Curriculum Management Using Nova-T6

Part B

Course Code – CMNT6B-4-05
Version 5.0
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Capita SIMS, Franklin Court,
Priory Business Park, Cardington, Bedford, MK44 3JZ
Tel: 01234 838080 Fax: 01234 832082 http://sims.capitaes.co.uk

Where appropriate for data entry purposes, the graphics used in this document match the training data recommended for use on the course. Where the graphic is an example of what might be expected when using certain areas of the software, the training data may not be an exact match.

Revision History

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# Curriculum Management Using Nova-T6

## Part B

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Preparation for Scheduling

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Chapter Introduction

Nova-T6 contains a number of routines that check the feasibility of being able to schedule a staffed curriculum plan:

1. **Building a Block**
   Designed to check the internal consistency of a single block. The routine looks at staffing, session definition and, if applicable, rooms and facilities.

2. **Combing Chart**
   To indicate, for a selected set of subjects, the minimum number of periods required for scheduling. It indicates the number of periods required without considering when the period might take place. It views the cycle simply as a set of period numbers from one up to the total number of teaching periods in the cycle. The routine looks at the members of staff attached to particular classes. Whilst using the current build it works out how the blocks could be made to fit together without double booking a member of staff. It does not look at session lengths, one-per-day rules or the availability of part-time members of staff, facilities and rooms. The information provided enables the timetabler to see exactly what is causing the failure, for example, which teacher team(s) are incompatible.

3. **Partial Schedule Trials**
   Designed to test whether a single department can be scheduled into the available cycle. All factors are considered. The routine attempts to autoschedule all blocks containing the relevant subjects. It returns a simple yes or no without displaying the timetable that has been created. It does not provide interpretation as to what might be causing it to fail.

4. **Clash Table**
   Sometimes called a conflict matrix (to distinguish it from the clash table found in the Options software). It provides information that would be difficult to achieve using the combing chart. Option blocks tend to contain staff from a number of departments and the clash table checks which blocks from one year group will fit with which blocks from the second. A typical example would be the checking of year 10 against year 11. Having information about areas of conflict is likely to reduce the amount of time taken when scheduling and can also help the timetabler decide on which blocks should be scheduled before others.

If timetablers envisage a block as a bag, then the teaching groups/classes are designed to fit into the bag. This might seem obvious, but it is possible in Nova-T6 to schedule a block onto the timetable without including its contents. The reasons for this will be discussed later.
In Nova-T6 when a block is built, the groups are fit into the bag. A build is a check on the internal integrity of the block. It answers questions such as would any teacher or room be used more than once at a period, if just this block were to be scheduled on an otherwise empty timetable? Would any facility be overused at a period? Are the session requirements for the block consistent with those of each group within it?

If the block will not build then it cannot be scheduled. Building a block partly can be used as a feasibility check to ensure that it is not sabotaged right from the start.

**Step by Step 39 – Building a Simple Maths Block**

Consider a simple Maths block of four single sessions.

1. Using the T6 (4) dataset, select the **Model** process and examine the **Maths** block for **Year 7, band x**. Change to the **Classes** process and find the three groups within the block, **7x/Ma1, 7x/Ma2** and **7x/Ma3**.

2. Select the **Sessions** process, then browse to the **7x Maths** block and note the information about each of the three groups. The graphic displayed below illustrates group one.

   ![Graphic illustrating group one](image)

   All three groups are defined as S4, as is the block shape.

3. Change to the **Block** process and note the information displayed.

   At this point do not focus on the timetable area towards the bottom of the display.
The **Pending** sessions section initially contains all the sessions for all three groups (by default the filter is set to all). The **Attributes** column indicates the teachers assigned in the plan. The grid or **Build** to the right is a visualisation of the block shape. It has four rows, one for each period and the thick horizontal line between each row indicates that they are all singles. The build has three columns, one for each group. The meaning of the numbers, for example, 4-4 or {4-4} will be discussed later.

4. Click the **Build** button (above the grid) and note the effect.

<table>
<thead>
<tr>
<th>Pending Sessions</th>
<th>Build</th>
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<tr>
<td><strong>Group</strong></td>
<td><strong>Period</strong></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
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</tr>
<tr>
<td>3</td>
<td>2</td>
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All the sessions move across from the **Pending Sessions** section into the **Build** section. On a block like this it is pretty obvious that there is only one way this can be built (this is more complicated when the groups are split).

5. Click the **Unbuild** button, change the **Pending Sessions** filter to **7x/Ma1** and click the **Build** button, opting just to build the selected group.

6. Click the **Unbuild** button and change the filter back to **All**, then click the **Build** button.

This method of selective building is not particularly relevant to the current process, but will be used later in the course.

**NOTE:** There are shortcut keys for **Build** (**Alt and B**) and **Unbuild** (**Alt and U**).

### Step by Step 40 – Building a Split Technology Block

1. Browse (magnifying glass) to the block **7x Technology**.

The Pending Sessions section indicates that three of the groups are taught by two teachers, one for the double and one for the single. The Build grid shows four groups for three periods. Looking at the horizontal lines it is clear that the sessions are DS.

The order of the Pending Sessions can be changed by selecting any of the headers. The initial order is by session length with doubles at the top.
2. Change the order to **Group Order**. The split between teachers is more obvious.

3. Click the **Build** button and note the way in which this block is built.

![Diagram of Nova-T6 CMNT6B-4-05](image)

If the block shape had been incorrectly left as the default of S3 rather than DS, would it have built?

4. Click the **Unbuild** button and change to the **Sessions** process. Click the small **Block** button (as shown in the graphic displayed below) and type **S3** (which is incorrect), then click the **OK** button to confirm.

5. Change back to the main **Block** process. It is evident from the build grid that the block shape is now **S3**. Click the **Build** button.

![Diagram of Nova-T6 CMNT6B-4-05](image)

The error message displayed refers to doubles.
6. Click the OK button to confirm the error message and change back to the Sessions process. Redefine the block shape as DS. Select the main Block process again and check that the block will build.

**Step by Step 41 – Building a Tutor Group Block**

1. Browse to the 7x Tutor Groups block and select the Pending Sessions heading of Fit.

![Image of build grid with Pending Sessions and Build sections]

This is a more complicated block. This is because although there are only three groups called 7A, 7B and 7C, each requires fifteen periods of a variety of nine different subjects and Sc wants DS as the session requirements. The build grid shows a double session at the top with thirteen singles underneath. Scrolling may be required to see all the rows, depending on the resolution setting of the display.

At present, if timetablers discount the requirement for a double period of Science then the number of possible ways in which a single row could build is 9x9x9. An example of this is any one of nine subjects for 7A, 7B and 7C. If this is the case for a single row, then the number of ways of building the whole block is extensive. In this lies the flexibility of the block. There are many ways of juggling and shuffling around the contents. Due to this fact, this kind of (linear) block tends to be one of the last ones to be scheduled, precisely because there are many ways that it could fit.

If there are many ways in which this block could be built, does Nova-T6 try to find the best one? Unfortunately this is impossible because until most of the timetable is scheduled, it is not clear which build would be the best. When blocks are being built nothing is likely to be on the timetable. At this stage Nova-T6 is attempting to produce any build. It works in a random way and therefore it is unlikely that the build will be the same as any other person on the course. If timetablers unbuild and re-build the block they are most unlikely to achieve the same build twice.

It is important to realise that each row in the build is a period. This means that whatever combination of subjects is placed on the same row for the three groups, this is what eventually will be scheduled. There is one added complication when autoschedule is used. T6 may manipulate the build as it schedules. At this stage it is looking for any build rather than the best build when scheduling.

2. Click the Build button and examine the results. Compare it with the delegate next to you.

The graphic displayed below shows the top part of one possible build.
The top two rows are bound to contain Sc for all three groups, because the block shape of DS13 is constraining the build to place all three double sessions at the same time.

On row [4] the combination is 7A/En, 7B/En and 7C/Gg.

Facilities have previously been assigned to certain classes, hence the HU, AR and (off shot) MU displayed in certain cells.

The process of building ensures that the normal rules of timetabling are observed, for example, do not double-book any teacher or room.

It is possible to manually build all or part of a block, then to lock certain parts so that autoschedule cannot rearrange that part of the build. This ensures that certain combinations that may have been requested are preserved through to scheduling. For example, if the head of Modern Languages has requested that all three groups have one Fr single at the same time. The other single may be anywhere. There is no intention to set French and it is not a case of creating a Fr block such as is the case with Ma in the year 7 curriculum. Some flexibility can be preserved by only forcing the three groups together for one period. The request does not specify at which period this combination should take place.

3. Unbuild the block by clicking the Unbuild button and manually drag one session of Fr for each of the three groups onto row three. Right-click each cell and select Lock followed by Hard (the difference between hard and soft locks will be discussed at a later stage).

4. Click the Build button to complete the build.

The build is completed without disrupting the previously defined Fr arrangement.
5. For each of the three groups examine where the remaining Fr period has been placed in
the build.

They will not all occur on the same row.

There are times when requests are made from heads of departments who require part or all
of the build for a particular block to take on a certain pattern. Consider a block which contains
three groups, each of which requires Hi, Gg and Ps. There are two approaches to building
such a block. The first is to leave it to the software and the second is to manually manipulate
the build to achieve the desired effect, then to lock the build. It is still possible to leave the
scheduling to the software.

For the vast majority of blocks the timetabler does not wish to intervene and is looking for the
quickest way to build all the blocks in the curriculum plan.

**Step by Step 42 – Building All Blocks Automatically**

1. Click the **Auto** process button.

This routine will be discussed in more detail when dealing with scheduling. At this point, note
that each row is a block and for the ones already built the text is black. For unbuilt blocks the
colour is grey.

2. Change the radio button at the bottom-right from **Current** (meaning just the highlighted
block) to **All**. Click the **Build** button.

The software quickly runs down the blocks and attempts to build each one. If a block fails to
build then the text for that block is coloured red. There is a quick way of isolating the failures
rather than looking for red text. In our case, there are no failures, but delegates will carry out
the process.

3. Click the **Tag** button above the grid of blocks and define (as shown in the graphic
displayed below) all years and blocks not completely built.

4. Click the **OK** button to confirm the **Tagging Definition** display.

A tag is placed in the first column of any block which is not built (in our case none).
5. Click the **Filter** button above the block grid.

The list of blocks changes to display only those carrying a tag (in our case, none).

6. Return to the **Block** process and sabotage the **7x Tutor Groups** block by clicking the **Unbuild** button for the block. Then manually place any single session in the top row of the build (which is intended for the double session of Sc) and lock it.

This makes it impossible to fully build because one double period session of Sc cannot fit in the grid.

7. Do not build the block here but return to **Auto** and carry out steps 1 to 5 again ensuring that the **Exclusive** check box is selected.

Delegates should find that the tutor group block fails to build and is listed when filter is used.

**Step by Step 43 – Combing Chart**

A Combing Chart is a tool that enables the timetabler to carry out a feasibility check on the staff assigned (or proposed to be assigned) to classes in a single subject or a number of subjects, as in the case of a department. It is common practice to require a head of department to create (or complete) a combing chart in the form of a spreadsheet.

The Combing Chart provides diagnostic information that might lead the head of department to amend the staffing to ensure that the requested staff allocations are not impossible to schedule. It provides the answer to the following question; given the current (or intended) staffing allocations, what is the minimum number of periods that would be required to schedule this set of classes?

Departments that only comb are considered inflexible and might need to be scheduled before other departments. Or, the head of department could be asked to improve the combing by moving staff around. Ideally, the timetabler would like every major department to comb in no more than the average loading of the staff. So, for example, with a cycle of 25 teaching periods every department should comb in no more than 21 periods. Combing in 24 or 25 is not good and of course combing in 26 or more represents an impossible task when scheduling. Knowing this information is extremely valuable at this point rather than halfway through the scheduling process.

Major departments tend to teach in blocks of half or full year, therefore teams of teachers are assigned to classes within each block. If the same teacher is assigned to two or more blocks, then these blocks cannot be scheduled simultaneously. It only takes a few unwise choices of staffing to create a situation in which there are not enough periods in the cycle to enable all the blocks to be scheduled, without double booking a teacher. This is precisely what the combing chart is intended to diagnose.

A timetabler would not want to embark on the difficult task of scheduling the curriculum plan if it was already known that at least one department was bound to fail, even if it was the only department on the timetable. Without some form of feasibility check the chances are that the data will contain impossibilities arising out of unwise (or uninformed) choices of staffing.

In some school situations, the head of department is required to produce a combing chart that works before handing the staffing requests to the timetabler. In this instance, Nova-T6 cannot really help, as at this stage it does not know what the proposed allocations will be.

Those schools that tend to deploy staff onto classes after they have been scheduled will not find the concept of the combing chart at all helpful.

If, for example, staff were to run a check on the maths department, the assumption would be that the classes have been staffed and the blocks have been built.

1. Before proceeding load a new **Local** backup file called **T6 (5)**.
2. From the menu bar select **Tools | Combing Chart**.

![Select Subjects](image1.png)

The select subjects display includes just those subjects that have been used in the current model. Initially all subjects are selected.

3. Click the **Clear All** button, then the **Department** button. From the list of departments select **Ma** and confirm by clicking the **OK** button.

![Select Subjects](image2.png)

T6 has detected that in **Plan | Subjects** two subjects have been defined as belonging to the maths department. It is possible to further select subjects or departments and the current selection will not be lost. Hence, more than one department could be combed together (or the whole lot, if required). Combing more than one department can be useful if a particular member of staff is thought to have a significant allocation across departments and that this might cause difficulties when scheduling.

4. Confirm the selection of **Ma** and **St** by clicking the **OK** button.
Initially, the number of rows (slots) matches the number of teaching periods in the cycle, in this case 25. It is possible to increase or decrease this number using the arrow buttons at the top left. Reducing the rows would be sensible when trying to see if the combing will fit into less than 25 periods. It might then be necessary to increase back to 25. The only point of increasing past 25 would be to see how many periods it does take to comb, if it fails at 25 or less.

Each column represents a band (whether or not it contains Maths subjects). The familiar yin yang symbol (button) in the top left corner of the chart performs the usual T6 function of transposing the axes.

The items to be fitted into the chart are listed in the right-hand section. Each item pertains to a block.

7x is listed on four rows because the block requires four periods. The rows represent rows in the build and the attributes correspond to staff in the build (rearranged into alphabetical order).

- Each item is allocated a short code consisting of year, block or band identifier and a number (which represents periods, not a set).
- The items are grouped in blocks and shaded so that it is easy to see when a new block begins in the list.
- Items can be placed into the chart manually or automatically or a combination of both.
- An item can be dragged from the right-hand list into any cell in the appropriate column.
- If Ctrl is held down while performing the drag then all items in that block are placed in the one operation.
- If the Insert button is clicked then the software attempts to place all items in the list, shuffling existing ones if necessary.
- Double-clicking an item in the chart removes it.
- Double-clicking an item while holding down Ctrl removes the item plus other items in the same block.
- Double-clicking a period header removes all items placed at that period.
- Double-clicking a band header removes all items in that band.
- Clicking the Clear button at the top removes everything from the chart.
- If the show pending only check box is selected then, as items are placed in the chart, they are removed from the right-hand list.
- If there are too many rows or columns to be able to see without scrolling, when dragging close to the edge of the chart, the display will automatically scroll.
- Clicking the Subjects button enables the selection of subjects to be changed, but this will result in the chart being completely cleared.
- The two filters years and blocks can also be used to restrict the items listed at the right. The blocks filter only becomes available when the years filter has first been used to restrict the list.
- The Copy Chart button enables the current state of the chart to be copied either to a file or to clipboard. Various options are possible. Once in clipboard it could be pasted into programs such as Excel or Word to perform a save or print.
- It is not possible to save the chart within T6 and therefore, each time the combing chart is used it begins as an empty chart. The choice of subjects is remembered while the timetabler remains in T6.

