Goods received notes

Users	Supplier, foreman
Location	On site, site office
Solutions	Several
User benefits	Medium
Org. benefits	High
Implementation	Hard

Process description

This process starts with an order to the supplier for goods required. The goods are then delivered to site along with a delivery docket. The goods should then be checked by the person receiving the delivery to ensure they match the delivery docket and then they are signed for. One original signed delivery docket is retained by the supplier and is now termed the "proof of delivery" (POD) and a copy of the signed delivery docket is retained by the contractor and is termed the "goods received note" (GRN).
The GRN is then returned to the accounts department where it is matched with the order and the invoice sent by the supplier.
Once these have been satisfactorily matched, which may require further conversations with the supplier, then payment to the supplier is made.

Background

This process involves several different parties; the person requesting that material is ordered, the person placing the order, the supplier, the delivery driver, the person signing for the delivery and the person matching order to GRN and the invoice.

These parties are all at different locations and work for different departments/companies.

The paperwork is also under the control of different parties at different stages. The order is created by the contractor and the delivery docket which once signed becomes the POD and the GRN is created by the supplier.

Deliveries are made in order to make maximum use of the space on the delivery truck, this results in orders being split and not all arriving on the one lorry at the one time; not even on the same day in some cases. Also, on larger projects deliveries are made to multiple locations which increases the difficulties incurred as there are multiple people signing for the deliveries.

Currently, for most contractors the process of matching order to GRN to invoice is purely a manual process and on a large project this can involve searching through reams of paperwork.

Each project will have a number of different suppliers for different materials and equipment, this magnifies the number of people involved and hence the complexity of the process.

Current issues

The following issues have been raised for this process:

- Contractors sometimes change their order whilst on the phone, when what they want isn't in stock but a replacement is suitable, this can lead to disputes if the conversation isn't backed up by a revised order.
- Delivery drivers are keen to make the delivery quickly and often just want the delivery docket signed by anyone so that they can continue to carry out another delivery.
- Often the person who is signing for the delivery doesn't know what has been ordered and therefore cannot verify the correct goods have been delivered.
- Often the person signing for the delivery does not check the goods match the delivery docket.

- Lost GRNs is a huge problem for both the contractor and the supplier. One supplier stated that out of 4.5 million tickets issued each year contractors asked them to replace 300,000 GRNs. A contractor stated that on a £45 million project £133,000 of invoices was being queried on any one day.
- Once goods arrive on site there is difficulty in making sure they go to the person who ordered them.

Mobile solutions

There are two distinct areas in this process that mobile technologies can be used to address; GRN creation and distribution, and tracking of delivered goods.

GRN creation and distribution

The contractor should set up a list of authorised signatories and only these people will be able to sign off the electronic GRN. The signatories could then be provided with a PDA form that details the goods that have been ordered and have yet to be received.

When the delivery arrives they should compare the delivery docket and the goods in the delivery truck against the list of goods ordered and then put the number of items delivered against each item type. This would then create a GRN on the PDA. The signatory could then sign the delivery docket provided by the supplier and also ask the driver to sign on the PDA GRN form. The signatory would also sign the PDA form and then click complete and the information collected in the GRN would be input into the contractor's orders database and emailed directly to the supplier.

The people that had asked for the goods to be ordered would then be alerted via SMS to let them know their goods had arrived.

Tracking of delivered goods

Ideally all of the suppliers would barcode or RFID their goods so that an inventory of the contents of the delivery truck can be made by the contractor; however this requires industry-wide cooperation.

Alternatively the goods could receive a barcode/RFID on arrival to show what the item is and where on the site it should go. These goods can then be checked out only with the authority of the person who placed the order.

Benefits of mobilisation

Capturing, at the point of delivery, the data that is required to verify the goods received on site will eliminate many of the difficulties associated with lost GRNs. This currently creates a huge administrative workload. Providing electronic GRNs, orders and invoices enables the matching process to be carried out automatically, saving valuable time.

The use of RFID/bar-coding tags containing the delivery load enables the information to be downloaded immediately into the site database and to the supplier as soon as the operative has scanned the incoming delivery, this will substantially increase the speed it takes to identify exactly what is in the delivery.

Providing the contractor with the ability to produce the GRN puts control back into the contractor's hands thereby enabling them to automate their processes almost immediately without relying on multiple suppliers updating their ways of working. Where suppliers are producing electronic delivery dockets, the contractor could continue to use their own electronic GRN system; this would simply serve to verify the supplier's records.

Providing the signatory with the live list of goods ordered enables them to immediately turn away goods that have been delivered by accident. This reduces the time associated with returning unwanted goods and eliminates the possibility of being charged for unwanted goods that have subsequently been damaged on site.

Automatic notification when goods have been delivered enables work to progress sooner.

Ease of implementation

The provision of a PDA form for orders made and GRNs is relatively simple and there are many packages available. Initially this form could have the same appearance as the current paper forms thus providing the user with a familiar interface.

However, this approach of putting the GRN in the contractor's control will require an alteration in responsibilities in the current process.

