

**CITB-ConstructionSkills action learning
project – supply chain integration, logistics
and e-trading**

**Report into the application of a logistics
management system to the Whitefriars
housing refurbishment in Coventry**



The Wates project

This project explored the scope for achieving further reduction in the time taken to refurbish a house using planning techniques supported by the Synchro system. Synchro is described below under "The system"

The Wates project involved the replacement of kitchens and bathrooms in approximately 150 out of 20,000 houses that Whitefriars Housing Group refurbished in Coventry over a period of five years.

Up until 2004 Wates had four work-streams, all working in tandem. Each work-stream had sufficient resources to start work on two to three houses per day. This study initially worked with Stream B, which had the capacity for three house starts per day.

Through continuous improvement the normal completion time for a house had reduced since the contract began. A 25% improvement meant that what was once a 20 day cycle took only 15 days to complete. The team now had to find ways of lowering the build time by even more.

Three key preparatory meetings took place:

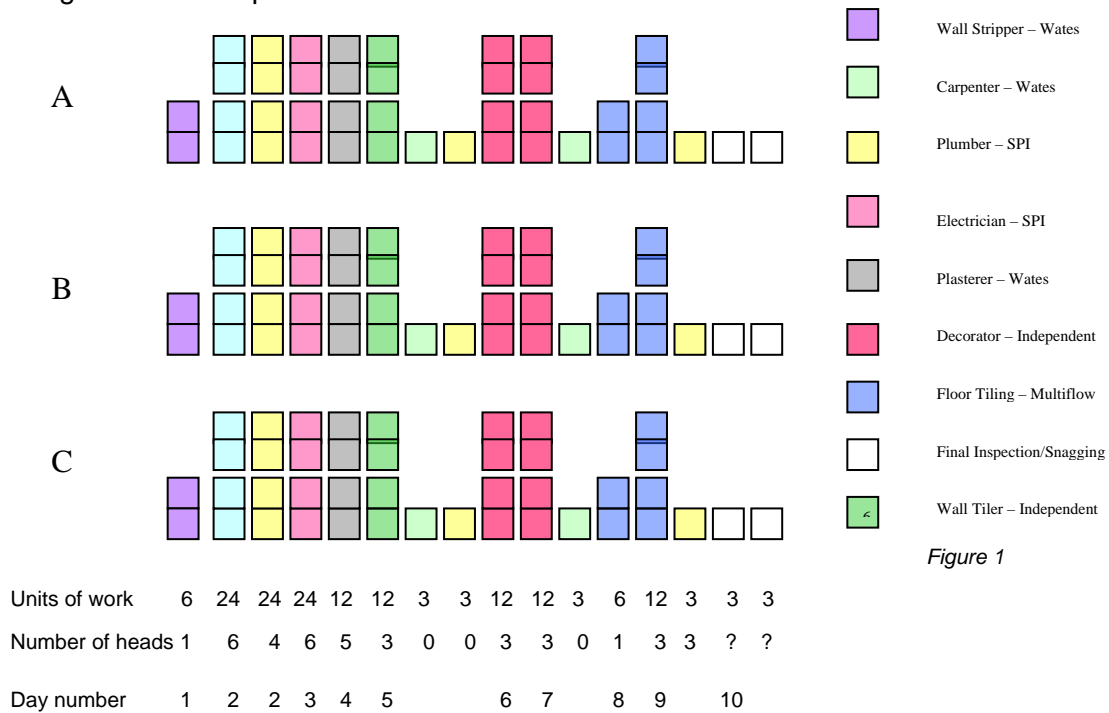
1. With people involved in the work-stream to define the work processes required for a house.
2. With the bathroom suppliers and fitters.
3. With the kitchen suppliers.

In addition, much time was spent with the teams on the ground to understand the entire process from survey to completion. The client was included in discussions to gain an understanding of how the housing stock was released for work.

The main aims for the live project were:

- to reach a nine-day house turn-around time, which represents a further 40% improvement over the previous average achievement
- to fix a date agreed for the work as early as possible with the tenant
- to minimise the elapsed time in which the house would be worked upon
- to calculate resource requirements one month before work started
- to issue work templates from survey information
- to issue proposed timings and job requirements to the supply chain immediately after the survey
- to put real names to jobs as early as possible in order to ensure resource availability
- to give each resource a clear statement of times and contents of jobs.