Experiment with the maths department.

5. Click the top item in the list (7x1) and drag across to the top left cell.

As the cursor moves, appropriate cells in the chart are given a black border to indicate that this is where the item could go. It is not necessary to drag to the cell. If the cursor is anywhere on the correct row, the item will be correctly placed.

The colour of the placed item reflects the colour identified in the model for this block.
6. Double-click the placed item to remove it from the chart. Drag the item again, this time holding down Ctrl. All four items in the block (that requires four periods) are placed.

7. Hold down Ctrl and double-click one of the items to remove them all from the chart. Another way to remove them all is to double-click the heading 7x.

8. Click the Insert button.

In the previous example the Show Pending Only check box is selected. Therefore, all placed items have been removed from the list. The statistics at the bottom right of the chart indicates that all 49 items have been placed (with zero remaining). It is clear that T6 has managed to comb the complete Maths department in 21 periods. This is as intended.
9. Remove **10y:3** from the chart by double-clicking. The item moves back to the list and it is evident that this particular row in the build is staffed by CJ, CY and DM.

![Chart with staff information](chart.png)

10. Drag the item to row **12**, as shown in the graphic displayed below.

![Chart with staff information](chart.png)

Two year 9 cells turn black to indicate that 10y:3 could not be placed at this period without double booking teachers already in 9x and 9y.

11. Stay hovering over the same cell for a couple of seconds and note the change in the cell information (which toggles every couple of seconds).

![Chart with staff information](chart.png)

The chart indicates that DM is in 9x and CJ is in 9y. This is why the item cannot be placed at this row. If the item were to be dropped here then both black cells would be removed from the chart.

Sometimes, when a head of department is completing a combing chart the axes used are periods and staff (rather than bands).
12. Click the **Clear** button and change the radio button selection from **Bands** to **Staff/Rooms**.

Only one column is created (without a heading). This automatically increases as the process progresses.

13. Although staff members could work manually, click the **Insert** button to save time.

The result is more like the traditional spreadsheet type combing chart.

14. Using the **Yin Yang** will re-orientate the chart also into a more traditional style.

The issue is that not all periods are visible and a scroll bar appears at the bottom. There is no way round this, except to export to clipboard and to paste into, for example, Excel as shown in the graphic displayed below, which is unreadable due to the context.
It may be preferable to work with periods down the left, given the saving of space.
Give the routine an impossible task to see how it responds when working hard at the process.

15. Clear the chart, return to periods down the left-hand side and reduce the number of periods to 20.

16. Click the **Insert** button.

The software instantly places all but one item, then spends about ten seconds trying to work out how to fit the final item. It then fails. While it is trying, a yellow progress bar at the bottom indicates where it is up to and the **Clear** and **Insert** buttons are replaced by an **Abort** button and a clock. The clock simply indicates that T6 is working (as opposed to locked). With some tasks, staff members might well decide to abort the process if it seems to be taking a long time.

17. Increase the periods to 21, then click the **Insert** button.

The combing chart is instantly completed.

**As a caution:**

- Just because a department combs is not a guarantee that it will schedule. There are other limiting factors (that the combing chart does not consider) that could prevent a solution. Some of these are, for example, part time teachers, one-per-day rule, limitation of facilities, sessions requiring a double rather than two singles.

Therefore, a further feasibility check has been included in T6 and this does consider these additional issues. It is called **Partial Schedule Trials** and is described in the following step by step. It is likely that both the combing chart and partial schedule trials will be used before attempting to schedule for real.

- The combing chart works on the current build and makes no attempt to change it. This means that in blocks where staff share the teaching of a class or where there is linearity in the plan, the build is somewhat arbitrary. It might therefore be possible to comb if only the build had been different. There is no way to quantify this factor, in the vast majority of instances it can be discounted. So, if it will not comb then staff members need to change something.
Step by Step 44 – Partial Schedule Trials

The first stage in preparing for scheduling is to ensure that all blocks will build. There is no guarantee that because all of the blocks did build, that the timetable will be put together as each block is built in isolation of the others. There is the reverse guarantee that if a block did not build it cannot be properly scheduled.

Partial schedule trials enables the timetabler to run a quick check on an individual subject/department/faculty to see if on an otherwise empty timetable, it could be scheduled. The most likely cause of failure will be the resources attached to the classes, for example, staffing, rooms and facilities. A particular failure might be the result of one resource or a combination effect of several. If a single department will not schedule then there is not much point in carrying on until it is sorted.

1. Before proceeding reload a new Local backup file called T6 (5).

This contains blocks which are built and ready for the partial schedule trials. The advantage of moving to this dataset is that all delegates will have the same build and therefore be modelling an identical situation.

2. Remain on the Auto process and from the menu bar select Tools | Partial Schedule Trials.

3. Leave the radio button on Single Department, change the maximum Depth of Search from 6 down to 3, then click the Start button and browse to the department Hu. Click the OK button to confirm.

The routine very quickly checks every block in the curriculum plan for the presence of any subject within the Hu department and attempts to schedule the relevant blocks. The timetable cannot see this schedule and is only interested in whether or not the trial is successful. The preceding graphic indicates that there is no problem in scheduling this subject area.

An example scenario is if staff members now sabotage this department in such a way as to render it impossible to carry out the trial successfully.

Humanities includes Gg and Hi in our current dataset. A facility called HU has been created, quantity eight. It has been assigned to classes on Gg and Hi. A very artificial method of sabotaging the process would be to declare that there are now only three such rooms.

4. Click the Close button to close the Partial Schedule Trials dialog, select Plan | Facilities and edit the Hu facility to Quantity available 2, then click the OK button to confirm.
5. Return to the Auto process and select Tools | Partial Schedule Trials. Ensure that the maximum Depth of Search is 3 (not 6), then select the Single Department check box for Hu.

![Partial Schedule Trials](image)

The routine fails on Hu and concentrates on each subject separately. The preceding example shows that no one subject is at fault. Certainly, no one single block is at fault, otherwise it would not have built in the first place. The reason for the failure is a lack of resources that have been assigned to the classes. It is simply not possible to give all these classes the Hu facility and define only three.

This would have been evident had the timetabler looked at the classes process, changed the attributes to facilities and looked at the statistics.

6. Click the Close button to close the Trials screen and try this check on the Classes process.

7. Change the number of HU rooms back to 8 by selecting Plan | Facilities | Edit Facilities.

While this was a very artificial example of what can prevent partial schedule trials from successfully completing the task, timetablers will appreciate that this routine is monitoring a great number of variables. It is, in practice very worthwhile when used as another feasibility check before embarking on the real scheduling.

One other factor that is most likely to cause problems is the deployment of staff and part-time staff in particular. Partial schedule trials is sensitive to blanking codes already scheduled for teachers and provides useful diagnostics in areas of the curriculum in which part-timers have been assigned.

What the routine cannot diagnose is potential problems caused by the same teacher working in two different areas of the curriculum. The routine checks only one departmental area at a time, it cannot spot conflicts caused by assignments across departments.

If a particular teacher is assigned to classes in both Ma and En, one way of diagnosing potential problems would be to actually attempt to schedule all blocks containing Ma and En, starting with an empty timetable. Delegates will become familiar with this kind of selective autoscheduling as it is covered later in this guide.
Step by Step 45 – Clash Table

Consider a typical situation in which year 11 blocks are clashed against those in year 10. Depending on which staff have been assigned to each block in the two year groups, one might be unfortunate enough to encounter a situation in which a particular block in year 10 could not be scheduled at the same time as any of the blocks in year 11 (without double booking at least one teacher). Assuming that students in years 10 and 11 are not enabled to be free at any period, this represents an impossibility when attempting to schedule. There is a cast iron guarantee that the scheduling will lock up when attempting to schedule Key Stage 4 (KS4) blocks. Even autoschedule would not be able to find a solution in this circumstance and one would have to change some staffing allocations to get round the problem.

At the other end of the spectrum of flexibility there might be a particular year 10 block that may be scheduled at the same time as any of those in year 11. In reality, the flexibility of most blocks is likely to lie somewhere between the two extremes.

A sensible strategy is to schedule the least flexible blocks before the most flexible (before the least flexible ones become impossible). However, how would anyone know which blocks should be considered the least flexible. It could be argued that a year 10 block (that should be scheduled all Monday morning because a number of collaborating schools have agreed that it should) is the least flexible and should be scheduled first and locked. There are many situations in which the inflexibility is caused by the interaction of blocks between year groups. The clash table provides information about which blocks will be most difficult to fit. If it is known that a particular block in year 10 will only fit against either of two blocks in year 11, whereas another year 10 block will fit against any of eight in year 11, it would be unwise to ignore the obvious; deal with the former situation before the latter.

1. Select **Tools | Clash Table** and using the drop-down lists. Change **Year 1** to 10 and **Year 2** to 11.

The graphic displayed below shows the initial state of the clash table. The text in the graphic is virtually unreadable, delegates will deal with each section in turn.

![Clash Table Graphic]

Blocks in year 1 (10 in this case) are listed vertically in the blue headers; those in year 2 (11 in this case) are listed horizontally. If a particular block is unbuilt, then its header is black rather than blue.

Each cell in the table represents an analysis of two blocks, one from each year group.
The top left cell is, by default, selected. Detailed information about the selected cell is displayed at the right-hand side of the table. It is possible to select any other cell by left-clicking in the required cell.

The background colour of a cell may be green, white, pale yellow or bright yellow:

- green – there is no clash between these two blocks
- bright yellow – there is only one clashing attribute
- pale yellow – there are two clashing attributes
- white – there are three or more clashing attributes.

The definition of an attribute, for the clash table, is either a teacher or a room assigned to each class within the blocks. It is not necessary for the blocks to have been built.

Also considered is the effect of the deployment of facilities onto particular classes. In order for this part of the analysis to function the blocks should have been built.

There is a further section in the clash table of departments. This is not dependent upon the blocks being built and this is explained later.

2. Select the cell that corresponds to the blocks 10x Humanities and 11xy Option A.

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Include Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSE</td>
<td>10x</td>
<td>11xy</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>OK (1)</td>
<td>OK (1)</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>OK (2)</td>
<td>OK (2)</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>OK (1)</td>
<td>OK (1)</td>
<td></td>
</tr>
<tr>
<td>PE / HC</td>
<td>OK (1)</td>
<td>OK (1)</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>OK (1)</td>
<td>OK (1)</td>
<td></td>
</tr>
</tbody>
</table>

Each of the blocks requires three periods, as indicated by the numbers in square brackets in the respective blue headers.

The background colour of the cell is yellow, meaning that only one attribute is clashing. The text inside the yellow cell identifies that:

- there is a full clash for all of the three periods
- the clash is for one of the total of nine attributes attached to the two blocks combined
- the clashing attribute is AS, a teacher.
Further information is available to the right of the table, as shown in the graphic displayed below.

The name of the two blocks, the number of periods and the definition of sessions.

A text description of the clash.

Information about the departments (see later).

A table of the attributes attached to the classes in the two blocks. In this instance there are nine teachers, with the clashing teacher highlighted in red. It is possible to make changes to staffing allocations by right-clicking the name of a class, and using the resulting edit staff routine. This routine is explained in detail later in the course.

A table of the facilities attached to classes in the two blocks. In this instance there are no clashes.

3. Select the cell that corresponds to the blocks 10y PE and 11x PE/Re.

This example is a little more complicated. The pale yellow background identifies that there are two clashing attributes and both the cell text and the details section indicate that they are teachers JD and BK.

The clash is for only one of the two periods. This is because the year 11 block is slightly linear and each group requires one period of Pe and one period of Re. The clash only involves the Pe staffing (as shown in the graphics displayed below).
4. Select the cell that corresponds to the blocks **10xy Option A** and **11xy Option A**.

This cell is white because there are three or more clashes of attributes, in this instance seven. The space in the cell is only sufficient to display about five codes but the details section shows that all but teacher HG are clashed.

There is a further problem identified that concerns the facility MU. In **Plan | Facilities | Edit** this facility has been defined as quantity two and assigned to a range of classes. Two classes (10A/Dr1 and 10A/Mu1) in one block have been given this facility and 11A/Mu1 in the other block also requires MU. To place these two blocks together would require a quantity of three when there are only two available. This facility clash is shown in the cell as a small red square (and is not counted as an attribute). The details of the clash are shown at the bottom of the opposite graphic.

It is possible to switch off the display of facilities by deselecting the include facilities check box at the top of the clash table.

The clash table also provides information about departmental staffing. For this to function it is not necessary that the blocks be built. In fact, they do not even need to be staffed. This is because the analysis is working on the data contained in **Plan | Teacher Departments** and in the curriculum model. It is more conceptual than relating to individual teaching staff. It provides information about trends rather than actual clashes.

For a full explanation please refer to the appropriate chapter in the T6 handbook. For the moment delegates will look at an example.

5. Select the cell that corresponds to the blocks **10x Humanities** and **11x Mathematics**.

The clash table cell for this combination of blocks is green, therefore indicating that there is no actual clash. The details from the right of the grid are shown in the graphics displayed below.

The year 10 block contains classes in Gg and Hi. The year 11 block contains just Ma. Delegates will deal with Hu in a moment.

The colour coding implies that there is no issue with Gg or Ma, but there might be a problem with Hi. In this context what is the definition of a problem?
6. Hover over the **Hi** row in the **Department** section.

   | OK (3) | Full Clash (3) | OK (2) | Periods | Attr: 1 of 5
   |--------|----------------|--------|---------|----------
   |        |                |        |         |          

Hi - History: 6 lessons over 3 periods, so 2 teachers required.

- There are 7 members of staff in the History department with a total allocation of 49 periods.
- So in theory, that’s an average of 2.0 per period over the 25-period cycle.

The hover help is self-explanatory. In both blocks combined there is a total of six periods of Hi spread over three periods. This would require two teachers. In **Plan | Teacher Departments** seven different members of staff have been identified as being able to teach Gg, the total number of periods between the seven being 49. There are 25 teaching periods in the cycle, so the average allocation available per period in the cycle is 49/25. This works out at 1.96, but is rounded to 2.0 in the table.

No exact numerical interpretation may be placed on this figure, but the following statement would be fair summary:

*If these two particular blocks were to be placed on the timetable together, the requirement for Hi specialist teachers would be more than the average number available per teaching period. In other words, this combination of two blocks requires more than their fair share of Hi specialists.*

A similar calculation is carried out for each subject in the two blocks and for any departments to which they might belong. In our example, a calculation is carried out for Hu. Although these blocks only contain Gg and Hi from the Hu department, in **Plan | Subjects** Hu is defined as also containing the subjects Gs and Re. In **Plan | Teacher Departments** a total number of 20 teachers have been allocated 133 periods across Gg, Hi, Gs and Re. This averages to 5.3 per period in the cycle.

7. Check the hover help for **Hu** and note the details.

Be careful not to put too high a premium on the information contained in the department section of the clash table. It should be treated qualitatively, rather than quantitatively.

There are two other features that should be mentioned:

- in the left hand drop-down list it is possible to select all years. This results in every block in the curriculum plan being placed on the vertical axis.
- in the right-hand drop-down list it is possible to select summary. In this case display changes to show a band in each column rather than a block.
For details on the selected cell see the following graphic.

In each cell there are two numbers separated by a hyphen. The first number shows the number of blocks in the band with which the row-block clashes. The second indicates the number of clashing periods across all of these blocks. If these figures are high then this is an indication that the row block will be difficult to fit against the band in question.

<table>
<thead>
<tr>
<th>Block</th>
<th>Per</th>
<th>Attr</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>11th PSE</td>
<td>1</td>
<td>2</td>
<td>No</td>
</tr>
<tr>
<td>11th Option A</td>
<td>3</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>11th Option B</td>
<td>3</td>
<td>3</td>
<td>No</td>
</tr>
<tr>
<td>11th Option C</td>
<td>3</td>
<td>1</td>
<td>No</td>
</tr>
<tr>
<td>11th Languages</td>
<td>3</td>
<td>1</td>
<td>No</td>
</tr>
</tbody>
</table>

The block 11th Option A clashes with 5 blocks in band 11. If summed across all the blocks in the band, the number of clashing periods is 13.
10 The Scheduling Process

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Chapter Introduction

There are four T6 areas in which it is possible to schedule the timetable: bands, auto, block and optimise. This chapter deals with each in detail.

Step by Step 46 – An Overview of the Bands Process

This process is one of two methods of manually scheduling blocks. The other is discussed later.

1. Click the Bands process button.

Various function keys are active on this display and have the effect of toggling on and off display sections or functionality, as shown in the graphic displayed below.

2. Experiment with the function keys. The effect of F5 cannot be seen until later as there is nothing scheduled as yet.

Each column in the grid is a teaching period. Whether or not non-teaching periods are displayed depends on the setting in Bands | Show Non-Teaching Periods, so a registration period already defined via the cycle as non-teaching can either be visible or hidden. This certainly aids manual scheduling by controlling the number of columns on the grid.
For schools with a two-week cycle either the two weeks can be spread horizontally, or week two can be placed underneath week one. This is particularly helpful when the number of periods in the day make it impossible to fit horizontally without a scroll bar. This option can be selected from the bands menu (Bands | Week 2 Under Week 1). The graphics displayed below illustrate the two options.

As blocks are scheduled session by session using click and drag, it is evident that a block should first be selected before it can be scheduled. Although there is a **browse** button (magnifying glass) it is not necessary to use it.

Each row of the grid represents a band and by selecting any cell (period) in any row (band), the blocks at the top-left are filtered to those appropriate to the selected band.

3. Experiment by selecting cells on different rows noting the effect on the blocks listed.
4. Return to the top row, band 7x.
5. Select the **7x Maths** block.
As shown in the graphic displayed below, the **To do** column carries the information S4, which is interpreted to mean that there are four single sessions that are yet to be placed on the timetable for this block.

These four sessions are listed on separate rows in the lower part of the display.

In fact, these are the same four rows displayed in the build grid when using the build process.

6. Point to the top session and note the information displayed in the lower right-hand part of the display.

7. Select the **Block** process and examine the build grid for the same information.

The top row in the grid is the same session as the top row in the bands display.

In this particular instance all four rows are identical, as shown in the graphic displayed below, but that is not always the case. With some blocks every session contains different information to the others as with tutor group type blocks.
8. Repeat the comparison with the block 7x Technology noting that the sessions are defined as DS. Concentrate on 7x/Te4, because this is shared between two teachers (split).

**Step by Step 47 – Scheduling Fixed Points**

The general rule for scheduling a timetable is to start with the most difficult (or most inflexible) structures, leaving the more flexible ones until later. If a school organises a joint sixth form provision with a neighbouring school then it is likely that some blocks will be completely inflexible, so they can only go where it has been agreed that they go. College and other vocational courses involving external agencies also usually come into the same category. Sometimes, purely for matching in with already booked visiting speakers, certain blocks need to be scheduled at prescribed periods. The introduction of specialised diplomas will further reduce the flexibility of the process.

For example, in our training situation, the school wishes to ensure that the PSE blocks in years 7 to 11 are scheduled last period on Thursday and locked so that they cannot inadvertently be moved or deleted. In effect, the rest of the Key Stage 3 (KS3) and Key Stage 4 (KS4) timetable is suspended so as to accommodate this request. The advantage of adopting this approach is that it is likely to be possible to place form tutors with their own forms for this single period. The disadvantage is that it may make scheduling anything in the sixth form at Thu5 rather difficult because most of the staff will be unavailable.

1. Return, if necessary, to the Bands process and select any period on the top row.

The top block in the list of five is PSE. This is because it serves both bands 7x and 7y.

2. Click and drag the only session onto any white period and release. Drag it horizontally to move it from one period to another.

As the session is moved, a history of the moves builds up at the top-right section of the display. It is possible to undo each single move in sequence or jump back several moves by clicking the Rollback button.

3. Experiment with Undo and Rollback and eventually re-schedule the session at Thu5.

4. Right-click the scheduled session and from the menu select Lock followed by Hard. Try moving the session once it is locked.

5. Experiment with locking and unlocking using both hard and soft locks, but ensure that it is Hard locked once finished.

Now is an appropriate time to further consider the meaning of Hard and Soft locks. Neither is given any intrinsic meaning, but they are hierarchical. Timetablers may decide when to use a hard lock and when to use a soft lock. The only difference is in the ability to remove them. It is possible to use a global routine to remove locks from a selection of blocks. If the choice is made to remove all locks, then no locks remain, but if the choice is made to remove soft locks, then hard locks remain.
Timetablers will recognise the value of this two-layer locking system. Our PSE at Thu5 would benefit from a hard lock because under no circumstances would they want the session to be moved or deleted. As future scheduling develops, they might opt for soft locks on certain structures because they do not think that they want them moved.

The mechanism for performing bulk locking and unlocking resides in the auto process and via the menu bar by selecting Auto followed by Lock or Unlock (as appropriate).

The options include all days and periods or specific ones. If the choice is made to lock all, this does not set up a rule that will be obeyed in future scheduling, as it applies only to those sessions already scheduled.

6. Return to the Bands process and select any period for band 8x. Schedule the PSE session at the same time as for Year 7 and lock it. Repeat for Years 9 to 11.

Step by Step 48 – Scheduling the College Course

In band 12g there is a block called work exp for five periods. This is intended to be a day at college and should therefore, be defined not as S5, DS3, DDS, TD, QS but P; a single session of five consecutive periods. It does not require staffing because the students are to be taught by college lecturers. Delegates will trace through the process of manually scheduling this block.

1. Examine the block on the Model. Change the name from Work Exp to College. Leave the subject as Wx.

2. Change the process to Classes and select Year 12. Scroll down to the bottom subject Wx.

There are two groups (presumably because of a choice of two college courses) neither of which is staffed.
3. Change the process to **Sessions** and if necessary, browse to the **Year 12 College** block.

Both groups, together with the block shape, are defined as S5.

4. Redefine both groups and block to have the session requirement of \( P \), as shown in the graphic displayed below.

![Graphic](image1.png)

5. Change to the **Block** process and if necessary browse to the **College** block in **Year 12** and click the **Build** button.

The build looks a little strange (as shown in the graphic displayed below) because there are no teacher codes in the cells.

It is quite evident from the build that this is a single session of length \( P \).

![Graphic](image2.png)

6. Change to the **Bands** process and attempt to schedule the **College** block. Hold the session over any one of the periods and note the reason for the software’s refusal to schedule the session.

![Graphic](image3.png)

It is the break rule that is preventing the scheduling. An all-day session should be enabled across morning break and for lunch to be possible.

7. Change to the **Cycle** process and check the kinds of breaks used.

There is a soft break after period one and a medium after period four.

8. Change to the **Auto** process and note the break setting for the **College** block is **Soft**.
9. Right-click the block, select **Set Break** and change the setting to either **Hard** or **Day**.

10. Return to the **Bands** process and schedule the block on **Wednesday** but do not lock it.

If, for example, the college has given the school a choice of either Wednesday or Friday and timetablers would like the software to negotiate the best solution as the timetable develops. This involves the use of period types, of which there are 12.

11. Change to the **Auto** process and right-click the **College** block. Select **Set Period Type**, select **User 1**, then click the **OK** button to confirm.

12. Change back to the **Bands** process.

The college block has been descheduled and any attempt to re-schedule it is futile. This is because delegates have just flagged the college block as being enabled only at periods marked as user 1 via the cycle process. There are no such marked periods.

13. Change to the **Cycle** process and right-click the **Wednesday** header, select **Period Type**, select **User 1** and click the **OK** button to confirm. Repeat for **Friday**.

14. Return to the **Bands** process and schedule the block on either of the possible days.
This whole step by step illustrates how with Nova-T6 it is important to set the rules correctly.

**Step by Step 49 – Scheduling Year 12 Option Blocks**

1. Stay on the Bands process and select any cell on the row for 12a.
   
   It can be seen that there are four option blocks, each requiring DSS.

   ![Schedule Table]

<table>
<thead>
<tr>
<th>Block</th>
<th>To do</th>
</tr>
</thead>
<tbody>
<tr>
<td>12a Option A</td>
<td>DSS</td>
</tr>
<tr>
<td>12a Option B</td>
<td>DSS</td>
</tr>
<tr>
<td>12a Option C</td>
<td>DSS</td>
</tr>
<tr>
<td>12a Option D</td>
<td>DSS</td>
</tr>
<tr>
<td>12ap General St</td>
<td>S3</td>
</tr>
<tr>
<td>12ap Extra St</td>
<td>S3</td>
</tr>
</tbody>
</table>

   2. Click the D session for Option A and note the pattern of white v grey cells in the Timetable grid.

   ![Timetable Grid]

   The break rule is being applied and as this particular block is set to soft in the auto process, the block is not enabled to go across any break.

   3. Schedule the block on Mon1&2 and attempt to schedule a single session on the same day.

   ![Schedule Example]

   4. The software does not enable a second session on the same day because of the 1 per day rule (1pd). It would not be a good idea to turn off this rule completely for this block because subsequent autoscheduling might result in all three sessions being on the same day. Delegates will deal with breaking the rules later in the guide.

   5. Place the remaining sessions at periods and schedule the sessions for blocks B, C and D.

   ![Schedule Diagram]

   The preceding graphic illustrates just one solution. Delegates may have noticed that block C would not fit on Wednesday. Attempting to do so results in the clash information at the bottom right that $AW$ is blanked on Wednesday, so a part-time teacher is not available.

   One particularly useful feature on the bands grid is the ability to colour certain blocks (not subjects) so as to increase awareness of distribution throughout the cycle.
6. Right-click one of the scheduled sessions on the grid for Option A and select **Set Colour** from the menu.

7. Select any colour (but the top one) and click the **OK** button to confirm.

8. If the colour is not visible on the grid then press the **F5** function key.

9. Change to the **Model** process, select **Year 12** and note that the colour is indicated as a background to the **Identifier** for Option A.

10. Right-click the **Title** area of Option A, select **Set Colour** from the menu, modify the colour, then click the **OK** button to confirm.

11. Select colours also for the other Option blocks B, C and D.

12. Change back to the **Bands** process and note the effect.

All scheduled sessions of the block are now displayed in this colour and stand out against the relatively pale colour of all the other blocks. By default all blocks are given the top colour in the colour list. Pressing the F5 key toggles between displaying either the block colour or the yellow/green/pale blue combination used to indicate locks.

13. Select **Timetable | New | Year/Band** and select **Year 12**. Press the **F5** function key to toggle through the available colour schemes.
14. The timetable can be printed or copied to clipboard and any displayed colour scheme is included when printed. Click the Close button to close the timetable display.

Delegates will revisit the bands process after having looked at the autoschedule routines. There is autoscheduling functionality in the block, auto and optimise processes. For the moment, the focus is with auto.

**Step by Step 50 – Autoschedule Overview**

Change the process to auto and read the explanations detailed in this step by step.

Each row in the grid is a block in the curriculum plan and the meaning of each column is as follows:

- **Tag column**: The tag column which identifies if any blocks have been tagged.
- **Year**: The year group associated with the block.
- **Bands**: The band or bands served by the block.
- **Description**: The title of the block as defined in the model.
- **Code**: The identifier carried in the top-left corner of the block in the model.
- **E**: When a block is selected (highlighted) other blocks serving the same band(s) are identified with a C in this column.
- **Break**: The setting of the break rule for the block. If set to soft, then no breaks can be spanned by multiple period sessions; if medium, then soft breaks may be spanned, if hard, then soft and medium
breaks may be spanned, if day, then all breaks may be spanned. This is set by right-clicking the block and selecting set break from the menu.

**PType**

The period type (if any) associated with the block. This is defined by right-clicking the block and selecting set period type from the menu. Alternatively, this can be set on in model process by right-clicking the block description and selecting period type.

**Grps**

The number of groups in the block.

**Staff**

The number of different staff assigned to the block via the classes process.

**Per**

The number of periods assigned to the block.

**Sessions**

The block shape as defined in the sessions process. The data may be edited by overtyping in the column.

**1pd**

The setting of the one per day rule. This is changed by right-clicking the block and selecting one per day rule.

There are four possible settings:

- **Active** – the rule is fully in force. This means that a block may not be scheduled more than once on the same day unless it requires more sessions than there are days in the cycle, in which case the rule is automatically relaxed by the software. In these circumstances the one per day rule is still in force for individual clusters (classes) within the block. A typical example of this is a tutor group block requiring DS13 sessions and in which each group has DS for Sc. The block cannot have a 1pd rule, but the individual Sc classes still obey the rule. There is, therefore, no danger of both Sc sessions being scheduled on the same day either by autoschedule or manually by the user. The symbol used in the 1pd column is ✗.

- **Clusters only** – the rule is suspended for the block but individual clusters (classes) should still obey the rule. The symbol used in the 1pd column is ✗.

- **Clusters by staff** – the rule is suspended for the block and individual clusters (classes) may also disregard the rule if more than one teacher is involved. In practice this means that a group may be enabled two sessions of Sc on the same day, if the teacher is different. The symbol used in the 1pd column is ✗.

- **Suspended** – the rule is completely suspended for this block, so watch out for the mayhem caused when the software schedules, for example, all Ma for a particular cluster (class) on the same day. The symbol used in the 1pd column is ✗.

**To do**

The sessions of this block that have not yet been placed on the timetable, which is, sessions yet to do. When the timetable thinks that the timetable is complete it would be a good idea to scan this column to ensure that T6 also thinks it is complete.

The controls for scheduling are arranged down the right-hand side on the display and are detailed in the following text.
When scheduling, the clock moves to indicate activity.

The **Abort** button stops the process without finishing.

The depth of search is a measure of how hard Nova-T6 should try or to put it another way, how many moves it can handle for scheduling a single session.

The **Minimum Unit Size** can be used to force Nova-T6 to schedule larger sessions before smaller. When set to two, for example, it would ignore singles.

Sometimes it is useful to be able to constrain the scheduling routines to spending up to a particular time per session. This means it gives up on the hard bits.

The **Skip** button moves the routine on to the next block leaving sessions unscheduled.

The top digital timer (00:00:00) resets each time the software moves to a new block.

The table of sessions shows how many sessions in the block being scheduled are not yet completed.

The three-way radio button (**Current, Tagged or All**) controls how many blocks the routine attempts to schedule.

The lower digital timer (00:00:00) is cumulative in that it indicates how long the routine has been working since clicking the **Schedule** button.

Failed sessions are turned red and are ignored until the **Reset** button is clicked, in which case they are included once more.

The order of the blocks may be changed by clicking the **Sort** button. The routine always starts at the top and works down the list, including such blocks, then the order could be regarded as being important.

The two most commonly used are:

- **by year and band** - places the lowest year at the top (unless the reverse check box is also selected)
- **recommended** – works out a crude hierarchy and places the hardest blocks to schedule at the top with the easiest at the bottom. This is more likely to produce a completed timetable than by year and band.

