fake tickets, which may cause losses to the company.
3. It was difficult to analyze and manage ticket data.

**SOLUTIONS**
Chainway customizes C5000 based on MTR’s need. More functions are added in the C5000 PDA, and the appearance design is more ergonomic. This special PDA is applied in ticket checking of first-class coaches and in ticket managing of second-class coaches. Data statistics will be automatically run on the PDA and the result will be sent to the ticket management system through Wi-Fi.

**APPLICATIONS**
Ticket Checking
The ticket-inspector uses PDA to scan the ticket, and the PDA will inform the inspector if the ticket is valid or not via a voice or text prompt.

Data Statistics
Intelligent data analysis on PDA is more accurate and fast than manual calculation.

Ticket Management
The ticket-inspector can inquire and update the latest ticket data on the PDA via Wi-Fi to the ticket data base. Real-time ticket management can be realized.

**Effects**
1. PDA helps MTR to realize an intelligent ticket checking. Operational efficiency is raised.
2. Shortened ticket checking time improves passengers’ satisfaction.
3. In the same period of time, more passengers will get on the train because of ticket checking shortening. More revenues will be brought to MTR.
4. The traffic flow is more fluent. Less workforce is needed to maintain the passengers order.

**PDA CONFIGURATION**
P/N: C5000
Functions: PSAM, WiFi, Customized card reading module, Keyboard area transformed into card reading area, Upside-down screen
SPEEDING UP BORDER PROCESSES FOR SCHOOLCHILDREN FROM SHENZHEN TO HONG KONG

BACKGROUND
With the economic and cultural exchanges between Shenzhen and Hong Kong becoming more closed and frequent, the number of cross-border marriages has increased rapidly and the number of cross-boundary students has also been on the increase year by year. It is learned that the number of cross-border students in Shenzhen has exceeded 18 thousand and it is still growing. To enable their children to receive better education, many parents often choose to live in Shenzhen, and send their kids to be schooled in Hong Kong. It’s quite challenging for the checkpoints to carry out inspection work in such a short period time, especially when the children are too young to follow the rules.

CHALLENGES
1. The workload is heavy by manual inspection as there are huge numbers of students making round trips between Shenzhen and Hong Kong.
2. Time is limited. Passing speed should be as quick as possible, or they’ll be late for school.
3. Some children are not old enough to follow the boarding process. High service demand is needed.

SOLUTIONS
In view of this particular group, China Immigration Inspection authorities have been continuously strengthening the innovation of the border entry-exit control model, actively providing quality and efficient clearance services for cross-boundary students. To this end, the authorities deployed Chainway C3000 mobile PDAs in Shenzhen checkpoints of Luohu and Sha Tau Kok. By scanning the traffic permit with built-in low-frequency badges wore by schoolchildren, the inspection time has been shortened from 8 to 10 seconds to 2 to 3 seconds.

EFFECTS
1. With C3000 handheld PDAs, clearance efficiency has been greatly improved; passing time has been shortened.
2. It is comfortable and convenient for inspectors to carry the portable and compact C3000 anywhere they need in the checkpoint.
3. Once a young kid is lost, quick access to his/her basic identity information helped contact their guardians, ensuring child safety.
4. Their identity information can be collected and uploaded in real time, which facilitate statistics or inquiries by some government departments.

PDA CONFIGURATION
P/N: C3000
Functions: LF RFID (125K), 3G (WCDMA), WiFi
The financial department need to sum up all the fees that tourists have spent to do the accounting, which is a heavy workload.

SOLUTIONS
Chainway Information Technology Co., Ltd. developed an intelligent ticket validation system for the local government to strengthen the scenic spot’s ticket affairs management. Using C2000 handheld devices to scan the tickets with two-dimensional barcodes delivers higher security and reduces counterfeit tickets. Automatic identification instead of naked eyes’ identification significantly improves the speed and accuracy of ticket inspection. Even in holidays, tourists can be quickly admitted so that they can be better satisfied.

EFFECTS
1. These unique tickets with 2D barcodes can’t be easily modified, copied and counterfeited.
2. Automatic ticket validation brings a substantial increase in inspection efficiency, which shortens the time of tourists passing through the entrance.
3. It eases off working staff’s workload, thus their loyalty and commitment is highly enhanced.
4. The application of intelligent ticket checking system has strengthened the overall management of the scenic spot, improves the service quality of ticket checking. The degree of satisfaction of tourists has been raised, which further stimulates consumption and increases the income of the local government.

PDA CONFIGURATION
P/N: C2000
Functions: 2D, GPRS, WiFi
ACCESS CONTROL AND SECURITY CHECK FOR AN IRAQI COMPANY

BACKGROUND
What is known to us is that there are local wars and turmoil in Iraq now and then, triggering social unrest. The fixed access control facilities in commercial buildings are often damaged, and maintenance costs long time and large amount of money. It’s difficult to guarantee the security and daily operation of the control system, causing huge losses to the managers. Automatic identification and access control system have become necessary to overcome the security threats faced by many organizations in Iraq. In order to reduce losses and prevent the entry of terrorists or unidentified persons into the building, operators are required to increase the accuracy of security checks. It then requires more flexible and efficient security facilities to ensure building safety.

CHALLENGES
1. Due to Iraq’s social unrest, the fixed security facilities in the commercial building are of poor mobility, then vulnerable to destruction.
2. It takes long time and high costs to maintain and repair the fixed security facilities. It causes huge losses to the managers during their breakdown.
3. Information collected can’t be shared in real time on these fixed security facilities, which can’t facilitate supervision and overall management.

SOLUTIONS
According to the user’s needs and social status, Shenzhen Chainway Information Technology Co., Ltd configured C4000 mobile terminals to solve a series of problems ahead. Security personnel only need to carry the portable C4000 PDA at the entrance. When an employee walks by the reader, the badge is scanned and his/her status can be updated in the system. Then the backend database can match information automatically via fast and stable 3G network. Only authorized personnel are able to access the building, helping decrease the probability of lost or stolen equipment and information. Due to its portability and mobility, the device is free from damage as it can be carried away once there is chaos, which effectively reduces losses.

EFFECTS
1. C4000 handheld terminals are portable and mobile, thus can be easily transferred during a war, effectively avoiding damages to facilities.
2. By integrating high-frequency RFID reading and writing, 3G network and other functions, it improves security efficiency, at the same time, effectively prevents the terrorists or unidentified persons from entering the building.
3. Rugged and reliable C4000, with a high degree of protection, can survive drops in chaos.
4. It improves the efficiency of security check, reduces a lot of maintenance costs, and effectively enhances the economic benefits of the building managers.

PDA CONFIGURATION
P/N: C4000
Functions: HF RFID, 3G, GPS, WiFi, Bluetooth

Industry Application: Access Control & Security Check
Region: Iraq
Model: C4000 Handheld Computer
BACKGROUND
Flipkart, India’s biggest e-commerce company by far, started out in 2007 as an online book distributor but has ever since successfully expanded its range of merchandise to include home appliances, digital products, apparel, household products, and more. Headquartered in Bangalore, the biggest city in India, the company was valuated in May 2015 at $15 billion.

As commodity circulation increases, the challenges in its distribution process become more complex, cumbersome even, resulting in higher labor costs and an increased error rate. To contain operational costs and boost efficiency, Flipkart partnered with Chainway Information Technology Co., Ltd by introducing its high-performance C4000 mobile computers. Chainway is committed to raising customers’ management efficiency and elevating their comprehensive strength and adaptability to maintain their competitive edge in today’s globalized marketplace.

CHALLENGES
1. Increased number of commodities in flow makes manual order picking and sorting laborious, time-consuming and error-prone.
2. As the supply and distribution channels expand, overall administration becomes more difficult.
3. Flipkart cannot track the movement of goods so that delivery time is not controllable and delays often happen. Additionally, emergencies cannot be informed and dealt with in a timely manner.
4. The online shoppers have no access to real-time tracking information, which probably leads to less satisfied shopping experience.
5. Without reliable indicators for performance assessment, it is impossible to establish an effective incentive mechanism, which is inconvenient for personnel management.

SOLUTIONS
After each commodity is matched with a unique barcode, Chainway C4000 handheld terminals can realize efficient goods identification and picking, intelligent management of order sorting and goods distribution, real-time goods monitoring and tracking. What’s more, for each order, key information like time and implementer throughout the whole process from order sorting to distribution to goods receipt can be transmitted to the information management platform via wireless networks. The administrators can check real-time information about goods flows between suppliers and distributors nationwide and then adjust the allocation of commodities accordingly.

EFFECTS
1. It promoted the visibility of Flipkart’s operational procedures. Additionally, it saved costs and enhanced operating efficiency.
2. It realized intelligent delivery and receipt. By eliminating manual operations, it made order picking and sorting more intelligent, prompting the correct parcel sorting rate up to 99%.
3. It achieved interconnection between national logistics centers, facilitated the unified management of the network, improved the allocation speed between warehouses, and optimized resource allocation;
4. It enabled real-time logistics tracking and standardized workflows;
5. It established a more sound distribution network; comprehensively enhanced corporate image, service level and customer satisfaction.

PDA Configuration
P/N: C4000
Functions: 1D/2D, WiFi, Camera
BACKGROUND
This e-commerce enterprise has several large warehouses across Thailand. With the rapid development of e-commerce and continuous expansion of business, requirements for speed and mobility have become high and higher. The current situation has urged the company to change the previous manual operation for a more intelligent and efficient management tool.

CHALLENGES
1. Because there are large quantities of goods in and out of each warehouse every day, manual steps are not only time-consuming but also error-prone.
2. Paper records are not easy to keep, and most importantly extremely inconvenient to inquire needed information.
3. It is difficult to find the cause when recorded data don’t match with the real stock, a real headache for the user.

SOLUTIONS
Integrated with barcode scanning technology, Chainway PDA can automatically identify goods information by scanning their unique 2D barcodes, just like our unique passports or driver licenses. Then sorting, stock-taking and order picking become quicker and more precise.

Application implementation
Quick Putaway
Upon the arrival of goods, each commodity is pasted with a label which will distinguish it from others. By scanning the label, the database will synchronize the records, confirming their entering into warehouses. The label has already been written into information like product name, category, production date, exact place where it should be placed, and etc. The warehouse keepers can then quickly and accurately put them away on the right shelf.

Efficient Stock-taking
Each warehouse can monitor its real-time stock with smart PDAs. Real-time transmission of inventory information to the database over wireless network connections greatly enhances stock-taking efficiency and feedback speed. Inventory visibility are improved and replenishment are made in time, so that supply shortage or out of stock never happens.