The targeted work sequence was as follows:



The challenge was to come as close as possible to a regular achievement, house by house, of the above programme.

The cooperation of the main suppliers was always going to be important so advanced scheduling and considerable process changes were necessary to allow them to resource properly.

The project

The system

1. Synchro is a collaborative system that allows the complete supply chain to share a common view of events, plans, and any changes to plan. The information is provided on a concurrent basis, meaning that there is less than one second in difference for all project members viewing information on the system.

2. The intention was to create a plan of work based on identical tasks being performed in each house. Once the first job was started, the others should follow in a set sequence as shown in Figure 1 above.

3. Synchro allows every task to have its own process indicated by a colour, which meant that once Wates had agreed a date with the tenant upon which to begin work, it could link this date to the start of the default process. The system then electronically told each subcontractor when they were required in a specific location. The contractor could then check their resource availability and confirm whether or not they could carry out the work.

4. Because each contractor could filter down to their own schedule information within Synchro, it was easy for them to understand the requirements of Wates, and by pressing

one mouse key once they could confirm to Wates and the other suppliers their ability to support the work programme.

5. The mechanism was therefore eminently simple and was not seen by any user as anything other than useful, relevant and practical.

The tasks

This project followed classical line of balance scheduling theory. By injecting more planning into the project it was possible to identify which tasks were likely to fall outside of the line. This was simply because they were not shown in the status colours of grey for 'started' or blue for 'completed' in the right place in the chart.

The chart in Figure 2 shows the graphical presentation that gives management the ability to recognise anomalies in the planning period and variances in the execution period. In the example below, all tasks above the line of balance should be in blue but those in yellow show immediately that there is a serious downfall against the plan.