### Step by Step 51 – Autoscheduling Years 12 and 13

1. Switch off logging (see Step by Step 52 for explanation of logging) by selecting **Auto | Logging**. This will remove the tick from the menu item. Click the **Confirm** button to confirm the change.

2. Click the **Tag** button and send **Years 12** and **13** from the left-hand box into the right, then click the **OK** button to confirm.
3. Click the **Filter** button and note that only tagged blocks are visible.

4. Click the **Sort** button and change to **Recommended order**, then click the **OK** button to confirm. Click the **Filter** button.

The Post-16 blocks contain a mixture of D and S sessions. As a general principle it is better to schedule longer sessions first, since they are more difficult to fit than singles. Timetablers might schedule the longer sessions right through the plan before concentrating on a particular year group.

As there is very little scheduled on our timetable it should not make a difference either way, but delegates will adopt the principle of dealing with doubles before singles.

5. Change the **Minimum Unit Size** at the top right to two, ensure that the radio button at the bottom is set to **Tagged** (although in this instance, **All** would have the same effect), then click the **Schedule** button.

6. Change to the **Bands** process and note the presence of additional double sessions in **Years 12 and 13**.

7. Change back to **Auto**, apply the **Filter** again, set the **Minimum Unit Size** to **1**, then click the **Schedule** button again. When the process is complete change back to bands.

![Scheduling Process Diagram]

It would be a remarkable coincidence if the solution was identical to the one above or to the delegate next to you, but it is possible. The gaps in the schedule are because the curriculum plan in years 12 and 13 does not total the cycle size and hence, students have free periods.

**Step by Step 52 – Autoscheduling Years 10 and 11 Using Logging**

In the previous step by step two year groups were scheduled automatically. The process worked down the list of blocks and it may be that to find solutions for blocks further down, previously scheduled sessions needed to be moved. Although this is unlikely as delegates were starting with a virtually empty timetable. We will consider the possibility. Had there been any shuffling then you would not have been aware of it. This could be regarded as the main weakness of autoschedule. Delegates have no idea what is happening to the timetable (except that locked sessions cannot be moved). This uncertainty has led towards locking everything so far scheduled to protect from unwanted shuffling.

A better approach might be to request further information from the software when it is autoscheduling. Delegates will use this feature while scheduling years 10 and 11.

1. Return to **Auto** and from the menu, select **Auto | Logging**.

   This activates the process (and places a check against the item on the menu). Repeating the selection switches off the process and removes the check.

2. Tag **Years 10 and 11** also select the **Exclusive** check box (which removes previous tags), click the **Confirm** button to confirm and select a filter.
3. Ensure that the three-way choice is still set to **Tagged** and select **Schedule**.

This causes the autoschedule log report screen to be displayed. The two sections; **Confirmation** and **Filtering**, enable timetablers to define when the software should wait for confirmation of the scheduling of an individual session before proceeding. It can then be decided to either confirm the individual solution or reject it. Delegates will look in more detail at the options before using it with years 10 and 11.

**Confirmation**
- Always ask for confirmation
- Auto-confirm simple insertions
- Never ask for confirmation

**Filtering**
- Set Block
- Set Year
- Clear

The top option always seeks confirmation even though the solution may not involve any previously scheduled session.

The middle option requests confirmation only when the solution involves shuffles. This is likely to be the most useful setting.

The lower option proceeds without requesting any user intervention.

There are occasions when it might be thought necessary to intervene only if a particular block or year group is involved in the shuffling.

Only one block at once may be included in the filter, but multiple year groups can.
If for example, while attempting to schedule years 10 and 11, timetablers want to be alerted to anything that might affect year 13, but are not likewise concerned about year 12.

4. Click the Set Year button and select the Year 13 check box, then click the OK button to confirm.

5. Select the Auto-confirm simple insertions radio button in the Confirmation pane.

6. Click the Start button in the Autoschedule Log Report dialog.

It is impossible to predict exactly what each delegate will see (because the software is likely to respond differently for each person), but the graphic displayed below illustrates one possible situation.
The process has reached the 10y Science block without requiring to shuffle anything in year 13. It is now halted, waiting for confirmation. The solution involves moving a previously scheduled year 10y Maths block, together with year 13 recreation. The moves are detailed in the last solution box.

If clicking the **Confirm** button, then the process continues until the next confirmation (if any) is required. If clicking the **Reject** button, the session is left unscheduled and the process moves on to the next session. The process does not attempt a second solution for the rejected session. If clicking the **Abort** button the process is halted completely.

Only those solutions that fall into the category of requiring confirmation will be listed in the log. Confirmed solutions are copied from the last solution box into the Solution log, rejected solutions are listed in the Failure log. Other reasons may contribute to failures; the software may time-out because a time limit has been set and exceeded, the current depth of search may not be sufficient to produce any solution.

When any session fails to schedule, the software turns the session red in the To Do column of the auto grid and ignores it from then on. If this happens then it is necessary to click the **Reset** button (bottom-right) and to repeat the scheduling process, possibly using different settings.

7. Click the **Confirm** button to confirm any solutions until the process is complete then return to Bands.

Some explanation is necessary about what can be expected of the autoschedule routine. It attempts to spread out the sessions of a particular block across the cycle size. A balance between am and pm is not guaranteed, even where lunch is in the middle of the day. On a two week cycle it will make an attempt to distribute between the weeks, but there is no function to produce two weeks as similar as possible (for this, interleave should be adopted as the scheduling strategy). It cannot distinguish practical from non-practical subjects, neither would it recognise that Sc followed by Ma followed by En might be regarded as intolerable. Similarly it would see no problem in placing Fr and Ge at adjacent periods for the same band of students, not seeing the MI connection between the two subjects.

Delegates are advised that to improve the spread of a particular subject or block across the cycle, the optimise process (see step by step 62) should be fully explored.

The autoscheduling routines observe all settings built into the dataset. These include rules for; breaks, period types, session lengths, blanking codes, 1pd, teachers, rooms and facilities. These rules should be observed by the software when scheduling. Timetablers are enabled to override some of these rules when manually scheduling.
Step by Step 53 – The Bands Process Continued: Show Fits

On a partly finished timetable, one of the questions constantly being addressed is; what should I schedule next? As a general principle the answer is always the most difficult remaining task. Timetablers develop an instinct for these awkward areas and sense that they ought to deal with them sooner, rather than later. On one occasion it might be a subject area requiring severely limited resources (normally teacher or rooms) and on another, all the blocks in which a particular part-time teacher has been assigned.

Can the software point the timetabler in the right direction, particularly if they wish to continue to schedule using the manual routines?

1. Return, to the Bands process and load in the new file T6 (6).
2. Select the Show Fits check box and select period Mon2 on the top row (7x). Also select the 7x Tutor Groups block in the list to the left.

This approach to scheduling is similar to the process of painting by numbers in which neither creativity nor knowledge enters into the picture. It is a form of timetabling by numbers and while it may seem very artificial, there are times when it can be extremely useful, particularly in pointing the timetabler to potential pitfalls or impossibilities.

Three sets of numbers are displayed when Show Fits is activated, each playing its part in describing the flexibility of the various structures:

- the first set is contained in the unused periods on the grid. In the preceding example Mon2 carried the figure two. This means that of the four blocks yet to be scheduled for 7x, (the row in question) only two may be scheduled at this period. Generally the lowest numbers in the grid represent tight spots that should not be overlooked otherwise they may soon become zero. A zero represents that nothing for the band may be scheduled at this period for any one of a number of reasons, at least, not without moving something else first. Once it is known that only two blocks may be scheduled at Mon2, one would need to know which ones.

