The Design and Development of IT Asset Inventory System Based on Two-Dimensional Code

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Abstract. The original IT asset management system of Hangzhou cigarette factory can only cover the application, approval purchasing and fixed assets of IT equipment asset management, but is still in the stage of manual operation on the inventory work which is inefficient, and cannot meet the demand for the management of equipment assets. According to the actual situation of factory, we develop and design an IT asset inventory system based on two-dimensional code, which improve the management efficiency of IT equipment assets. The trail showed the time consuming of each inventory reduced from 2 person-months to 1 person-week.

Introduction

Two-dimensional code technology, which has developed rapidly in recent years, has been widely used [1-3]. QRCode is a widely used two-dimensional code [4-5], it is also the first clear definition and the standard of public release.

Hangzhou cigarette factory completed IT asset management system in 2004, which can only cover the application, approval purchasing and fixed assets of IT equipment asset management, but in the IT asset inventory stage, you need to print out the list and manually check with it. This manual inventory method, not only need to spend more manpower, but also prone to error. Hence we need a system to support IT asset management, which can improve the efficiency of inventory, and interact with existing system.

The mobile IT asset inventory system, not only to meet the needs of asset inventory, and easy to deploy. It can be installed on any Android or Apple smartphone, does not require specialized equipment purchases, less investment, quick effect. So we design a mobile app which can rapid inventory IT assets by scanning the two-dimensional code. Two-dimensional code technology has been widely used in different

System Architecture

The APP includes three hierarchies, respectively, the system function layer, the business component layer and the presentation layer, which is shown as figure 1.

![Figure 1. System architecture of mobile APP.](image-url)
System function layer: based on the basic data of system, develop data interface to achieve equipment data synchronization and generate two-dimensional code, and set inventory plan according to the rules, finally realize statistical results of inventory result and exception handling in process.

Business component layer: the assets can be identified by scanning the two-dimensional code or manual judgment.

Presentation layer: perform IT asset inventory through APP, generate inventory plan and statistical results on PC side.

Technical Realization

Implementation Flow

The system generate two-dimensional code, using QRCode coding technology, for the asset number or machine number of the IT equipment, then decoded during scanning code, and display the detail which is gotten from database. Implementation flow is shown as figure 2.

![Figure 2. Implementation flow.](image)

Label Specifications

Label is the terminal input of system, which is shown as figure 3: it contains company name, asset number, machine number, brand specifications, user department and information, and the corresponding two-dimensional code at the lower left corner.

![Figure 3. Label.](image)
**Inventory Process Implementation**

**Generate Inventory Plan.** According to the requirements of asset inventory, we need to generate inventory plan. The plan contains: title, planned start time, planned end time, inventory type of equipment, remarks and responsible person. The detail is shown as figure 4.

![Figure 4. Inventory plan.](image)

**Inventory Plan Execution.** After generating inventory plan, IT asset administrator can see all plans after logging in APP. Click the plan which you want to check, you can see all the records in the plan which is divided into three categories: "unfinished", "scanned" and "confirmed", as shown in figure 5.

![Figure 5. Inventory plan list.](image)

For the asset in the unfinished category, we have two way to finish the inventory work: the two-dimensional code scanning, or manually confirm. Respectively, the asset will be deleted from the unfinished list, and divided into the scanned or the confirmed. Manually confirm is need in the case of some devices not yet posted a two-dimensional code or two-dimensional code is damaged.
Data Statistics

Administrator can query data through following conditions: "asset number", "user department", "user" and "state". Query results can be exported to EXCEL files for further analysis through “export” button at the lower right corner. The detail is shown as figure 6.

Figure 6. Statistics report.

Summarize

The trail showed the time consuming of each inventory reduced from 2 person-months to 1 person-week. The efficiency has been increased by 8 times.

References