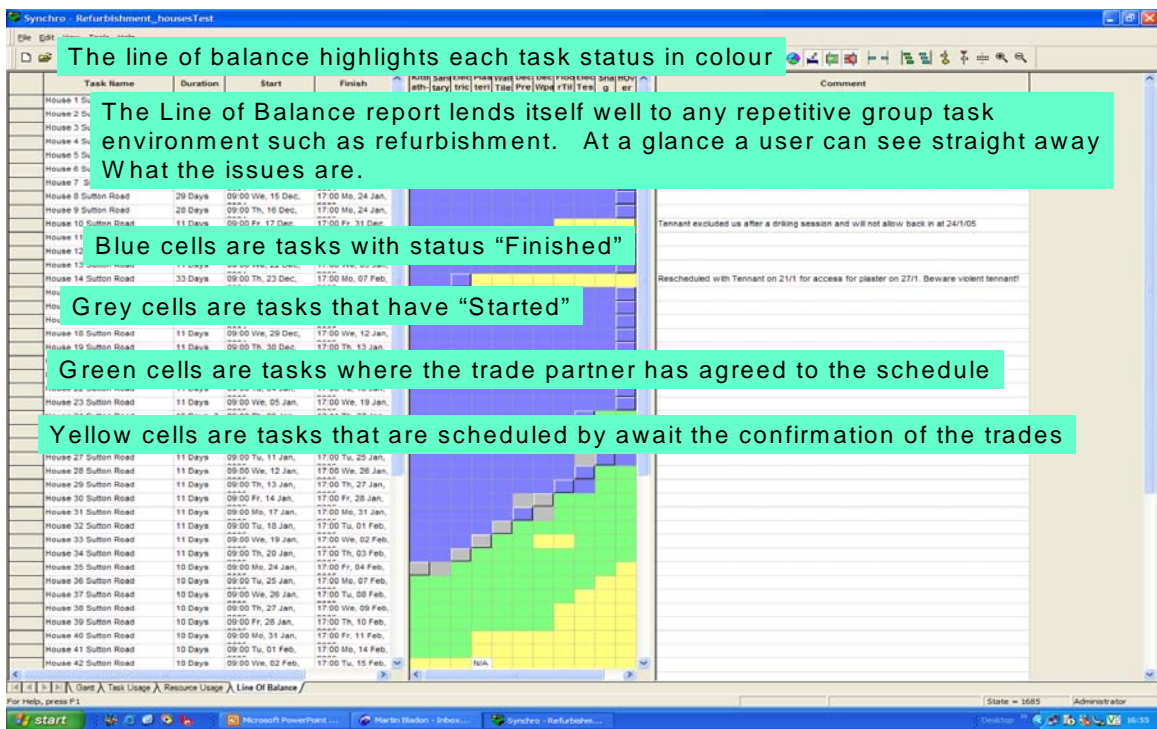


Figure 2

The implementation

The project experienced problems common to many new IT installations, in that several weeks were lost obtaining functional approvals, hardware on which to run the system, version changes, and user adoption.

As a result Synchro consultants shadowed the project team for many weeks. In this phase it was found that:

- houses were started regularly and the first two or three days progressed according to plan
- subsequent trades were often working on other houses, breaking the planned sequence of work. Deeper analysis of this showed that they sometimes wanted to squirrel away a stock of houses for forward work and organise their own timetables,

but also they did not believe sufficiently that the handover would occur at the stated time.

To address the last issue it was agreed to put a two day buffer into the process after day four between the tilers and the decorators, in order to accommodate a snagging review and any delays that might occur within the early work.

At the outset of the project the need to understand the organisational impact and opportunities of using a new working method were underestimated. When properly implemented the system needed only a relatively junior person to work as a sort of controller, leaving all foremen and supervisors to concentrate on outside activities. Trying to change hands-on operators into manipulators of even a simple system did not work and affected the project results negatively.

The outcome

1. Working on this particular project in the last year of a five year programme meant influencing a team that already worked well using approaches they believed in. They did, however, believe that improvements were possible and contributed their ideas on how processes might be changed for the better.

2. Enough houses were completed within the objective timespan to know that a build time of 15 days could be improved upon. However, the project failed to achieve this on every house for various reasons, including amongst others:

- tenant access difficulties
- changes in priority
- legacy problems that diverted resources away from what was needed to carry out the agreed cycle
- lack of buy-in from some of the finishing trades.

3. As the project proceeded, the plan to work with one stream was changed to working with the two streams then in operation. With the power provided by the Synchro system control, it might have been better to adopt a single team approach and not split resources by stream. The difference between resource availability was considerable, with the result that one stream was able to achieve contracted programme times without difficulty and the other struggled to avoid being late.

Key lessons

1. Effective planning is vital to achieving the aim of finishing every house within a nine day cycle.

2. Before this trial started the teams had become used to dealing with immediate problems and could not truly believe that another way of working was possible. However, every subcontractor warmed to the concept of forward planning and was in favour of having the ability to manage resources better.

3. The key issue in a planning environment is resource deployment and optimisation. By adopting a philosophy of continuous improvement, the resources that represent the cost-base of the project could be used more efficiently. It was clear that in future projects, planning should focus on ways in which the project is organised and supported by systems. In particular, attention should be paid to ensuring that the house is available for work to take place in. Without this, the equilibrium upon which the supply chain

depends is lost and replaced by a scenario in which attempting to catch up can become a permanent fixture.

4. The role of the initial house survey was not valued as highly as it should have been. The work was relatively standard but anything that caused extra time, such as abnormal plastering work, threw out the normal line of balance unless it was recognised beforehand. Any variations in schedule must therefore be established at the survey stage and included in the work template for each house.

5. More process work is needed at the start of such a project. It was evident that results could be improved by process changes supported by quality system control. The benefits for the contractor of working in this way would be manifold with faster throughput and lower overheads.

Extrapolating the learning points from the Whitefriars scheme to the national 'decent homes' programme, it is certain that a minimum of 10% could be saved if more process definition work was carried out up front and then applied in a continuous improvement mode. Optimising the use of the four key resources of people, equipment, materials and above all space (the working location itself) would create dramatic results.

6. Finally, a first project of this nature will inevitably be part of a learning curve. The benefits are more likely to be realised on later projects. It is finding a way to achieve this continuity of improvement that is frequently missed by the industry but it is necessary to generate the changes the industry says it needs.