Intelligent Sorting
Each warehouse received thousands of orders each day. Fulfilling one order by another is definitely a waste of time and warehouse keepers keep walking back and forth for the whole day. Chainway PDAs solves this trouble by planning the best sorting route, putting all staff’s work in order.

EFFECTS
1. Automatic data collection saved both time and efforts.
2. The first-rate scanning head delivered strong recognition ability, fast scanning speed and high precision.
3. Information automatically transmitted to the database over wireless networks eliminated handwritten transcripts. Electronic records could be kept forever and information inquiry became much easier.
4. The efficiency of recording the inbound and outbound was highly enhanced, at the same time avoided manual errors.
5. Real-time inquiry about inventory information stopped incidents like stock out.
6. It maximized utilization of warehouses, lowered warehousing costs, and speeded up the turnover rate.

PDA Configuration
P/N: C5000
Functions: 1D/2D, WiFi, Bluetooth

Information Inquiries
For administrators, they can get whatever data they need about a certain commodity by an easy wave of a mobile computer. By entering commodity’s code number in the official website, customers can check all information online so that they can be assured of its authenticity.
Enhance Visibility into Paperchase Warehouse

Background
Paperchase is an international chain of stationery stores which were established in the United Kingdom but has since expanded into Europe, the USA and United Arab Emirates. It is also UK’s number 1 shopping spot for exciting and innovative design-led stationery. For over 40 years they have been inspired with stylish stationery, unique greeting cards, distinctive gifts as well as quality art and craft materials. Always ready with fresh and inventive ideas, Paperchase is constantly bringing customers with many new products. As of January 2013, the company has over 130 retail points of sale. These are primarily based in the UK, with several in Dubai and a few in Denmark, Netherlands, France and Germany.

Challenges
1. Because there are large quantities of goods in and out of each warehouse every day, manual stock taking is not only time-consuming but also error-prone.
2. It is difficult to find the cause when recorded data don’t match with the real stock, a real headache for the user.
3. It costs a long time to find out the needed goods from the numerous other goods in the vast warehouse.
4. On-site warehouse workers can’t be monitored and managed in time.
5. Paper records are not easy to keep, and most importantly extremely inconvenient to inquire needed information.

Solutions
Integrated with barcode scanning technology, Chainway PDA can automatically identify goods information by scanning their unique 1D barcodes, just like our unique passports or driver licenses. Then sorting, stock-taking and order picking become quicker and more precise. Data collected can be transmitted in real time to the management system, so that administrators can make replenishment in time, change production plan accordingly and improve management efficiency.

Application Details
Quick Putaway
Each box of stationery is first pasted with a 1D barcode which will distinguish it from others. By scanning the label, the database will synchronize the records, confirming their entering into warehouses. The label has already been written into information like product name, category, production date, exact place where it should be placed, and etc. The warehouse keepers can then quickly and accurately put them away on the right shelf.

Intelligent Sorting
The warehouse received thousands of orders each day. Fulfilling one order by another is definitely a waste of time and warehouse keepers keep walking back and forth for the whole day. Chainway PDAs solves this trouble by planning the best sorting route, putting all staff’s work in order.

Efficient Stock-taking
Each warehouse can monitor its real-time stock with smart PDAs. Real-time transmission of inventory information to the database over wireless network greatly enhances stock-taking efficiency and feedback speed. Inventory visibility are improved and replenishment are made in time, so that supply shortage or out of stock never happens.

Effects
1. Automatic data collection saves both time and energy.
2. The first-rate scanning head delivers strong recognition ability, fast scanning speed and high precision.
3. Information automatically transmitted to the database over wireless networks eliminates handwritten transcripts. Electronic records can be kept forever and information inquiry became much easier.
4. The efficiency of recording the inbound and outbound is highly enhanced, at the same time avoids manual errors.
5. Real-time inquiry about inventory information stops incidents like stock out.
6. It maximizes utilization of warehouses, lowers warehousing costs, and speeds up the turnover rate.
7. It has bettered staff monitoring and personnel management.

PDA Configuration
P/N: C4000
Functions: 1D, WiFi

Industry Application:
Warehousing & Logistics Management
Region:
England
Model:
C4000 Handheld Computer
CHALLENGES
1. Order picking: due to the large quantities and various kinds of goods in logistics centers, manual operations are not only time-consuming but also error-prone.
2. Logistics tracking: it is unable to track goods; delivery time is not controllable. So delays often happen and unexpected events cannot be reported and handled in real time.
3. Information inquiry: it cannot provide real-time logistics tracking records, resulting in poor customer shopping experience.
4. Personnel management: without reliable assessment criteria, personnel management is inconvenient; an effective incentive mechanism can’t be established.
5. The information does not flow freely among these logistics centers, which is not conducive to the unified management and deployment of headquarters.

SOLUTIONS
Integrated barcode scanning technology, Chainway PDA can automatically identify and record goods information. From order picking to goods transportation to goods delivery, key information throughout the process is recorded. By uploading information to the management platform through a wireless network, administrators can have real-time access to information; manage them efficiently and conveniently through the backstage system. The system also offers services to inquire tracking information and further provides users with a better shopping experience.

EFFECTS
1. It promoted the visibility of distribution and dispatch. Additionally, it saves costs and enhances operating efficiency of logistics.
2. It realized intelligent receipt and delivery. Eliminating manual operation made order picking and sorting more intelligent; ensured the correct parcel sorting rate up to 99%.
3. It achieved interconnection between national logistics centers, facilitated the unified management of the network, improved the allocation speed between warehouses, and optimized resource allocation;
4. It enabled real-time logistics tracking and standardized workflows;
5. It established a more sound distribution network system; comprehensively enhanced corporate image, service level and customer satisfaction.

PDA CONFIGURATION
P/N: C3000/ C4000/ C4050/ C6000
Functions: Barcode scanning, RFID, WiFi, GPRS

Industry Application:
Logistics & Warehousing
Region:
China, India, Russia
Model:
C3000, C4000, C4050, C6000 Handheld Computer
LOGISTICS MANAGEMENT OF TNT EXPRESS IN PAKISTAN

BACKGROUND
TNT is operational in Pakistan for almost 3 decades. Because of business expansion in this country, traditional way to provide express services (picking, tracking and delivery) can barely meet the current need. TNT Pakistan then chooses Chainway as its partner to build a new highly efficient express system. TNT uses Chainway C3000 in express inventory, distribution, logistics tracking and goods delivery. The whole operational efficiency is improved, and the company benefits a lot from it.

CHALLENGES
1. While labor cost was high, manual picking were error-prone and inefficient.
2. When business peak, workers cannot handle stacked parcels, an on-time delivery seemed not possible. Delivery time was uncontrollable.
3. There was no personnel management system to evaluate employees’ performance.
4. Real-time tracking was unlikely to achieve, especially when emergencies occurred. Customer experience was poor.

SOLUTIONS
A barcode-based solution is launched to ensure intelligent picking, tracking and delivery. All real-time data is forwarded to the backend system. Real-time management can be therefore promised. Also, TNT can offer tracking information to those customers who are eager to know their parcel conditions.

APPLICATION DETAILS
Picking
Workers use handheld barcode scanners to scan the 2D barcode on the parcel in the warehouse. Fast and accurate parcel inventory and distribution means high efficiency and real-time tracking. Data transmission via Wi-Fi connection to the backend system allows administrators supervise and consult the real-time situation of the express process.

Delivery
The courier carries Chainway C3000 handheld terminal to scan the 2D barcode on the parcel. Delivery information is recorded automatically by the handheld and forwarded to the data base via 3G network. It is fast and convenient.

EFFECTS
1. Data can be collected in an easy way in the business peak. Both operational efficiency and customer service level are improved.
2. Real-time tracking of personnel is realized. It standardizes workflows.
3. Intelligent parcel picking and delivery improve working efficiency.
4. Real-time logistics information is offered to the customer. Customer satisfaction is ensured.
5. A better cooperative image is enhanced under the newly-founded logistics system.

PDA CONFIGURATION
P/N: C3000
Functions: 2D, 3G, WiFi
EFFECTS
1. Quick response to customer needs enhanced customer shopping experience and store image.
2. Stock-taking in bulk saved time, eased off workload, helping improve efficiency.
3. Headquarters could better learn sales status and adjust marketing strategy in time.

SOLUTIONS
Configured with circular polarization antenna, RFID reading & writing and wireless communication functions, Chainway C3000 realized apparel stock-taking in bulk and real-time information inquiry for field sales. Timely data update and intelligent statistics are also easily achieved.

CHALLENGES
1. It is inconvenient to inquire relevant information about clothes for customers at the store, resulting in poor shopping experience.
2. Inventory checking by manual operations or barcode scanners leads to heavy workload and high error rate.
3. All the sales data have to be input via a fixed PC terminal, which is inefficient and error-prone. Administrators have no real-time access to those sales data to make a response to the changing market.

BACKGROUND
The user is a famous Chinese department store chain. Founded in 2003, it is a retail establishment offering a wide range of consumer goods that range from clothing, furniture, home appliances, toys, cosmetics, housewares, toiletries, sporting goods, books, jewelry, electronics, and stationery to baby products. Its urgent need is to upgrade management level, enhance quality of service and hold down costs.

PDA CONFIGURATION
P/N: C3000
Functions: UHF RFID (Circular polarization antenna), WiFi

Industry Application: Retail
Region: China
Model: C3000 UHF RFID Reader
THAI GOLD JEWELRY STORE GAINS ACCURATE INVENTORY CHECKING WITH CHAINWAY PDA

Industry Application:
Retail
Region:
Thailand
Model:
C5000 Handheld Computer

Background
If you go to Thailand, you may likely to explore the feast of overwhelming gold jewelry stores. There are over 6500 of them, and each store has hundreds of pieces of gold jewelry. Thai gold is famous for the purity and the small commission. Large traffic of customers brings these stores not only real money, but also real headache. How to achieve a more accurate and intelligent inventory management becomes the biggest problem that many store owners want to solve.

CHALLENGES
1. A wide range of categories and fast stock turnover makes old manual inventory checking time-consuming, labor-costing and error-prone.
2. All sales data are first recorded manually on paper and then typed in a fixed PC terminal. This process is unnecessarily slow and inefficient.
3. Administrators have no real-time access to sales data and inventory data to make a quick response to the changing market.
4. Inaccurate inventory checking easily brings obstacle in store management.

SOLUTIONS
Each piece of jewelry is wrapped around a RFID tag, which is encoded with that item’s unique ID number. Store employees use Chainway C5000 handheld RFID readers to capture that information and send to the back-end server. Timely data update and intelligent statistics are also easily achieved. C5000 is easy to operate and rapid to deploy.

