

Site diaries

Users	Site engineers & clerks
Location	On site and site office
Solutions	Several
User benefits	Medium
Org. benefits	High
Implementation	Medium



Process description

The site diary is completed by site engineers to record all activities on site e.g. weather, visitors and operatives on site, progress made, and health and safety issues.

Each site engineer is required to record this information on a daily or weekly basis. This information is often kept in the site engineers notebook, however there has been a move towards keeping this information centrally and hence a more formalised process put in place whereby the site engineer completes a diary form and then sends this back to the site office to be kept in their records.

The site diaries are often only referred to when there is a query as to what actually took place on site. The information kept in the diaries is then used to respond to the query.

Background

On every project it is essential that a day-to-day record of site activities be noted. This forms the site diary, which can then be used as a contemporaneous record of events and is a written description of what happened at the time.

These site diaries also need to be kept for use post-project for claims/disputes, or mid project to verify health and safety audits/inspections, quality inspections and progress reports.

Currently the process for recording information in site diaries varies across the industry. Some companies only require that the site engineer keep log book and it is very much up the engineer what information he records. Other companies have set up a site diary form and this provides a more structured approach.

Each site engineer should keep a site diary, which on medium/large projects is a substantial number of people and hence a large number of records. The quality of information contained in the diary depends on the individual completing it.

The information in the diaries may need to be accessible some time after the project has been

completed; this is an issue in terms of data storage and accessibility.

Current issues

The following issues have been raised for this process:

- Diaries are often handwritten on paper forms, this results in difficulties searching the information and being able to read the person's handwriting.
- The diaries often remain with the person writing them, therefore when that person leaves the project so does the information recorded and it can be difficult to get back.
- Diaries can lack sufficient detail or contain conflicting information if they are not completed diligently.
- Diaries often contain information that is typed up at the end of the week from memory rather than being recorded contemporaneously.
- Diaries lack pictorial information that may provide more detail than writing alone.

Mobile solutions

A form could be created for use on a PDA to enable the site engineer to capture diary information whilst he is out on site.

Once the diary form is completed it could either be synchronised when the site engineer gets back to the site office and enable him/her to add further information through a web-based interface if required or it could be synchronised via WLAN or GPRS whilst out in the field. Due to the nature of the data collected it is not thought necessary to provide diary data on more than a daily basis, hence synchronisation would be sufficient.

The data can then be fed into a diary database which would collate the data from each site engineer.

As more information is collected electronically on site (e.g. progress information or health and safety inspections) the diary form could pull in this information from the relevant databases and then the site engineer would simply have to verify that those events did indeed occur on those days.

Although most of the diary information can be highly structured e.g. weather, rainfall, number of visitors. There will still be a lot of information that will require heavy text input. It may be more acceptable to provide digital forms for use with a digital pen instead of a PDA form. This would enable the site engineer to write the information required using the pen and then submit this to the diary database by pressing the function on the paper. A picture of the data captured could then be kept alongside the textual transcription that has been provided using character recognition.

Another alternative would be to utilise video diaries. A video recorder/mobile phone could be used to record the diary, and prompts for information could be given as the diary is recorded.

Benefits of mobilisation

Capturing diary information directly in the field provides contemporaneous information, eliminating errors typing up information from handwritten notes or from memory. It also allows the site engineer to spend more time out on site undertaking work that enables the project to be completed on time and on budget.

Providing an easy way for site engineers to capture the information may lead to the information being

collected on a more regular basis. This increased feedback could help in the provision of more accurate and complete information.

Once the diary information is captured in an electronic format this enables the data to be more easily searched and also ensures that all of the diary information is stored centrally and 'owned' by the contractor so that they can use it retrospectively.

Providing a structured form helps to prompt the site engineer to record the information that the contractor may require in the future rather than simply relying on the site engineer to record this. Missing information can be prompted for and insisted upon prior to the site engineer being able to submit his/her diary. People late submitting their diaries can also be automatically prompted via SMS or email to ask them to complete them.

Once more information is captured electronically on site this can enable comparison of the data collected by different people e.g. the site engineer and the health and safety inspector. The discrepancies can then be highlighted and resolved at that point in time when the events are fresh in their memories.

The use of video diaries can speed up the process of recording the data and release the engineer of writing a long record at the end of his/her working day

Ease of implementation

Site engineers appear keen to record this kind of information electronically and are beginning to ask for this functionality.

The provision of a PDA form for the collection of diary information is relatively simple and there are many packages available that can be used to create the form. Initially this form could have the same appearance as the current paper forms thus providing the user with a familiar interface.

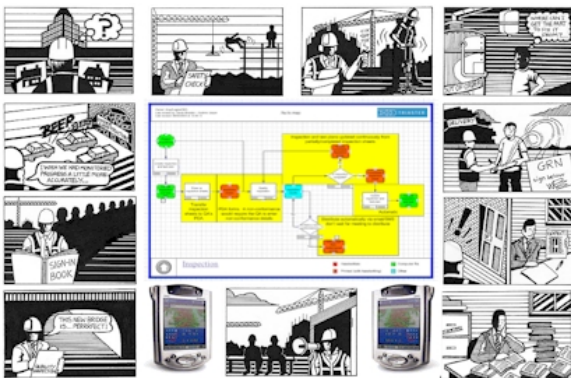
The use of a digital pen could help overcome some of the barriers to new technologies by providing the site engineer with a recognised method of inputting information; paper and pen.

Video diaries may be less acceptable culturally as people often feel inhibited by a camera and they may well not record some of the more contentious issues.

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.

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.

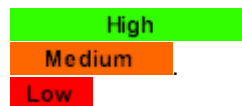
Solutions

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:



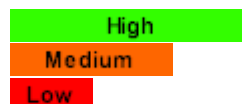
User benefits

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:



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:



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:

