

Rosser & Russell

Process	Maintenance information
Users	Maintenance engineers
Hardware	Siemens SX45 PDA
Software	Cognito
Location	Nationwide, UK
Cost	£135,000
ROI	Payback in one year



Business Problem

The administration system had become unwieldy due to the “paper trail”. Customers were becoming unhappy with the speed and inaccuracy of invoicing and reporting. The engineers posted forms and timesheets to the office at the end of each week. This was time consuming, open to delays and inaccuracy, meaning that any reporting to customers could be 3-4 weeks out of date.

Business Solution

Providing the engineers with PDAs enables electronic transferral of information in real-time. This gives the status of jobs for the day and not for the previous month as before. Efficiency of the division has improved by enabling the allocation of jobs on a weekly basis instead of monthly. For a company of this size the payback period is estimated at ten months.

Background

The manual administration system for maintenance tasks and timesheets, had become unwieldy due to the large “paper trail” that it produced, customers were becoming unhappy with the speed and inaccuracy of invoicing and reporting.

Process

The process of taking worksheets and timesheets and using the information to provide reports and invoices.

Traditionally, engineers filled out paper worksheets and sent these back to the office in weekly batches with a covering timesheet. These needed to be chased, collated, checked, verified and reconciled. This resulted in a large administration effort, slow processes and out of date information.

Solution

Engineers now have PDAs so that they can receive and fill out worksheets in real time. Forms on the PDA, developed by software engineers, look like the old paper forms.

These are sent via the mobile phone network to the database. Information transfers between them almost instantly.

Costs

The total implementation cost for this mobile computing solution was £135,000 and then a running annual cost of £72,000. The key areas of expenditure were:

- Set-up of software modules and interfaces
- Buying the Siemens PDA units
- Memory cards and SQL license for each unit
- Training, mainly internal time spent

Benefits

The improved planning, information speed and accuracy will help contain administration costs during a period of expansion and increased turnover.

Information about the status of jobs is available the same day, not a month later.

Business Benefits

Cost

Originally, the annual turnover was steady as some clients arrived and some left.

Due to an expansion program the turnover has doubled in three years; partly because the administration work is not increasing with new clients, the divisions profitability has improved.

This has enabled more focus on long term maintenance contracts and not short term reactive projects.

The administration work has reduced, even though the number of contracts has increased. When all the paper forms are stopped, the administration time saving is estimated at 450hrs a week for an office working with 90-100 engineers.

Time

The clients can see on the company extranet the status of the jobs as soon as the information is in the PDA. This is a huge improvement from a three week paper delay. The administration staff can now do three tasks (logging, checking, reporting) instead of one task being a full-time job.

Quality

The real time transferral of electronic data significantly reduces the time spent trying to match job forms, contract jobs, timesheets etc. There are now no errors from engineers writing the wrong job number on forms as this is done automatically.

The customers appreciate the efficiency, lower costs and like to be associated with new technology.

The accuracy of the forms means that engineers can only put in times within 1/2hr of the real-time.

Return on Investment

The impact on the administration effort is high. Take a large contract of 30 engineers, they produce enough paperwork for 5 staff full-time. With the PDAs sending information through this is reduced to one full-time administration staff.

The payback period can be estimated to about 40 weeks for this size of firm. However, if you consider the increase in the contracts and customer satisfaction then this number can be reduced.

Champion

The National Operations Director, Paul Ryder, initiated this development and the Systems Manager, Richard Thomas, carried it out. Paul had seen a similar system installed and working in a previous role and was brought in to push things forward. This gave Richard the backing and the time to carry out the leg work for the infrastructure and the technical work.

Implementation Team

The improvement was initiated by the National Operations Director and carried out by the Systems Manager (Richard). Guided by Richard, the contract supervisors did the final rollout. The Cognito and FSI staff gave training information to the Systems Manager.

Training

To use the Siemens hand-held the engineers each had two hours of training in groups of two. The administration staff had longer training but there are less staff to train. Future training will be given to the administration and accounts staff as they now have some time freed and have increased multi-tasking.

Some of the initial training was provided by Cognito and then some internally by the Systems Manager. It was found that the most effective training was given by the contract supervisors to their engineering staff. Thus training concentrated on using the contract supervisors.

Technology Usage



Team tasks

The engineers undertake planned and reactive building services maintenance tasks. Mostly on a limited number of contracts so they get to know the buildings and environments. Having to carry a Siemens SX45 to receive and send information, is much more efficient than carrying then posting paper (such as timesheets, maintenance forms) for each task.