APPLICATIONS
Sales Management
Chainway PDA is connected wirelessly to the store’s back-end server. When a customer requires an item, the item is taken to the counter where staff uses a PDA to scan the RFID tag in order to record the inventory change. For each item purchased, the records are updated in real time.

Inventory Checking
At the end of each business day, a store employee uses a Chainway C5000 handheld reader to capture all the tags and send these IDs to the back-end software. If any tags are not accounted for, the software alerts the staff.

Data Analysis
Stored data is free to be analyzed. Store owners can have a clear picture of which category of jewelry sells fast and its stock. They make promotion strategies and stock preparation based on the analysis. Always ready for any changes of the market.

EFFECTS
1. Intelligent inventory checking improves efficiency and reduces human labor.
2. Store employees have more time and energy to interact with customers. In the end, a better customer service is provided.
3. Electronic database stores data forever. Real-time visibility into sales and inventory data promotes the management level of the store.
4. Insight into the real-time data lets store owners make the best use of marketing strategies. Customers can always get what they want in the store.
5. Intelligent inventory checking management makes the store more prepared and competitive in the gold jewelry retail sector. A positive and modern image is built to attract more customers.

PDA CONFIGURATION
P/N: C5000
Functions: HF RFID, GPRS
HOW TO GET STARTED WITH RETAIL CHAIN VISIBILITY

BACKGROUND
1b.ru is a new concept and new generation of stores for beauty and health. Large selection of high-end perfumes and cosmetics, personal care products, as well as medicines and medical-care products for the whole family—all in the ideal combination of comfort and convenience. Russian are fond of these stores due to their large selection of quality goods, favorable prices, and convenient locations. Besides its focus on product quality and innovation, it is committed to providing consumers with more efficient and convenient, timely and comfortable shopping experience. Thus, 1b.ru retail chains adopted C5000 handheld terminals to improve the life of their customers, minimize shopping time and reduce expenses.

CHALLENGES
1. There are a wide range of products in store, so inventory checking by manual operations leads to heavy workload and high error rate.
2. Inventory visibility is low and replenishment can’t be made in time, so that supply shortage or out of stock often happens.
3. It is quite difficult to quickly locate the exact merchandise that customers need.
4. All the sales data have to be transcribed to a fixed PC terminal, which is inefficient and error-prone.
5. Headquarters couldn’t keep abreast of the newest sales data to make a quick response to the changing market.

SOLUTIONS
Integrated with barcode scanning technology, C5000 can automatically identify goods information by scanning their unique 2D barcodes, just like citizen’s unique passports or driver licenses. By an easy wave of Chainway mobile readers, workers can quickly and accurately collect and match information of all merchandises in warehouse. Then stock-taking, sorting and order picking become quicker and more precise.

APPLICATION DETAILS
Quick Putaway
Upon the arrival of goods, each carton is pasted with a barcode which will distinguish it from others. By scanning the barcode, the database will synchronize the records, confirming their entering into warehouses. The label has already been written into information like product name, category, production date, exact place where it should be placed, and etc. The warehouse keepers can then quickly and accurately put them away on the right shelf.

Efficient Stock-taking
Each warehouse can monitor its real-time stock with smart PDAs. Real-time transmission of inventory information to the database over wireless network connections greatly enhances stock-taking efficiency and feedback speed. Inventory visibility are improved and replenishment are made in time.

Intelligent Sorting
Each warehouse received thousands of orders each day. Fulfilling one order by another is definitely a waste of time and warehouse keepers keep walking back and forth for the whole day. Chainway PDAs solves this trouble by planning the best sorting route, putting all staff’s work in order.

Information Inquiries
For administrators, they can get whatever data they need about a certain commodity by an easy wave of a mobile computer. By entering commodity’s code number in the official website, customers can check all information online so that they can be assured of its authenticity.

EFFECTS
1. Intelligent inventory checking and order picking achieved a highly automated warehouse management.
2. Information automatically transmitted to the database over wireless networks eliminated handwritten transcripts. Electronic records could be kept forever and information inquiry became much easier.
3. The efficiency of recording the inbound and outbound was highly enhanced, at the same time manual errors were avoided.
4. Real-time inquiry about inventory information stopped incidents like stock out.
5. It eventually lifted sales service and customer satisfaction.

PDA CONFIGURATION
P/N: C5000
Functions: 1D, WiFi
DRIVE EFFICIENCY AND SERVICE TO ACCELERATE REVENUE

BACKGROUND
Nepstar Chain Drugstore, headquartered in Shenzhen, pioneered the concept of chain retailing in pharmacies, and is now a leading retail drugstore chain in China. Established in 1995, Nepstar has grown from a single shop into a chain of 2,000 directly operated outlets covering 69 cities in China as of March 31, 2016. It uses directly operated stores, centralized procurement and a network of regional distribution centers to provide customers with pharmacy services and a wide variety of other merchandise, including OTC drugs, nutritional supplements, herbal products, personal care products, family care products, and convenience products including consumables and seasonal and promotional items. As now it has one headquarters distribution center and 12 regional distribution centers in China, it is in urgent need to capitalize on an efficient tool to improve warehouse and distribution management.

CHALLENGES
1. As there are a wide selection of medicines in headquarters and regional distribution centers, manual steps to make an inventory are not only time-consuming but also error-prone.
2. To track and find certain medicine in the warehouse takes a long time.
3. Those outlets or regional distribution centers cannot keep abreast of the latest stock data.

Sometimes they did not place orders from regional distribution centers or headquarters until some kind of medicine sold out.
4. It is difficult to summarize total sales amount of over 2,000 chain drugstores. The headquarters has no convenient and quick access to real-time sales status of each outlet, which is not conducive to adjust stock and related strategies.

SOLUTIONS
Drug Stock-taking
Each box of drug is pasted with a barcode that distinguishes it from others. Warehouse keepers can hold Chainway PDAs to scan and read barcodes to accomplish stock-taking. Comparing to the traditional operation that a staff walks here and there, holding a pen and paper to write down drug name, category and quantity, this automated way absolutely enhanced working productivity, raised accuracy of stock-taking and improved warehouse visibility.

Intelligent Sorting
Integrated barcode scanning technology, Chainway PDA can automatically identify and record goods information by scanning their barcodes, so that sorting and order picking become quicker and more precise. The mobile solutions not only significantly save time, but also streamlined operations of the entire logistics process.

Data Management
Via backstage information system, administrators can learn sales status of each distribution center whenever they need. Based on customers’ actual demand, administrators can adjust the quantity and variety of drug supply in real time. Logistics centers can share resources, in which way best optimizes the allocation of resources for each center, improving management efficiency and service quality.

EFFECTS
1. Accuracy and speed of stock-taking has been greatly improved.
2. It realizes intelligent receipt and delivery. Eliminating manual operation makes drug order picking and sorting automatic and intelligent.
3. Keeping control of the latest stock always ensures adequate supply of drugs.
4. It establishes a more sound distribution network system; comprehensively enhances corporate image and service level. It signifies their commitment to bringing health, convenience and a better quality of life to Chinese.
5. It has better served the store to capitalize on the robust demographic and economic growth trends in China to achieve a leading brand and market position.

PDA CONFIGURATION

Industry Application:
Retail
Region:
China
Model:
C3000 Handheld Computer

BACKGROUND
Nepstar Chain Drugstore, headquartered in Shenzhen, pioneered the concept of chain retailing in pharmacies, and is now a leading retail drugstore chain in China. Established in 1995, Nepstar has grown from a single shop into a chain of 2,000 directly operated outlets covering 69 cities in China as of March 31, 2016. It uses directly operated stores, centralized procurement and a network of regional distribution centers to provide customers with pharmacy services and a wide variety of other merchandise, including OTC drugs, nutritional supplements, herbal products, personal care products, family care products, and convenience products including consumables and seasonal and promotional items. As now it has one headquarters distribution center and 12 regional distribution centers in China, it is in urgent need to capitalize on an efficient tool to improve warehouse and distribution management.

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5. It has better served the store to capitalize on the robust demographic and economic growth trends in China to achieve a leading brand and market position.

PDA CONFIGURATION

Industry Application:
Retail
Region:
China
Model:
C3000 Handheld Computer

BACKGROUND
Nepstar Chain Drugstore, headquartered in Shenzhen, pioneered the concept of chain retailing in pharmacies, and is now a leading retail drugstore chain in China. Established in 1995, Nepstar has grown from a single shop into a chain of 2,000 directly operated outlets covering 69 cities in China as of March 31, 2016. It uses directly operated stores, centralized procurement and a network of regional distribution centers to provide customers with pharmacy services and a wide variety of other merchandise, including OTC drugs, nutritional supplements, herbal products, personal care products, family care products, and convenience products including consumables and seasonal and promotional items. As now it has one headquarters distribution center and 12 regional distribution centers in China, it is in urgent need to capitalize on an efficient tool to improve warehouse and distribution management.

CHALLENGES
1. As there are a wide selection of medicines in headquarters and regional distribution centers, manual steps to make an inventory are not only time-consuming but also error-prone.
2. To track and find certain medicine in the warehouse takes a long time.
3. Those outlets or regional distribution centers cannot keep abreast of the latest stock data.

Sometimes they did not place orders from regional distribution centers or headquarters until some kind of medicine sold out.
4. It is difficult to summarize total sales amount of over 2,000 chain drugstores. The headquarters has no convenient and quick access to real-time sales status of each outlet, which is not conducive to adjust stock and related strategies.

SOLUTIONS
Drug Stock-taking
Each box of drug is pasted with a barcode that distinguishes it from others. Warehouse keepers can hold Chainway PDAs to scan and read barcodes to accomplish stock-taking. Comparing to the traditional operation that a staff walks here and there, holding a pen and paper to write down drug name, category and quantity, this automated way absolutely enhanced working productivity, raised accuracy of stock-taking and improved warehouse visibility.

Intelligent Sorting
Integrated barcode scanning technology, Chainway PDA can automatically identify and record goods information by scanning their barcodes, so that sorting and order picking become quicker and more precise. The mobile solutions not only significantly save time, but also streamlined operations of the entire logistics process.

Data Management
Via backstage information system, administrators can learn sales status of each distribution center whenever they need. Based on customers’ actual demand, administrators can adjust the quantity and variety of drug supply in real time. Logistics centers can share resources, in which way best optimizes the allocation of resources for each center, improving management efficiency and service quality.

EFFECTS
1. Accuracy and speed of stock-taking has been greatly improved.
2. It realizes intelligent receipt and delivery. Eliminating manual operation makes drug order picking and sorting automatic and intelligent.
3. Keeping control of the latest stock always ensures adequate supply of drugs.
4. It establishes a more sound distribution network system; comprehensively enhances corporate image and service level. It signifies their commitment to bringing health, convenience and a better quality of life to Chinese.
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PDA CONFIGURATION

Industry Application:
Retail
Region:
China
Model:
C3000 Handheld Computer
BACKGROUND
The user is one of Jordanian’s most favorite jewelry retailers, with chain stores across major cities. With the rapid development of e-commerce, it has become more urgent for it to adopt modern technology to hold down management costs, enhance stores’ services and improve customers’ shopping experience.

CHALLENGES
1. Some sales must look through relevant information when they introduce jewelries to customers at the store, which repels customers and tires their patience.
2. There are a wide range of gold jewelries in store, so inventory checking by manual operations usually leads to heavy workload and high error rate.
3. All the sales data have to be transcribed to a fixed PC terminal, which is inefficient and error-prone. Administrators have no real-time access to those sales data to make a quick response to the changing market.
4. Membership management cannot be synchronized among its chain stores.

SOLUTIONS
Configured with RFID reading & writing module and wireless communication functions, Chainway C4000 realized intelligent jewelry stock-taking and real-time information inquiry by scanning the UHF RFID tags. Timely data update and intelligent statistics are also easily achieved. This interactive management system tailored for this Jordan jeweler is easy to operate and rapid to deploy.

APPLICATION IMPLEMENTATION

Sales Management
- It allows operations like data entry and revocation, return management on this single device. You can also make changes to wrong data. The backend system can merge and process all the figures uploaded by all PDAs so that headquarter can get to know the total sales of all categories.

Smart Shopping Guide
- As PDA can automatically identify jewelry tags, users can access all the corresponding pictures and information, and then respond to customer needs at the first time.

Inventory Check
- All the chain stores can monitor their real-time stock with smart PDAs. Inventory visibility was improved and replenishment was made in time, so that supply shortage or out of stock never happens, which will eventually engage customers better.

Membership Management
- Users can inquire, add, delete, and alter membership information on mobile PDAs. Headquarters can also achieve the unified management of members and information submitted.

EFFECTS
1. With Chainway PDAs, chain stores could respond to customer needs immediately, which would enhance customer’s in-store experience.
2. Inventory checking in bulk saved time, eased off workload, and lowered labor costs.
3. It achieved interconnection among all the stores, so the headquarters could keep abreast of the newest sales data, and timely optimize marketing strategies.
4. It facilitated unified membership management. By analyzing members’ consuming behavior, the headquarters could carry out appropriate marketing plans to develop their brand loyalty.
5. Adopting smart interactive modern technology to facilitate retail management significantly enhanced the store and brand image, helping attract more consumers.

PDA Configuration

- P/N: C4000
- Functions: UHF RFID, WiFi
EXPLORE HOW CHAINWAY SOLUTIONS HELP MANAGE AMBULANCES

BACKGROUND
In healthcare industry, time pressures and staff stress may lead to serious medical errors that can be fatal where mis-identification of medications or medical apparatus and instruments occur. Considering the liabilities that the Brazilian hospital has to guard against, the necessity for extreme accuracy and efficiency is clear, so keeping its operations on ambulances as efficient and well-managed as possible is of utmost importance. This is just the right time for the hospital to adopt Chainway RFID readers to manage ambulances and all assets on these vehicles. The reliable identification of medications or medical apparatus can prevent mistakes, and win more time to save patients’ life.

CHALLENGES
1. There are a large number of ambulances which have various medications and medical apparatus and instruments. Manual inventory management is of low efficiency, which is not conducive to a timely assistance of patients.
2. With manual operations, there are many steps in medication administration, which are not only time consuming, but also present opportunities for error.
3. If an emergency happens to the ambulance, the hospital cannot know the ambulance’s real-time location to give timely assistance.
4. The hospital can neither plan and optimize route nor track the route.

SOLUTIONS
Chainway solution provides the kind of visibility that nurses and doctors see into every aspect of health facilities on ambulances. Integrated with RFID automatic identification technology, C5000 data terminals can help best enhance patient safety, the productivity of staff members and the efficiency of the hospital’s operations. Armed with a mobile computer with RFID reading and writing capability, on the one hand, administrators can quickly and automatically identify each ambulance; on the other hand, nurses can easily find whatever medicine or apparatus they need and complete a fast inventory checking. What’s more, real-time location information of the ambulances can be transmitted to hospital management center by GPS positioning and wireless transmission technology, making it convenient for vehicle monitoring and management.

EFFECTS
The potential to eliminate manual inventory checking and medicine identification has far reaching advantages in healthcare applications. These are saved time, reduced errors and costs. It greatly lessened the possibility of the risk of misidentifying a medicine or medical asset. GPS positioning, Wi-Fi and GPRS can, together, transform the efficiency of ambulance management. Doctors and nurses can make preparations when the ambulance is about to arrive because they can be informed of the ambulance’s exact location. The management center can also take actions in a timely manner when ambulances encounter unexpected situations.

PDA CONFIGURATION
P/N: C5000
Functions: UHF RFID, GPRS, GPS

Industry Application: Asset Management
Region: Brazil
Model: C5000 UHF RFID Reader

Explore How Chainway Solutions Help to Manage Ambulances
LEVERAGE RFID TECHNOLOGY TO REALIZE REAL-TIME BLOOD BAG TRACEABILITY

BACKGROUND
Patient safety associated with the blood transfusion process has received considerable attention in recent years due to the propensity of transfusion errors to cause catastrophic morbidity or mortality. Human error leading to potential or actual mistakes in blood administration can occur at any step in the process. With nearly millions of patients in Poland requiring blood transfusions annually, there is a tremendous need for blood products to supply these important therapies. Blood banks and collection centers require portable data collection terminals to reliably track blood from the donor to the final recipient.

CHALLENGES
1. There are thousands of blood bags in a blood bank. To find out the proper blood bag they need, clinicians had to check one by one to see the blood type, the expiration date and the blood test details. That was an arduous and time-consuming task.
2. Blood bag collecting, storing, transporting and tracking involve multiple steps where manual data entry is required. Human operations and lack of real-time visibility can lead to human errors and a poor quality control of blood bag.
3. When making an inventory, clinicians need to write down all the information first and then type it into a fixed computer. That was slow and the latest inventory status cannot be updated in real time. Delayed transferring blood would probably endanger patients.

SOLUTIONS
This automated blood bag tracking and management solution specializes in auto identification, data management and movement tracking of blood bags. Chainway C5000 mobile computers ensure fast and efficient delivery of blood from donation centers to bedside transfusion. Through real-time tracking using barcode and RFID technology, the efficiency and speed of blood management is improved. Furthermore, the solution provides blood authorities with improved visibility into the inventory of different blood types at hospitals and can easily enable the supply of blood needed.

APPLICATION DETAILS
Unique Identity Information
Each qualified blood bag is affixed with a unique barcode or RFID tag with corresponding identifiable information, such as blood type, the exact place where it is stored, collection date and expiration date etc.

Tracking and Traceability
From the donor to the final recipient, the movement of each blood bag has been tracked.

Data Interaction
All data can be transmitted to the backend system over wireless networks in real time, so that hospital administrators have real-time visibility into blood inventory.

EFFECTS
1. By an easy wave of our C5000 PDAs, all information is clear at a glance, like blood type, collection date, blood test result, and more.
2. Contactless reading reduced the chance for the blood to be contaminated.
3. The PDA can issue a warning if any blood bag is near its expiration date, which made sure each drop of blood had been fully utilized.
4. RFID technology allows large volumes of tagged blood bags to be quickly and accurately identified and is especially designed for situations where blood bags are stacked or stored in any orientation.
5. It eliminated manual records and transcripts and reduced reliance on human data entry.

PDA CONFIGURATION
P/N: C5000
Functions: 1D, HF RFID
MOBILE HEALTHCARE PROJECT FOR A CHINESE HOSPITAL

BACKGROUND
The healthcare industry is one of the world’s largest and fastest-growing industries where efficiency and accuracy are vital. That’s why barcode and RFID technologies are more and more valued in healthcare these days. To improve patient care and operational efficiency, a hospital in Sichuan brought in Chainway’s mobile healthcare solution.

CHALLENGES
1. Adopting the HIS system on PC terminal as hospital’s controlling system can’t achieve mobility of bedside clinical care.
2. Lacking detailed electronic records is a barrier to generate positive patient outcomes.
3. Performance assessment and effective scheduling of nurses can’t be realized.
4. The nurse handwritings are highly error prone.

SOLUTIONS
Chainway provides mobile nursing solution based upon IoT and Cloud computing technologies, integrated handheld computer and compatible software, seamlessly connected to HIS system through Wi-Fi or 4G networks. By incorporating all these into the workflow of the nursing staff, our mobile healthcare information system aims to bring an all-round improvement to the hospital’s health care system. Chainway just in time delivers tools for medication administration, vital sign collection, information inquiry and personnel management. With our PDAs, health care providers can make sure every time the right medication and treatment is given to the right patient, in the right dose, at the right time and through the right route of administration. During vital sign collection, it is speedy and accurate for data collection and input at the patient bedside. Then Nurses can at the bedside have real-time visibility into all patient information both form the handheld computer and desktop terminal.

EFFECTS
A study conducted in 2010 found that barcode usage prevented about 90,000 serious medical errors each year and reduced mortality rate by 20%. The system standardized the nursing procedures and increased the productivity of staff members; reduced human error and enhanced patient safety; held down operating costs and streamlined operation procedures.

PDA CONFIGURATION
P/N: C6000
Functions: 1D, 2D, WiFi, Bluetooth, Camera

Industry Application: Healthcare
Region: China
Model: C6000 Handheld Computer
BACKGROUND

Malaysia is well-known for edible bird’s nests, which are created by swiftlets using solidified saliva. They are particularly prized in Chinese culture due to their rarity, and supposedly high nutritional value and exquisite flavor. People believe that it promotes good health, especially for the skin. Edible bird’s nests are among the most expensive animal products consumed by humans, with an average nest retailing for about US$2,500 per kilogram in Asia.

However, since July 2011, many mercenary businessmen began to make counterfeit and shoddy products by using glue, guano and nitrites that have long been recognized as potent carcinogens. In order to prevent illegal counterfeit, Malaysian bird’s nest manufacturers coped with Chainway to establish a traceability management system. This system provides customers with visibility into each production process of bird’s nests so that they can be assured.

