

## DATA ACQUISITION AND RETRIEVAL SYSTEM WITH WIRELESS HANDHELD USER INTERFACE

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates in general to a system for data acquisition and retrieval through the use of an user interface remotely located from the control system.

#### 2. Description of the Related Art

Today, most commercial businesses require field employees, such as at points of sale, to fill out paper forms with data sets concerning individual customers or products sold/manufactured. These reports are then collected, compiled, and assimilated at a central location and filed for future access. Most modern businesses require this information to be continuously updated and that the field personnel be afforded quick access thereto in order to reduce business costs, improve efficiency, increase accuracy, and the like. Heretofore, data sets concerning matters, such as customer or product information have been primarily compiled through paper forms completed by field personnel and later possibly entered into some form of central database.

In the healthcare field, hospitals utilize a significant amount of data retrieval and acquisition, with respect to patient information. All data sets containing patient information (data field), such as patient name (a data set header), date of birth, place of business, address, phone numbers, language, billing account number, social security number, drivers license number, and the like were written on paper forms and maintained in a paper file, and optionally entered by the hospital staff into a common database. Thereafter, the patient information was supplemented with information pertaining to their health condition, such as vital signs, fluid intake, fluid output and the like, which were written on different paper forms by a nurse and later keyed into this common database. Similarly, when patients undergo testing, the test results were manually keyed into the common database and/or written on forms stored in the patient's paper file.

An alternative example lies in the insurance industry in which field claims adjustors travel to the site of an insurance claim and evaluate the damaged property. These adjustors fill out multiple forms identifying the damage and the insured person's general information. For instance, in an automotive accident the claims adjustor must describe each problem with the insured car, such as dents, scratches, and the like. These forms are later processed manually or keyed into a common database, after which, the claimant ultimately is paid.

A substantial amount of data acquisition and retrieval is also utilized in factory environments. During the course of manufacturing various products, floor workers and quality review must complete multiple forms concerning a given production unit.

However, every business requiring significant amounts of data acquisition and retrieval in its day-to-day business encounter similar problems. First and foremost, a significant amount of the field operative's time is required in filling out the corresponding paperwork, in which the potential for user error exists. Also, in systems using paper forms, the information must be ultimately transferred to an electronic database, which provides a second opportunity for user error. Clearly, it would be advantageous to reduce the number of user entries, thereby reducing the likelihood of error.

Further, in many markets, field personnel at one location typically require information quickly from another field location. For instance, in a hospital environment, a doctor within the general ward may require immediate information concerning a patient from the radiology department. However, the process under which the information is written down and carried between departments is very slow. Similarly, doctors and nurses require immediate and accurate knowledge of specific procedures to be followed with regard to particular patients. Past systems for maintaining individual patient procedures have proven ineffective.

Moreover, one office within a business will typically require information from another office which must be hand carried or which is unavailable after the closing hours of the second office. For instance, hospitals require lab testing results be hand-carried to doctors who may be waiting for such results during the course of surgery. Also, typically doctors require clinical data after the clinics have closed.

The need remains in this field for an improved data acquisition and retrieval system to address the problems and drawbacks heretofore experienced. The primary objective of this invention is to meet this need.

### SUMMARY OF THE INVENTION

It is an object of the present invention to provide a data acquisition and retrieval system which allows users immediate real time access to all existing customer/product information.

It is an object of the present invention to provide a data acquisition and retrieval system which affords users access to wireless remote data terminals.

It is an object of the present invention to minimize the data retrieval time by reducing the necessary information transmitted between handheld units and the corresponding communications server.

It is another object of the present invention to minimize the data necessary for transmission by synchronizing operation within each handheld unit and a corresponding communications server, such synchronization including the minimization of header information for each transmission and the transmission of a command case code used directly by the command server to access a designated database.

It is another object of the present invention to provide a user interface which minimizes user error.

It is another object of the present invention to provide a user interface which utilizes an event driven architecture to allow data entry through a touch pad.

It is another object of the present invention to provide a user interface which is easily operated by using a touch pad which presents a scroll bar, rolling keys and icons for data entry.

It is another object of the present invention is to provide an user interface which allows for the scanning of bar codes to identify particular customers or products.

These and further objects will become more apparent from the drawings and detailed description hereafter.

### BRIEF DESCRIPTION OF THE DRAWINGS

The objects and features of the invention noted above are explained in more detail with reference to the drawings, in which like reference numerals denote like elements, and in which:

FIG. 1 is a block diagram of an overview of a data acquisition and retrieval system according to the present invention;