Technology usage

PDA's (Personal Digital Assistant) are being used by the maintenance engineers to replace all their paper forms. They fill in details about the status of jobs, the time, the condition of the equipment, and even sign using the screen. All new jobs are sent to the PDA over the mobile phone network. The office database records when the data is sent. In the future they will also fill in purchase orders for parts on the PDA's.



Why employ this technology?

A strategic change was desired to enable expansion and improve profitability. The old system entailed paper forms and posting reports/timesheets, and couldn't deliver the strategic change. The time taken to transfer information and report to clients and the accuracy of data have been targeted by this solution. The old infrastructure was upgraded for year 2000 and made robust for the new solution.

Implementation Costs

How much did it cost to implement this solution?

Description	Notes	Cost
Up front investigation costs	Time spent researching, now easier as the technology is becoming more available.	1 month of a systems analyst
The mobile computing devices	£640 per unit including SIM card, software and connection charges. 3 year life expectancy.	£64,000
The software application	Development and installation of software interfaces including licences.	£55,000
The communications infrastructure	Frame relay link with ISDN backup, 2 x CISCO Router (one as backup), 2 x PC (one as backup) plus management software.	£7,300
The data storage system	Existing server used.	N/A
Consultancy service costs	Training and other services.	£3,000
Ongoing communications charges	£3,500 pa plus £49 per unit/month.	£62,300 pa
Personnel training costs	£500 for training, and 2hrs each for 100 engineers at £20hr.	£4,500
Staff costs	A contract supervisor for 3 months. Regular steering and project team meetings.	£Unknown
Support costs	£285 pa on router maintenance plus £8 per unit/month.	£10,000 pa
Other costs	Repairs to damaged units before engineers learned how to care for them properly	£1000
Total		£135,000 plus £72,000 pa

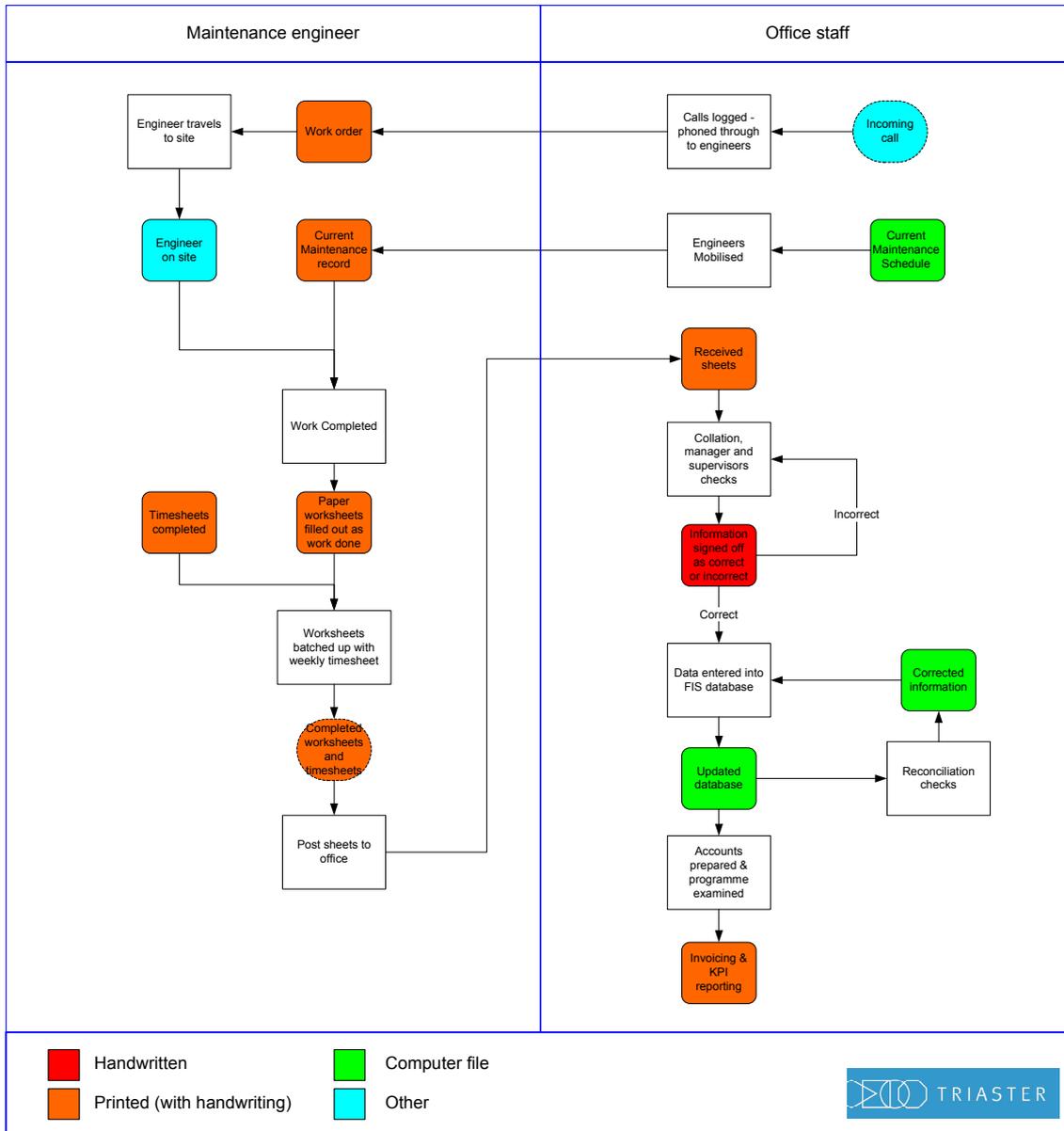
Costs

Costs fluctuated and mostly evened each other out to match the budget.

A suitable database was already in-place for the mobile IT to communicate with. If there is not an existing robust database available then there will be additional costs.

Implementation Timescale

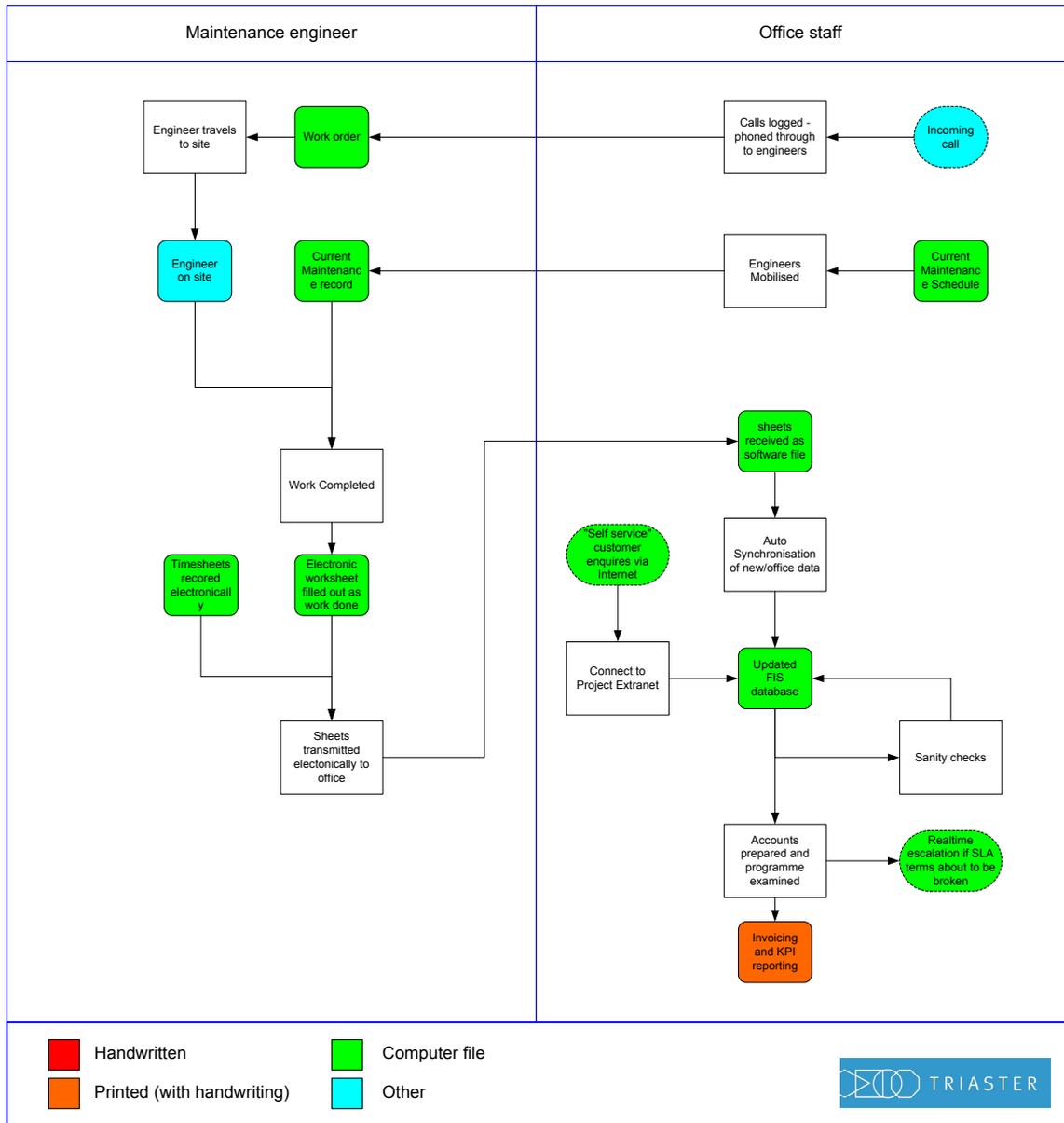
This took over two years. Over six months to research what was available and set-up a budget. About one year for the software development and to put the hardware network in place. Finalising the supporting infrastructure and doing pilot projects took another year. Once the paper forms are not required the main advantages can be gained from the time savings for the engineers, accounts and the client reports.



Original Business Process

Reactive maintenance calls are phoned through to engineers who will have blank paper forms that they fill out as they do the work. Planned maintenance is posted to contract supervisors to allocate on a monthly basis. The forms are posted by engineers each week with time sheets. This causes problems when there are postal delays/strikes and relies on the weekly paper form management of the engineers. Situations such as the recent postal strike underline this.

The office staff then have to try to match up papers for jobs and timesheets. This causes many queries and is time consuming. The data is then entered to the IT system, often 2 weeks after the work was carried out. The errors are then checked and the invoicing and KPI reporting is produced, hopefully accurate but out of date. Office staff can check progress of the planned maintenance for the previous month.



New Business Process

Reactive maintenance forms are sent through to the engineers PDAs. The planned maintenance forms are sent through to the contract supervisors each week to allocate. Engineers fill out an electronic form at the end of each visit. The form is then sent to the computer system.

Sanity checks are carried out by the system and by office staff. The office staff can then produce the reports and customers can look at the status of jobs via access to the R&R extranet. This real-time view of jobs enables the office staff to see how up to date the planned maintenance work is for that day.

Lessons Learnt

People

The contract supervisors need to understand the new process and promote it to the engineers. If the IT staff promote it then it doesn't work as a business improvement in the eyes of the engineers. It is also not seen as coming from their department or the hierarchy directly above them. This can hugely reduce the enthusiasm to use any new unit.

The new PDAs are being used by engineers, there were some initial damages when the units are not returned to their protective cases. The engineers are now responsible for their own units and cases.

To enable timely development of software and cross over to new servers, the IT staff need to give their backing to the changes. Ease of use of the software is vital thus full IT cooperation is needed.

The first pilot was pushed forward for a large project. The installation team would have preferred a smaller project. The mistakes that happened because of this haste caused a loss in confidence in the process and future delays.

A better organised project with the help of the contract supervisors then had 30 engineers kitted and trained in three months and the removal of paper forms within the next two months. This enforced the importance of a pilot project and having the correct staff taking ownership. The chosen supervisor was based near the administration office and understood the business case for the new process.

Process

Carry out a full risk assessment for anything that will be changed or affected and the affect that this could cause on the running of the business.

There are always things to learn that were not expected. Although the forms on the PDAs are very similar to the paper versions there are some differences, such as a job that is sent to an engineer that is off-sick. This has to be sent back and re-sent to a different engineer before he can see or log any information on it. If two engineers are doing a job together they both need to submit separate forms for the job, as these are also used as timesheets.

Technology

The PDA technology is now more available and constantly being updated. R&R have appreciated the close relationship between Cognito (Server and software) and FSI (database), the different systems have had no trouble 'talking' to each other.

When putting in new technology such as this, don't try to do everything at once. The infrastructure development and usage needs to be implemented in gradual stages to be tested and culturally accepted.

What Next?

The PDAs are to be rolled out to the remaining few engineers who are still using paper. The office staff need a little more confidence in using the system to stop the use of paper forms. It is then that the large time improvements are expected.

With the new solution enabling the improved process, Rosser & Russell can now take on larger/longer contracts with confidence.

After usage has been consolidated the uses of the PDAs can be increased. Bar-coding on equipment can be introduced and R&R can efficiently keep records and inventory of all equipment for customers not just the maintenance plans.