CHALLENGES

1. As fake bird’s nest products are on a rampage in the market, there emerged a crisis of confidence.
2. There is no effective anti-counterfeiting mechanism, so it’s hard for consumers to distinguish qualified ones from counterfeit ones.
3. There is no unified specification for production and processing, making the management inconvenient and productivity low.

SOLUTIONS

Chainway PDAs, with RFID technology and UHF anti-counterfeiting tags, play a very important role in establishing the traceability system. At the very beginning of the process, a raw bird’s nest is matched with a UHF tag. Then, all of the information about this piece from collection, processing, and transportation to selling can be collected and written into our PDA. The key information (such as, weight, collection site, manufacturer, production date, and product features, etc.) can be simultaneously uploaded to PC terminals. During these procedures, the food inspection staff can, at any time and place, obtain the needed information by easily waving our UHF handheld computer. Customers can also enter the unique code on a package via a computer to be assured of the authenticity of the product.

EFFECTS

1. It established and improved the traceability system to track bird’s nest products. Consumers can input a unique code on the packing bag to inquire information about its raw materials, production processes, import and export and so on and so forth.
2. It standardized and monitored the processes of bird’s nest production, processing and selling. Key information throughout the whole production process can be recorded into the information system. Then there comes improved productivity and guaranteed quality.
3. The establishment of this traceability mechanism allowed enterprises to re-win the trust of the market, to enhance the corporate image and to expand their influences.

PDA Configuration

P/N: C5000
Functions: UHF, RFID, GPRS
SOLUTION FOR INDIAN SMART BUS CARD

BACKGROUND
Public transportation in India develops fast. Thousands of passengers commute by bus daily. This large population is becoming more and more a heavy burden to the bus company, if the traditional manual way to check the ticket is not changed. Freeloader is also a problem that have caused a considerable economic loss to the company.

CHALLENGES
1. Manual way to check the ticket or have the bus card tag is a heavy workload to the bus conductor, and it cannot prevent ticket evading.
2. The bus company cannot supervise the bus in real time.
3. There is not an efficient system to supervise the conductor.

SOLUTIONS
Chainway C4050 mobile terminal which uses RFID technology to recognize identity easily achieves intelligent card reading, bus route supervision and bus conductor workload management, hence a better service is enjoyed by the passengers.

APPLICATION DETAILS
Bus Card Reading
The conductor uses Chainway C4050 to read the bus card or ticket without any need of recording manually or approaching to the passenger. When a passenger wants to buy a ticket after the boarding time, the operation also can be finished on the handheld.

Bus Route Supervision
With the help of GPS on C4050, the administration center can be informed with the latest bus location.

Conductor Management
Fare collection by the conductor at the end of the journey might challenge the driver’s memory. To avoid the manpower mistake, C4050 intelligently calculates the ticket fare and collects it no matter in section fare mode or in full fare mode.

Data Recording
At the end of the working hour, the driver can upload the daily fare collection data on the handheld via internet to the data center. The operational efficiency of the bus company is raised.

EFFECTS
1. Passengers are more satisfied with the service of the bus company, since the working efficiency of ticket checking is improved and more convenience is brought to all.
2. The bus company enhances the management of the bus and of the bus conductor. Any errors caused by manpower are avoided.
3. Drivers do not have to send the fare collection records personally to the data center. With C4050, under the Wi-Fi environment, data record can be passed online.

PDA CONFIGURATION
P/N: C4050
Functions: HF RFID, 3G (WCDMA), GPS, Camera, Bluetooth, WiFi

Industry Application:
Transportation
Region:
India
Model:
C4050 Handheld Computer
BACKGROUND
In Columbia, private cars and transport trucks have sprung up. In toll collection, working staff need to calculate the toll by themselves. This way not only wasted time, but also brought chances of overcharging or undercharging. In order to ease traffic jams near toll booths, Columbia reached a cooperation with Chainway and applied RFID technology to achieve electronic toll collection, and to ease the burden at the toll roads.

CHALLENGES
1. Due to the increment of traffic volume, manual calculation and charging clearly slowed traffic speed. Besides, it is error-prone.
2. Slow toll collection seriously affected the traffic speed of road vehicles as well as citizens’ daily life.
3. It is a headache for the staff in toll station to summarize and calculate total amount of toll collected each day. The cost of time and man power is high.
4. It is not conducive to the department’s supervision and management because all data and information cannot be reported in real time.

SOLUTIONS
To improve the status quo, Expressway Authority cooperated with Shenzhen Chainway Information Technology Co., Ltd, aiming to eliminate the delay on toll roads by collecting tolls electronically. When drivers enter highway, they will be given a UHF smart card. When they exit, staff can use our UHF RFID readers to scan the UHF smart cards and at the same time the pre-installed application software can calculate the total amount that should be paid. What’s more, GPS function integrated to the PDA helps locate the toll booth. And camera is available to take photographs of the scene. All data, photos and other information can be timely transmitted to the backend system via GPRS.

EFFECTS
1. It improved Columbia highway toll collection system to be more informationized, intelligent and scientific. There was a substantial increase in both the charging efficiency and the traffic speed.
2. Automated toll collection facilitated the operation of urban crowded freeways.
3. GPS positioning and photo taking made it more efficient to deal with emergencies.
4. All data, images and other information could be transmitted over the wireless network to the background system in real time. It became more convenient for administrators to monitor and manage toll booths.

PDA CONFIGURATION
P/N: C5000
Functions: UHF RFID, GPS, 3G, Camera

Industry Application:
Traffic and Transportation
Region:
Columbia
Model:
C5000 UHF RFID Reader
MOBILE LAW ENFORCEMENT IN AFRICA

BACKGROUND
As the economy develops rapidly in this African country, vehicle ownership is on the increase, which puts much pressure on the city’s traffic. In the past, traffic violation was detected by eyes and drivers got ticketed by a handwritten ticket. Human power can make errors sometimes, and writing a ticket costs time. On some narrow roads, pulling down the vehicle can lead to traffic congestion.

CHALLENGES
1. Eye detecting cannot reach a 100% accuracy, especially in detecting a faked license.
2. Violation information cannot be shared among law enforcement officials in real time, which endangers social safety.
3. Ticket need to be first written down on site then input in the management system back in the office. Twice recording is a heavy workload and wastes plenty of time.
4. Another problem is that data and information cannot be synchronized to the management system. Real-time communication between control center and each check point can’t be realized.
5. It is almost impossible for the control center to dynamically monitor police officer movement on the beat or alter the beats in tune with the requirements for the area.

SOLUTIONS
A police department in this country initiated a project using RFID reading and writing, 2D barcode scanning and fingerprint recognition functions to facilitate police law enforcement on the beat. Each traffic police is allocated with a C5000 mobile computer to achieve automatic detection and patrol. The solution enables traffic police to print out tickets on site and deal with traffic violations directly. Wireless networks make it possible to upload real-time information to the central database. What’s more, the police department can dynamically monitor police officer’s movement on the beat and alter the beats in tune with the requirements for the area.

APPLICATION DETAILS

**Intelligent Inspection**
Police first use C5000 to scan the 2D barcode on driver license to obtain driver identity information, then gather, compare and match the driver’s fingerprint. Police can also have instant access to information about the driver, the vehicle and other historical records by reading HF tags.

**Mobile Patrol**
Portable C5000 makes it possible for mobile law enforcement. A combined RFID and GPS location tracking system let the central office track police officer location and ensure their safety.

**Penalty for Traffic Violations**
With rugged and portable PDAs, the traffic police can deal with vehicles breaking laws and regulations anywhere and anytime. Tickets can be printed out on site. Besides, the system can automatically transmit all data captured to the central database.

EFFECTS
1. Through the application of hand-held terminals, now mobile law enforcement is achieved and so office efficiency is significantly improved. Manual recognition mistakes have been reduced to a maximum degree and so law enforcement becomes more deterrent.
2. Dynamic location tracking not only helps command center to better manage police staffs but secures the day-to-day operations of law enforcement professionals. The solution gives this organization reliable and cost-effective regulatory compliance.
3. That information can be synchronized to the backend system in time optimizes the ability of staff to access whatever information needed.
4. When accidents happen, real time electronic record can be a reference.
5. Traffic tickets can be issued and printed out so that penalty can be done on the spot, which streamlined workflows of law enforcement.

PDA Configuration

| P/N: C5000 | Functions: 2D, HF RFID, Fingerprint, GPRS, Camera |

**BACKGROUND**

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**PDA Configuration**

| P/N: C5000 | Functions: 2D, HF RFID, Fingerprint, GPRS, Camera |
MANAGEMENT OF WATER METERS IN AZERBAIJAN

BACKGROUND
The user is the Azerbaijan Water Company. In the past, manual water meter reading was error-prone and inefficient. A worse thing is that lack of supervision seriously affects the management and the profits of the company. A new way to read the water meter therefore is needed, a way that can improve working efficiency and recording accuracy and make the whole water-meter-reading business easier to manage.

CHALLENGES
1. Traditional way to read water meters was inefficient and the labor cost was high;
2. Record the volume manually was error-prone;
3. It was difficult for the resource scheduling department to consult and keep the paper records, which resulted in a poor allocation of water resource in different zones;
4. A delayed reaction to a sudden abnormal situation can cause greater losses.

SOLUTIONS
To prepare for these challenges, this water company builds a cooperative relationship with Chainway, using Chainway handheld C5000 to read water meters which are configured with IC card. This combination realizes an automatic intelligent meter reading and solves the problems caused by manual reading and recording. Moreover, Chainway’s handheld terminals can transmit the real-time data to the backend system via internet. Administrators then know the water use in all zones and are always ready for a quick and proper respond to any incidents. We see a rise in working efficiency and accuracy, management level and profits.

EFFECTS
1. It cuts the labor costs.
2. More accurate meter reading data is achieved.
3. Real-time data is transmitted to whoever need it.
4. It becomes easier to check residents’ historical long-term water use.
5. If there are accidents like the water meter is broken or the water supply goes irregular, the company can be informed immediately. Quicker actions can be taken and less losses can be covered.
6. Real-time supervision of water use is the basis of making a reasonable decision in water supply.

PDA CONFIGURATION
P/N: C5000
Functions: HF RFID (14443A), WiFi

Industry Application: Energy
Region: Azerbaijan
Model: C5000 Handheld Computer
VIETNAM RF ELECTRICITY METER READING

CHALLENGES
1. Due to vast territory and huge population, the workload is heavy and efficiency is low for meter reading.
2. Coming into each house for meter reading disturbs residents.
3. Effective supervision and management for meter reading personnel can’t be achieved.
4. Paper records are not easy to save and not convenient to query.

SOLUTIONS
The group chose Chainway C5000 mobile computers to facilitate electricity meter reading. Chainway PDA integrated with the needed functions modules—barcode scanning, RFID, Wi-Fi and GPRS to realize automatic electricity meter reading. Also the backend system accomplished seamless connection to the group’s ERP system, so the collected data can be transmitted in real time via wireless communication technologies. In this way, work efficiency and accuracy can be greatly improved.

BACKGROUND
EVN (Electricity of Vietnam), a state-owned company, is mainly engaged in power generation, power transmission, distribution, and sales of electricity. It is the largest power company in Vietnam having an installed electricity generation capacity of 23,579 MW and a transmission network of 21,883 kilometers (updated to 2015). According to 2007 UNDP report on the 100 largest enterprises in Vietnam, EVN came in at 3rd position.

EFFECTS
1. It realized remote meter reading by RF and Bluetooth modules, without the need of coming into each resident house.
2. Automatic meter reading eliminated laborious manual operations, significantly improved efficiency and accuracy.
3. All data and information can be conveniently checked, inquired and managed at any time in the backend system.

PDA CONFIGURATION
P/N: C5000
Functions: WiFi, Bluetooth
**BACKGROUND**

DP Novi Sad Gas is the biggest natural gas supplier in Serbia. It distributes natural gas to local residents through the network of gas stations and gas distribution center it has built. The company has successfully performed internal gas installations, projected gas pipeline systems and sold gas equipment and gas appliances. Meter-reading, equipment maintenance and network management was a heavy workload, and traditional manual operations were inefficient and error-prone.

**CHALLENGES**

1. Users of natural gas are distributed widely in Serbia, so entering each resident’s house to conduct meter reading is of low efficiency. What’s more, mistakes are easily committed by handwriting, and it’s demanding to recognize those handwritten records.
2. Staff need to input figures one by one on a fixed PC terminal when uploading data, which not only wastes a lot of time but causes many errors.
3. The maintenance center can’t be informed of the problems founded immediately during inspection.

**SOLUTIONS**

Those challenges are successfully overcame by deploying customized C2000 mobile computers. Chainway PDA integrated needed functions modules—barcode scanning, RFID, Wi-Fi and camera to realize automatic gas meter reading; also all collected data can be transmitted in real time to the backend system.

**EFFECTS**

1. It realizes automatic meter reading, which saved labor costs and improved productivity.
2. Paperless records are achieved. Portable PDA brings convenience to the inspectors.
3. With camera on the PDA, inspectors can take photos to provide more visible details in their inspection reports, thus equipment failures can be seen more directly.
4. It reduces losses caused by equipment or network breakdown, since the maintenance process is simplified.
5. All data and information can be conveniently inquired and managed at any time in the backend system.

**PDA CONFIGURATION**

P/N: C2000
Functions: 1D, HF RFID, Camera
INTELLIGENT METER READING SOLUTION FOR STAR INSTRUMENT

BACKGROUND
Shenzhen Star Instrument Co., Ltd. has constantly concentrated in developing, manufacturing and selling smart energy meter, water meter, and intelligent data collection system for energy (water and gas) meter, Advanced Metering Infrastructure (AMI) and electronic testing equipment. Its customers cover China State Grid, China Southern Power Grid, urban and rural utilities, as well as major utilities in over 80 countries and regions across Asia, Africa, Middle East, Europe and Latin America etc. The exportation of its smart energy meter series has been ranking the forefront in the industry over the years.

CHALLENGES
1. A huge number of users and their wide geographical distribution make meter reading a heavy workload.
2. There are residential users as well as industrial and commercial users. The diversified working environments require the data capture terminal to be environment-adaptable.
3. Traditional manual meter reading is not standardized. Effective supervision and management cannot be achieved.
4. Working staff have higher requirement for easier and more convenient operation.
5. It needs to read all water, electricity and gas meters, so it requires mobile terminals with high integration performance.

SOLUTIONS
In response to Star Instrument’s demands, Chainway recommend C5000 high-performance handheld computers. It also allows the company to install different meter reading modules according to the actual application demands. This solution brings a substantial increase in efficiency and a great improvement in reading safety.

APPLICATION DETAILS
Intelligent Reading
By using C5000 PDAs to scan the meter, the system can automatically and quickly figure out how much energy had been consumed and how much the user needs to pay. This way effectively avoids wrong manual calculation.

On-site Inquiry
If there is an abnormal amount change, meter reader or fee collector can check the detailed information on site by GPRS. Fault can be found in time, which protect benefits of both residents and the company.

Data Transmission
All data collected can be transmitted to the backend database via wireless networks or USB cable. It to some degree reduces manual errors during data input. Calculation efficiency has also been improved greatly because all bills are summed up automatically by the computer instead of adding one and another by hand.

EFFECTS
1. It standardizes workflows of meter reading; eases workers’ workload; improves reading efficiency and accuracy.
2. Automatic meter reading cuts down manual errors like undercharging or overcharging.
3. Users are pleased to see that the time of meter reading has been shortened.
4. All data transmitted to the backend system facilitates the follow-up statistics, sum up and billing.
5. The perfect integration of handheld terminals and meter reading system has lifted the overall level of intelligent meter reading.

PDA CONFIGURATION
P/N: C5000
Functions: WiFi, Customized modules

Industry Application: Energy
Region: China
Model: C5000 Handheld Computer
INSPECTION OF ENERGY AND WATER SUPPLY INFRASTRUCTURE FOR YUE GANG

BACKGROUND
Guangdong Yue Gang Water Supply Company Limited ("Yue Gang") is founded in 2000 and belongs to Guangdong Investment Limited. It is engaged in the businesses of energy and water supply to Hong Kong, Shenzhen and Dong Guan.

CHALLENGES
1. Manual inspection of infrastructure can sometimes fail to find out all the possible malfunctions.
2. The inspection records on paper is time-consuming to write and inquiry and hard to keep.
3. There is not a system to supervise the work of inspectors.
4. Inspectors cannot know the real-time condition of the infrastructure.

SOLUTIONS
Chainway RFID terminal easily conducts data recording, route directing, workload supervision and data analysis. With the connection to the company’s information system, an intelligent inspection is realized.

APPLICATION DETAILS

Intelligent Inspection
The RFID tag of the equipment carries necessary information of each equipment. The inspector scan to read this information on Chainway terminal and record the inspection results on it.

Inspection Order Arrangement
The inspection tasks listed on Chainway handheld can be revised anytime. The inspector can add or delete the equipment as well as the inspection sites based on real-time situation, thus the inspection order can be rearranged.

Workload Supervision
The handheld terminal can pass the real-time location to the administration center automatically or manually in order to supervise the inspectors’ workload.

Data Transmission
Inspection records can be transmitted to the administration center via 3G network. When there is equipment malfunction, details including equipment number and malfunction information can be uploaded to the administration center.

Data Analysis
The handheld can summarize and analyze the inspection data in the database to find out the frequency of certain failure during certain period, in report forms of charts or icons. This report can be a reference for the inspector to let them always be prepared.

Effects
1. A paperless, regularized and effective inspection improves the information management.
2. It improves the inspection quality and minimizes the security risk.
3. The workload supervision on the inspectors is enhanced.
4. The inspection task can be customized based on real-time situation.
5. No other machines are needed for the inspection. Costs are reduced.

PDA CONFIGURATION
P/N: C5000
Functions: LF RFID (125K), GPRS, GPS, Camera, WiFi

Industry Application:
Asset Management
Region:
China
Model:
C5000 Handheld Computer
A GERMAN AIRPORT SELECTS CHAINWAY FOR ITS ASSET MANAGEMENT

BACKGROUND
Ordered asset management dose matter to ensure safety of ground operations, aircrafts taking off, taxing and landing. With the rapid development of air transport in Germany, high-density flights taking off and landing, complex ground operating environment put forward higher requirements for airport’s infrastructure maintenance. It becomes a primary task for the German airport to ensure the safety of airport infrastructure such as the runway, taxiway surface, lighting system and so on, and at the same time to maximize the level of infrastructure maintenance and reduce the maintenance time to provide more operational resources. At this point, the German airport is turning to RFID technology to better its asset management and to eliminate myriad issues that come along with manual asset tracking.

CHALLENGES
1. There are too many asset facilities to be inspected, from large machines to small gadgets, from runway and taxiway to parking apron. Inspection work in this large-scale airport is really heavy.
2. Manual asset tracking is error-prone, and one single error will bring the airport great danger.
3. It is difficult to dynamically monitor the inspectors. Potential risks are ready to erupt at any time.
4. Inspection data cannot be transmitted in real time. If some breakdown is found out, the maintenance can’t be made instantly, which affects the airport’s normal operation.

SOLUTIONS
Shenzhen Chainway Information Technology Co., Ltd is focused on RFID enabled integrated tracking and visibility solution. C5000 mobile computers with 2D barcode scanning, camera, Wi-Fi and UHF RFID functions, can identify and locate mobile assets across the vast airport landscape. The airport departments can improve asset availability, reduce the time spent on searching for misplaced items, optimize maintenance schedules and provide better passenger service. What’s more, all data captured by the PDA can be updated to the database server in time.

EFFECTS
1. It completely changes equipment inspection mode in the airport, improves the inspection efficiency and data availability. PDA can quickly count and inspect the assets throughout the airport and identify misplaced items and maintain a correct inventory.
2. Integrated UHF module supports for long-range but accurate scanning, making inspection work more convenient.
3. It realizes dynamic monitoring of the airport inspectors. Safety level has been lifted high and higher.
4. Airport asset audits are performed in much less time and asset utilization rates and ROI is improved.
5. It enables managers and chief financial officers to successfully carry out maintenance plans, which Increases asset utilization, lowers replacement costs and betters resource planning.

PDA CONFIGURATION
P/N: C5000
Functions: 2D, UHF RFID, Camera, WiFi
BACKGROUND
Deutsche Bahn, abbreviated as DB, is a German railway company. Headquartered in Berlin, it is a private joint-stock company coming into existence in 1994, with the Federal Republic of Germany being its single shareholder. Deutsche Bahn describes itself as the second-largest transport company in the world, after the German postal and logistics company Deutsche Post / DHL, and is the largest railway operator and infrastructure owner in Europe. It carries about two billion passengers each year. Its railway line has been extended up to 34,000 km and there are 39,000 trains running each day. This brought new challenges for the railway’s inspection work. Traditional way of routine inspection and maintenance has become unable to meet today’s needs. It is in urgent need of more scientific means to improve the efficiency and quality of inspection work, thereby enhancing the company’s overall operational level of service.