Several research projects have been conducted to utilising barcoding/RFID for deliveries. These have been shown to work, however they often only involved one supplier.

COMIT

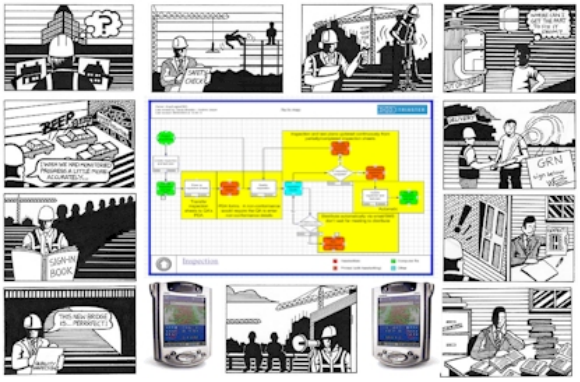
Construction Opportunities for Mobile IT

Process improvement

Process improvement through the introduction of Mobile IT

Accompanies To-Be map
As-Is map
Narrative

Available from www.comitproject.org.uk



Summary

The construction industry's drive towards utilising IT to enhance communication both within a company and between clients, consultants, suppliers, subcontractors and contractors has, to date, ignored the need to deliver information effectively to mobile personnel e.g. whilst on site or attending a client meeting.

The advent of suitable devices and software solutions will go some way to correct this. However, simply because the technology is now available we should not be indiscriminate in choosing the processes to apply it to.

This report documents the activities undertaken to better understand which construction processes would derive most benefit from the application of mobile information and communication technologies.

Introduction

An initial review of existing research and applications of mobile IT in construction was undertaken; The Current Status of Mobile IT. You can download this report from www.comitproject.org.uk.

The COMIT community, 30 representatives from the construction and technology industries, were then presented with a list, derived from previous research, of processes that Mobile IT could improve.

Ten processes were chosen to look at in detail in order to determine which processes would benefit from the introduction of Mobile IT. These were:

- Drawing distribution and usage
- Monitoring progress
- Monitoring health and safety on site
- Quality inspections
- Task allocation
- Goods received notes
- Site design problem resolution
- Site diaries
- Onsite accounting of operatives/visitors
- Maintenance inspections

In addition, one of the partners requested that monitoring of hazardous activities was also researched as new legislation, recently introduced by the HSE, has brought about a new requirement to monitor and record this process.

Generating the process maps

Process maps were produced to show how the processes occur currently; the "As-Is" maps.

Companies from within the COMIT community and relevant external contacts were asked to provide any material they had relating to each process; this included project procedures, existing forms, and QA documentation. This was supplemented with a literature review of research carried out in this area.

Material was received from 25 companies including most of the major contractors. This was then used to produce generic "As-Is" process maps for each of the 11 processes.

Using the "As-Is" process maps, activities were identified which could be improved through the use of Mobile IT. These areas are annotated and highlighted in yellow on the maps.

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Five of the COMIT companies attended a workshop to ratify the "As-Is" process maps and the areas highlighted for improvement.

Once the “As-Is” maps were finalised these were taken as a basis for the “To-Be” process maps which illustrate how the processes could be enhanced using Mobile IT.

Through the use of Mobile IT, data can be collected electronically at the point-of-activity. This results in many of the highlighted activities being automated, thus reducing substantially the time spent producing reports and transferring information.

Additionally the quality of information collected and hence produced is increased due to the lack re-keying and data entry errors.

The narratives

A narrative has been produced to accompany each set of process maps. This provides an overview of the process, the issues that are present with the current approach, ideas for mobile solutions, details of the benefits that they bring and an assessment of how easy the solutions would be to implement.

These have also been ratified by the COMIT community.

Mobilisation “scores”

A subjective assessment has been made of the how widely relevant solutions are available today, the benefits to the end-user, the benefits to the organisation and the ease of implementation.

These “scores” (red, orange, green) are given at the top of each process narrative to provide information at a glance and help you to decide which processes should be considered for the implementation of Mobile IT.

Solutions

An assessment of available solutions is made in accordance with how many solutions are available, their affordability, and are they in current use in the construction industry and/or will they require customisation to suit the particular process under consideration. The scores given are:

Many
Several
Few

User benefits

For any mobile solution to succeed it must deliver benefits that are directly apparent and of value to the end-user. This will encourage the adoption of the solution and hence help to deliver the organisational benefits. The scores given are:

High
Medium
Low

Org. benefits

The user benefits will result in benefits to the organisation. In addition benefits will be derived through the collection of more accurate information, the reduction of information transfer time and the ability to search and utilise the electronic information subsequently. The scores given are:

High
Medium
Low

Implementation

The ease of implementation is assessed in accordance with whether the solutions are already in use on construction or similar industries, the readiness of the users to take up the technology and the current extent of electronic information in the process. Hence a judgement can be made on the length of time and the effort that would be involved in the implementation. The scores given are:

Easy
Medium
Hard