Details for further investigation

User:

Richard Thomas, Rosser & Russell
[www.rosserandrussell.co.uk]

Software Providers:

Cognito
[www.cognito.co.uk]

FSI
[sally.wotton@fsi.co.uk]

Hardware and Service provider:

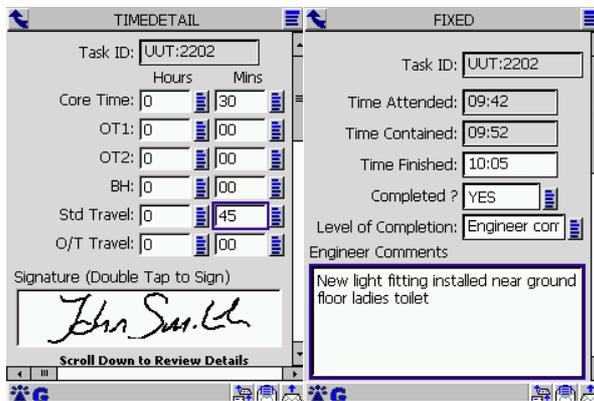
Siemens (via Cognito) and Vodafone

Technology Overview



Mobile computing device

The handhelds used in this case are the Siemens SX45 model. They currently have three hours battery time at high usage, R&R have put spare batteries in all the units. They provide a good screen visually and choice of pen or button inputting. The SX45 are larger than the new units available, in a fast developing industry. They are used by R&R in the leather cases as shown on page 3.



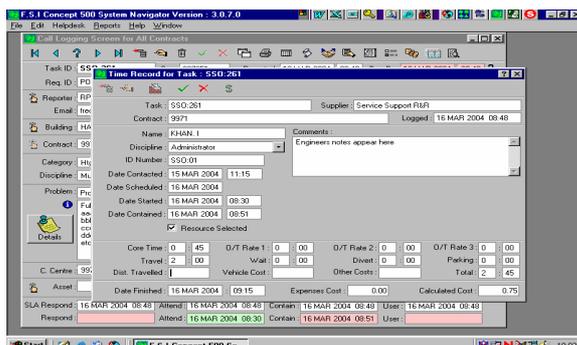
Software application

The Form application is used, (shown) has been developed by Cognito, which copies the style of the R&R paper forms and translates straight into CONCEPT, a standard FSI database.



Communications infrastructure

The Siemens handhelds communicate through text messages and on-screen “forms” (developed specifically for R&R). Messages are routed via Cognito to a project server at R&R head office (a Win2000 server). The servers with the FSI Concept database on can be accessed at different levels of detail by customers with a web interface, R&R contract managers, logistics controllers, accounts users, basic users and Concept administrators.



Data storage system

Very little data is stored on the Siemens handhelds as the information is frequently reported to back to the server. The Cluster server (a Win2000 server) holding the FSI Concept database (shown) information is the main storage facility. There is a backup server (MS SQL Server 2000) linked directly to the main server.

The COMIT Project

COMIT, Construction Opportunities for Mobile IT, is a two-year research and development project part-funded by the Department of Trade and Industry. Led by Arup, in partnership with BSRIA and Loughborough University, the project brings together representatives from construction, technology, research and dissemination organisations to facilitate the realisation of business benefits from the adoption of mobile information and communication technologies.

Key Objectives

- Creation and running of the COMIT community.
- Mapping of information and communication needs of point-of-activity workers.
- Production of case study material, including detailed factual business benefits and implementation guidance.
- Implementation of mobile IT on two demonstration projects, in order to evaluate the benefits and barriers successes and failures.
- Continuation of the development of community activities in conjunction with the ITCF.

COMIT Case Studies

This report provides an overview of the use of mobile communication technologies on a construction project. It is one of a series of case studies that have been conducted as part of the COMIT project to show real examples of implemented applications.

The case studies illustrate several mobile technologies and how the companies have improved work processes. An overview is given of vital information such as who championed the changes, how much they cost and what business improvements were gained. To gain a full insight, both the staff using the technologies and their managers were interviewed.

How do I find out more?

In addition to the contact details provided in this case study you can use the **Information hub** available on the COMIT website (www.comitproject.org.uk). The relevant details can be found by selecting:

Process	Asset management, Monitoring operatives
User	Maintenance engineers, Operatives
Software	Data capture
Hardware	Palmtop/PDA
Infrastructure	GPRS/GSM

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Produced in association with:



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