CHALLENGES
1. The traditional railway track inspection needs to record information manually at the railway, and input this information on a computer back in the office, which is inefficient and error-prone.
2. The whole inspection process—from inspectors accepting inspection task to giving a final report—takes long time.
3. Real-time communication cannot be realized among inspectors, maintainers and administrators.
4. The administrators can’t monitor the routine inspection in real time and can’t be informed of the maintenance schedule.

SOLUTIONS
In response to user demands, Shenzhen Chainway Information Technology Co., Ltd. deployed C5000 handheld computers with 2D barcode scanning and UHF RFID functions to help realize intelligent rail tracks inspection and maintenance. Through handheld PDAs, maintainers can receive new task assignments in real time, give fault feedback, and report working conditions over wireless networks. It is of high accuracy and efficiency during the whole operation. At the same time, real-time communication and interaction among inspectors, maintainers and administrators can be realized.

APPLICATION DETAILS
Task Assignment
Inspectors and maintenance men can receive new task assignments and specific requirements through the PDA.

Maintenance
Inspectors can input inspection results and maintainers can record maintenance process and conditions in a timely manner.

Rechecking
The foreman and quality inspection team can carry the portable device to recheck and record the results on the PDA.

DATA MANAGEMENT
Information can be shared in the railway management system that can plan the best inspection and repair route for working staff and automatically generate maintenance records.

EFFECTS
1. It standardized and streamlined inspection and repair workflows.
2. These field workers can record information with a light-weight device in real time, which saved time and maximized productivity.
3. All data and information captured by inspectors, maintainers and administrators can be synchronized to the backend database. And then these data can be shared among them. In this way, they can communicate with each other better so that they can keep up with the newest status of each fault found.
4. Handheld computers and fixed computers complement each other, working together to enhance the overall management level of this German railway company.

PDA CONFIGURATION
P/N: C5000
Functions: 2D, UHF RFID, WiFi
WEAPON TRACKING FOR U.S. NAVY

BACKGROUND
In order to strengthen the scientific management of weapons and the United States Navy soldiers stationed in Afghanistan, relevant military department proactively introduced data collection devices with RFID technology. Designed for use within the military and law enforcement services, Chainway solution is a powerful automated and accurate tool for the tracking of weapon inventory, soldier identity verification, weapon issuing and return together with audit trail, reports, maintenance schedules and records.

CHALLENGES
1. Identifying with eyes the sailor’s identity or the weapon can make errors and be inefficient.
2. Manually recording weapon issuing and return information can lead to a dangerous circumstance if the returned weapon has already been substituted.
3. Manual inventory checking of weapons brought heavy workload. Also, the latest inventory status can’t be updated to the management system in real time.
4. Historically maintenance records of the weapons were not easy to be checked and supervised, thus a complete maintenance plan cannot be built up.

SOLUTIONS
Facing above challenges, the military managed to deploy Chainway mobile C5000 PDAs with barcode scanning and RFID reading and writing functions to realize intelligent weapon tracking. The solution is aimed to meet the requirements of a modern armory and is deployed for military and law enforcement. Weapon inventory checking, issuing and return control can be improved. Real-time connection to the backend database makes it convenient for administrators to learn about weapon usage and maintenance status.

APPLICATION DETAILS
Weapon Tracking and Tracing
Every weapon has a unique RFID tag. C5000 reads the tag to see the weapon’s information and to see when and which sailor has used this weapon. In inventory checking, if a weapon is not returned on time, administrators can inform the sailor; if stocks need to be replenished, administrators can also use C5000 to give this order.

Maintenance Log
The full inventory maintenance log enables the system administrator to work on maintenance plan on all weapons and to detail the maintenance records for audit purposes. When a weapon is due for maintenance or given to one sailor for a period, a certification will be displayed and a warning will be issued during the period. When the weapon is returned on a regular basis, it will be sent to maintenance, which will prevent a re-issued until a ‘maintenance complete’ message is noted.

Sailor Management
All information about the sailor, such as name, image, biometrics, level, group, ID authority, certification and certification period have already been collected and saved in the database to which C5000 is connected. When a sailor begins to use and returns a weapon, C5000 RFID reader can be used to validate his identity and record this action.

EFFECTS
1. It offers a powerful and accurate management solution with a range of security and audit functions on this single device.
2. It provides the armorer with a fast, accurate and efficient tool to issue and collect weapons, and details the condition or service requirements of any item at the point of issue or return.
3. Inventory checking efficiency has been greatly enhanced. Real-time visibility into inventory enables administrators to make replenishment in time.

PDA CONFIGURATION
P/N: C5000
Functions: LF RFID (125K), GPRS, 1D, GPS, WiFi
How CHAINWAY Improve Productivity by Deploying RFID to Track Assets

BACKGROUND
Sembawang Shipyard is a shipyard that specializes in ship repairs and fabrication. Owned by SembCorp Marine, it has five docks totaling 775,000 dwt with adjacent engineering and fabrication facilities. It has almost four kilometers of continuous deep and sheltered berthing of up to 14 meters in depth. The shipyard’s 100,000 dwt dry dock is one of the deepest in South-East Asia. Formerly a British Royal naval base, the shipyard was built in 1938. After Singapore’s independence in 1968, the naval base was converted and came to use as a commercial shipyard under the management of Sembawang Corporation (now known as SembCorp).

CHALLENGES
1. The shipyard has a wide range of maintenance tools and various types of management tools.
2. When inspecting dock maintenance tools, writing down the asset information is time-consuming and inefficient.
3. There is no effective mechanism to monitor the inspectors. The administrators cannot ensure that they are in place every day.
4. The administrators have no timely access to fault information and cannot develop maintenance plans instantly. The maintenance often can’t be made in time, which causes losses to the company.

SOLUTIONS
Each dock maintenance tool is equipped with a barcode or an electronic RFID tag with uniquely identifiable information. Chainway C3000 handheld computers, integrated with 2D barcode scanning, UHF RFID, Wi-Fi and other functions, can quickly identify and obtain the corresponding tool’s information. Input relevant information when there is a breakdown or fault. In this way, workers can easily complete the inspection task. Besides, these information can be uploaded in real time via wireless networks so that maintenance won’t be delayed.

EFFECTS
1. It becomes more efficient and convenient to track and manage dock maintenance tools.
2. During on-site inspections, workers have no need to carry paper documents. Just take our portable PDAs to complete mobile asset tracking and inspection. It saves costs and improves productivity.
3. Administrators can check on work attendance better.
4. Thanks to the wireless communication function on C3000, maintenance plans can be made immediately when the breakdown is found.
5. Tool maintenance records are automatically generated and saved to the database system, which facilitates future inquiries and comprehensive management.

PDA CONFIGURATION
P/N: C3000
Functions: 2D, UHF RFID, Wi-Fi
COMMUNITY MAINTENANCE FOR JIZHI COMPANY

BACKGROUND
Jizhi is dedicated to providing software to community service companies for an intelligent community management. China Merchants Group and many other 300 noted enterprises are among their VIP clients.

CHALLENGES
As a leading software provider of community service management, Jizhi requires that the terminal equipment on which its software is configured has a high performance with flexible functions to meet the needs of its numerous varied projects.

SOLUTIONS
Chainway handheld PDA C5000, with functions of camera, barcode scanning, RFID reading and keyboard, matches perfectly to Jizhi software of community service management. This combination not only increases operational efficiency, but also updates the latest information to the backend system. C5000 makes possible the intelligent management of equipment inspection, meter reading and maintenance man arrangement.

APPLICATION DETAILS
Personnel Arrangement
When a maintenance service is needed, relative maintenance man can receive the arrangement through PDA and see the details of the maintenance service, the resident’s name, address and contact number. The proceeding and the final result of this maintenance service can be transmitted to the backend system in the form of photos and texts.

Equipment Inspection
In maintenance service, the maintenance man uses the PDA to read the tag or scan the barcode on the equipment, the tag or barcode information and the maintenance date then are recorded. If there is a problem, the maintenance man uses PDA to take pictures; if there needs further examination, the maintenance man also take notes in PDA. All the information will be sent back to end system, and the end system will arrange the next maintenance according to the result.

Meter Reading
In meter reading, PDA shows the reading records of each meter. The maintenance man types the latest reading number on the PDA. PDA will check if the number is irregular, if so, the maintenance will be informed to put the number again. This improves the reading accuracy. The final number can be transmitted to the server through Wi-Fi or USB cable.

EFFECTS
1. Intelligent paperless personnel arrangement is highly environment-friendly and efficient.
2. Real-time update of the proceeding and result of maintenance services leads an easy way for administrators to handle each maintenance.
3. PDA makes meter reading more accurate in a more productive way.

Industry Application:
Asset Management

Region:
China

Model:
C5000 Handheld Computer

PDA CONFIGURATION
P/N: C5000
Functions: 1D, LF RFID (125K), GPRS, Camera, WiFi
Drive Efficiency of Vehicle Management to Accelerate Revenue

BACKGROUND
Vehicle management is important for oilfield. If handled properly, it can play a positive role in promoting the safety and productivity in oil production. A Chilean oilfield, however, faces many challenges caused by messed vehicle management. Old manual way to keep all the oilfield vehicles in order can obviously not meet today’s requirements for a high efficient and more secure oil production.

CHALLENGES
1. As there are plenty of vehicles coming in and out of the oilfield, it’s extremely inefficient and time-consuming to record each with a pen and paper manually.  
2. Different types of vehicles -cars, trucks, tankers- run in the oilfield every day. The current method is not flexible enough to manage all types of vehicles.  
3. Due to oilfield’s special operating environment (high temperature and high pressure), there are potential risks in the management of vehicles with different uses.  
4. Administrators have no convenient and real-time access to records like the time when the vehicle enters or leaves the oilfield. Manual recordings provide them with no timely decision-making basis.

SOLUTIONS
Catering to the needs of this oilfield enterprise, Chainway configured 2D barcode scanning and ultra-high frequency RFID reading and writing functions to the portable C5000 mobile computers. This solution is aimed to realize automatic vehicle registration and management. Each vehicle is equipped with a 2D barcode or RFID tag with unique identity information. Then doorkeepers only need to scan the barcode or RFID tag to obtain all information about this vehicle and then input the data required. Via wireless networks, these newly collected data and information can be transmitted to a software system in real time, which makes the overall vehicle management more flexible and intelligent.

EFFECTS
1. Using handheld terminals to automatically collect vehicle information contributed to a substantial increase in the passing speed of the vehicle.  
2. Gatekeepers didn’t need to note down vehicle plate number, vehicle type or business unit it belongs to by hand, which eased their workload and eliminated manual errors.  
3. All captured information transmitted to the database ensured rapid access to the data needed for critical decisions.  
4. It effectively improved the level of vehicle management, ensured safe and high-quality oil production.

PDA CONFIGURATION
P/N: C5000U  
Functions: 2D, UHF RFID
HOW LOCATING SERVICES HELP THE ENTERPRISE CONTROL COSTS

CHALLENGES
1. There is a possibility that drivers may abscond with cargo as they could lie about their route of travel and delivery location.
2. The logistics company may overcharge Dongfeng because vehicles cannot be tracked in real time.
3. Inventory data can’t be calculated in real-time. Mistakes caused by manual operations often occur.
4. Feedback of sales status from distributors can be delayed.

SOLUTIONS
Through the integration of RFID, GPS, wireless transmission and other functions, Chainway proposed an intelligent vehicle management solution tailored to the user. Each batch of commercial vehicles can be tracked from the logistics company picking up, sending out and delivering them, to the distributors receiving, selling and returning them. A complete information system is formed to check real-time status of each commercial vehicle. It helps realize real-time monitoring of all heavy-duty commercial vehicles among national sales outlets, and real-time counting of the number of each category sold and returned.

APPLICATION IMPLEMENTATION
Faster Stock-in and Stock-out
Easy scanning replaced traditional manual recording. It is more efficient and accurate to record the exact number of commercial vehicles coming in and out of the manufacturing base and national sales outlets.

Inventory Management
In inventory management, staff can carry our portable handheld computers to scan and read tags on each commercial vehicle. The system then will automatically record, check and match information, ensuring that accounts and real stock are completely consistent.

Real-time Monitoring
By locating the driver every 1 hour, the system can clearly record and track the driver’s route of traveling.

EFFECTS
1. The successful application of positioning technology enabled the user to timely track transport vehicles as well as its assets.
2. Automated stock in, stock out and inventory checking lifted the management level to be high and higher.
3. It planned and optimized track route of all transport vehicles. Then they must strictly follow the planned route, which saved a lot of transportation costs.
4. After distributors take delivery of commercial vehicles, drivers need to immediately send feedback. With GPS, the user can check whether the place of delivery and the predetermined destination are the same.
5. Drivers could never lie about their route of travel and delivery location, which saved about 24 million RMB Yuan each year.

PDA CONFIGURATION
P/N: C5000
Functions: RFID, GPS, 3G

BACKGROUND
Dongfeng Motor Company Limited, formally established on 9 June 2003, is an automobile manufacturing company headquartered in Wuhan, China and a 50:50 joint-venture between Dongfeng Motor Corporation and Nissan Motors. Its registered capital gets up to 16.7 billion RMB Yuan. Heavy-duty commercial vehicles are one of its main product selection. To strengthen the management of heavy-duty commercial vehicles, the group reached cooperation with Chainway to improve vehicle management efficiency.
On-street parking management for Lufeng County in Yunnan Province

**BACKGROUND**

Car ownership in Lufeng has increased with the economic development in this county. On-street parking management is becoming more and more difficult. An intelligent traffic management system for the Emergency Command and Control Center is an urgent demand of the government.

**CHALLENGES**

1. Old way to handle on-street parking charges cannot meet today’s needs.
2. The policy of area-based and time-based charges cannot be implemented.
3. Information about parking cars which are illegal or have not been inspected cannot be shared with the police.

**SOLUTIONS**

Chainway provides Lufeng Government with C2000 PDA to manage on-street parking charges. A complete and effective system is built up to avoid illegal charging and oversight-omitting charges.

**APPLICATION DETAILS**

Parking Charges Management
The charging information can be transmitted to the administration center via wireless internet. Overall intelligent management of parking charges brings convenience to both car owners and parking chargers collectors. Those collectors enter the number plate on the PDA to have the car registered in the parking areas. They can also download the standard rate table from the PDA, on which the charging is based. The rate cannot be changed and the charges are calculated by the PDA, this way effectively avoids illegal charging.

Top-up Parking Card
Top-up parking cards are issued. M1 or CPU cards with PSAM enhance the security. After topping up their cards, car owners can use them to pay the parking charges.

**Data Analysis**

All kinds of analysis statement can be developed, including but not limited to parking charges income statement, collectors income statement, blacklist and inspectors recording statement.

**EFFECTS**

1. Rational allocation of parking resources regularizes on-street parking.
2. Using handheld computers to charge is more accurate and efficient. The charges are calculated automatically by the PDA, which avoids illegal charges.
3. Price control, time-based charges and area-based charges improve the utilization of parking resources and realizes a dynamic traffic control.

**PDA CONFIGURATION**

P/N: C2000
Functions: HF RFID (14443A), GPRS, Camera, Bluetooth, WiFi
PARKING CHARGES MANAGEMENT IN PARKING LOTS OF SHENZHEN JIESHUN SCIENCE AND TECHNOLOGY INDUSTRY CO LTD

BACKGROUND
Founded in 1992, Shenzhen Jieshun Science and Technology Industry Co Ltd ("Jieshun") is the leading company in intelligent management in China. The intelligent parking system is one of its industry-milestone product which has won wide popularity among companies, governments, infrastructure venues and communities. Both the 29th Olympics Games and Shanghai World Expo chose this parking system during the events.

DEMANDS
Jieshun requires high to the performance of the terminal which is connected to its intelligent parking system. The terminal needs to be portable enough to be carried around, fast enough to support high-intensity and high-frequency data acquisition and durable enough to be used under poor weather conditions.

SOLUTIONS
Chainway offers Jieshun C5000 PDA with functions of 2D barcode, dual protocol, camera, Bluetooth and Wi-Fi. The customized PDA satisfies every demand of Jieshun and is perfectly compatible with its intelligent parking system.

EFFECTS
1. The combination of Chainway C5000 and Jieshun parking system has been applied in various parking lots and has proved that the charging process runs faster, smoother and more accurate.
2. Pictures can be taken by C5000 when there is an emergency. All the data including photos can be transmitted in real time to the backend administration system via internet. A real-time management of parking charges can be promised.
3. High performance of C5000 in Jieshun intelligent parking system wins wide compliments among customers.
4. In short term, it provides convenience to parking lot administrators and users; in long term, it promotes the technology of intelligent parking system.

PDA CONFIGURATION
P/N: C5000
Functions: 2D, HF RFID, Camera, Bluetooth, WiFi

Industry Application: Transportation
Region: China
Model: C5000 Handheld Computer
CHECKING ON WORKER ATTENDANCE IN MALAYSIA PALM GARDEN

BACKGROUND
Palm oil production is vital for the economy of Malaysia, which is the world’s second-largest producer of the commodity after Indonesia. As the scale of palm plantation is large as well as the number of hired laborers is huge, traditional manual time and attendance management often results in many problems, like employees taking long lunch breaks without clocking out, clocking in but never coming to work, or they calling their buddies to punch for them. Time and attendance tracking has become the hardest and costliest part of operating the palm garden.

CHALLENGES
1. The Palm Garden is a large open working area, making the management of workers much more difficult.
2. As they almost come to or get off work in the same time period, manual clocking-in and clocking-out wasted a lot of time.
3. A large number of the employees are paid hourly, making it complex to record their working hours.
4. There is no automatic system other than a paper time sheet where the employees would put in their start times, and their meal breaks. When the HR do payroll each month, they spend a lot of time tracking down time sheets, some of which they couldn’t even read.

SOLUTIONS
The department decided to implement Chainway mobile PDAs with fingerprint recognition and 2D barcode scanning functions to realize intelligent time and attendance.

PDA CONFIGURATION
P/N: C5000/C3000
Functions: 2D, Fingerprint, GPRS, WiFi

EFFECTS
1. Gone are the days of employees using paper time sheets or traditional punch clocks to record when they start and end their days. This automatic attendance system ensures that workers are present to fulfill their duty.
2. Wireless transmission technology eliminates manual recording and re-typing information on a fixed computer. Productivity and accuracy has been enhanced.
3. With great portability and mobility, attendance is not subject to location constraints.
4. It minimizes payroll processing time and eliminates payroll errors. Employees have no doubt about the accuracy of their paychecks so that their working enthusiasm has been inspired.
BACKGROUND
In the workhouse inside the prison, scissors, wrenches, pliers, yarn cut and many other tools are available for prisoners to work with. If not managed properly, these tools can be dangerous outside the workhouse. Prisoners may use them to commit suicide or fight. The current way of managing the tools is error-prone.

CHALLENGES
Considered the special identity of prisoners, prisoner management needs more cautiousness than the usual personnel management. The traditional way of roll call took long and could fail to call the whole roll. Likewise, the traditional way of managing the tool was not efficient enough to achieve a 100% checking accuracy. One small mistake in personnel or tool management can lead to a serious problem. Without real-time supervision, the administrators cannot respond in time to any sudden incident.

SOLUTIONS
After the site inspection, Chainway picked up HF RFID technology to overcome these challenges. The current information system in the prison is a helper, too. Chainway connected her handheld RFID reader to this system and input all the data into it, thus realized an intelligent management of personnel and tools.

APPLICATION DETAILS
Roll Call Management
The handheld gets all prisoners’ data from the current information system in the prison. Every prisoner is given an electronic ID badge which carries all his/her personal information. When roll calling, the guard uses a handheld to scan the badge at the same time. This double check ensures that every prisoner on the roll is being called.

Tool Distribution
Before a prisoner gets a tool, the guard scans the prisoner’s ID badge and the RFID tag on the tool. The system on the RFID reader will register the tool under the name of the prisoner.

Tool Returning
When the prisoner returns the tool, the guard first scans his/her ID badge. All the tools registered under his/her name will be listed on the handheld. Then the guard scans the tag of the tool. Once scanned, the tool will be eliminated automatically from the list. If all tools are given back, the list will be empty; if not, the guard will know which tool under which prisoner’s name is missing. That way the guard can take actions immediately.

Information Transmission
The real-time data of prisoners and tools will be transmitted from the handheld computer to the administration server via internet.

General Management
The administrator can know the real-time situation of all areas from the background system and run a general management.

EFFECTS
1. It simplifies the process of roll call and tool management.
2. It avoids human mistakes such as roll call omission and tool missing.
3. Administrators can take quick action in case of emergency.
4. The transmission of the prisoners’ data between the handheld computer and the backend data base makes the data checking and management faster and easier.

PDA CONFIGURATION
P/N: C5000, C3000
Functions: HF RFID, UHF RFID, WiFi, Bluetooth