- the second set of figures is displayed to the left of each block yet to be scheduled. A zero indicates that the block may not be scheduled. In our example it is only possible to schedule 7x tutor groups and 7x Pe. Furthermore, the actual number identifies how many sessions of the block may be scheduled. In our case five out of the DS13 for the tutor group block and both of the Pe sessions. So, it might be more accurate to view the situation at Mon2 as being that seven sessions (originating from two blocks) will fit at this period.
- The third set of figures is found in the lower section where each session is listed on a separate row. Our example shows the tutor group block in which five of the sessions carry the word Yes. These are the five that can be scheduled at Mon2. The Fit column indicates at how many periods in the grid each session may be scheduled. It ranges in our example from three to sixteen. In effect, this information is the opposite of the figures in the timetable grid and indicates how many periods would turn white if the timetabler attempted to schedule the session.

In each of the sets of figures a low number indicates lack of flexibility and one way of using this information is to attempt to pair up two low numbers; one from the timetable grid with one from the lower session grid. In our example delegates might be inclined to pair up one of the sessions carrying the lowest number of ten with Mon2.

3. Investigate **Mon1** for 7x and schedule a session from any block of your choice, bearing in mind the issue of flexibility.

4. Also investigate **Thu4** for 8y. This is a really inflexible period.

**NOTE:** Whilst pointing to one of the sessions in the list, the details are displayed in the lower-right table. The autoschedule routines simply shuffle sessions around to make room for others.

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**Step by Step 54 – Keeping Track of Facilities**

In the training dataset currently in use there are three facilities; AR, HU and MU. The HU facility represents a suite of eight Humanities rooms that for some reason or another, it was thought necessary to monitor. Delegates will investigate how the use of this facility is progressing (even though only years 10 – 13 have been scheduled).

1. Select **Plan | Facilities | Edit Facilities** and ensure that each of the three courses have a tick in the **Show in Timetables** column. If not, then edit them accordingly.

2. Select **Timetable | New | Facilities**.

3. Select the **HU** facility and note that seven rooms are in use at Mon5. If the **Timetable** cells do not contain the code **HU**, click the **Options** button and ensure that the **Hide All** check box is deselected in the **Facilities** section.

Given that the quantity available for HU is eight, then seven does not represent a problem. It would not be possible to schedule more than one other class requiring this facility at Mon5.

4. Return to the **Bands** display and select the **7x Tutor Group** block. Point to the second session down (the top single session) and note that it contains two classes requiring the **HU** facility.
5. Select the session and drag and hover over Mon5 for band 7x.

The information to the lower-right indicates that there are three reasons why the session should not be scheduled at this period; teachers BPA and EP are teaching year 10 and there is an overflow of the HU facility.

While it would be possible to ignore these warnings (see Step by Step 58 to 61 for breaking the rules) resist the temptation to double-book two teachers, and at the same time, run out of HU rooms.

6. Press the F11 function key to return to the previously used facility timetable and if necessary, select HU.

7. Right-click the figure 7 displayed immediately under Mon5.

8. Type 2 as the Number to reserve at this period.

Reserve is used in the sense that it is reserved for some organisation except the school. Given that eight HU rooms have been defined and two removed leaving six, there is a problem now at this period, as seven are already in use.
9. Click the OK button to confirm the reservations.

The preceding graphic illustrates T6’s recognition of the problem. The period turns red both on the timetable display and on the bands grid.

This is considered a fundamental breaking of the rules such that the autoschedule routines are disabled until the problem is resolved. There are three ways this could be achieved:

- do not reserve the two rooms
- manually move one of the blocks to a different period
- redefine one of the classes as not requiring the facility for the session scheduled at this period.

**NOTE:** The reservations would be carried out before scheduling to ensure that the situation created above should never arise.

10. Return to the Bands process and manually move 10y Humanities from Mon5 to Thu2, accepting the displacements.

11. Change to the Auto process and schedule the two displaced blocks back in.

12. Return to Bands and examine the changes.

It is worth noting the significance of using the concept of reserving facilities. Timetablers are able to define to Nova-T6 a flexible situation in which the quantity available can be different at different periods. For example, a school may not have use of all the IT rooms at every period, because they are committed to some other organisation or school. As another example, it would be possible to define a facility called not here, quantity one and to assign it to some of the most challenging classes in the curriculum plan. The facility would then be reserved at the last period of each day. This would ensure that when scheduling these classes never ended up at the last period.

Delegates have seen how T6 is monitoring the use of facilities throughout the timetable cycle, but have not seen evidence of it when scheduling via the bands process. In the training data a facility called Art rooms, quantity two, has been defined and allocated to all classes of Art.
13. Select **Timetables | New | Facilities** and look at the usage of the facility **AR** for **Thursday**.

![Facilities Table](image)

The timetable indicates that the maximum of two has been reached at Thu 3 (amongst other periods on other days).

14. Select the row **9x**, the block **9x Exp Arts** and hover over one of the two unscheduled sessions, looking at the information to the right.

It is clear that the session (as shown in the graphic displayed below) includes the class **9x/Ar1** to which two attributes are attached: teacher **SW** and facility **AR**.

![Session Information](image)

The red square in an otherwise white period at Th3 indicates that there are not enough Art rooms available to schedule the session at this period.

![Th3 Schedule](image)

15. Drag and hover over the red cell and note the information displayed to the right.
16. Drop the session at the illegal period and note the response. Techmically, this is not a case of a displaced unit (as shown in the graphic displayed below) despite the title of the screen. It is purely an issue of a facility overload (overflow).

17. Confirm the overload by clicking the **OK** button.

The period is coloured red on both the bands screen and the facility timetable display. The autoschedule routines are now disabled until one of the three classes is removed from the schedule.

18. Click the **Undo** button on the **Bands** screen to return the situation back to normal.

The next step by step deals in detail with scheduling using the block process. Before this in depth look, delegates will examine briefly how the block process provides alerts to potential overflow situations, using the same example of 9x Exp Arts.

19. Click the **Block** process button and if necessary, click the **browse** button to browse to block 9x Exp Arts.
20. Click and hold onto either of the two **blue headers** in the build and note the effect on the timetable at **Thu:3**.

![Diagram](image)

21. Drag from the **blue header** in the build and hover over **Thu:3** (that contains the red square), but do not release.

![Diagram](image)

The clash information column correctly indicates the facility overflow for AR.
Step by Step 55 – Manually Scheduling Using the Block Process

1. Before continuing, load the Local dataset T6 (7) and view the scheduling via the Bands process.

This is an almost complete timetable with the only blocks yet to be scheduled being two tutor group blocks in year 7 (one for each band) and they each represent 15 periods out of the possible 25. Some sessions have been hard locked in KS4 to prevent them from being moved. This is related to links with external agencies and it is important that these particular arrangements should not be disturbed. The year 12g college block (denoted by W) is scheduled all Wednesday and has been assigned the period type user 1. On the cycle process all periods on Wednesday and Friday are defined as user 1. The college block can move between Wednesday and Friday if required. This is in keeping with the choice provided by the college to cater for the students on either, but not both days.

This situation is not dissimilar to that likely to be encountered by many schools; most of the timetable is finished, some of it is locked and the remaining blocks to be placed are in theory, the most flexible ones.

While it is perfectly possible to schedule these blocks using the bands grid (as can be seen above) in linear blocks requiring numerous sessions, such as the DS13 required for the 7x tutor groups, the bottom left-hand list of sessions can be difficult to navigate.

Each session is a row in the build and it is the case that by pointing to any session, the details of that session are displayed at the bottom-right. If scheduling manually, some will prefer to deal with this type of block via the block process, where the build can more clearly be seen.

If the timetabler is working with a cycle that contains non-teaching periods it is likely that, when scheduling, it would be preferable (as with the bands process) to be able to hide them. This is achieved via the menu route Block | Show Non-Teaching Periods. It works in tandem with the route Bands | Show Non-Teaching Periods which fulfils the same function on the bands process.
2. Ensure that the **7x Tutor Group** block is selected on the **Bands** grid, then change to the **Block** process.

The display is divided into four sections: Pending Sessions, Timetable, Clash and Build. The amount of space devoted to these may be changed by clicking and dragging the lines that divide the sections. It is also possible to completely reverse the layout, for example; timetable at the top or at the right. This is achieved using the three buttons as shown in the graphics displayed below.

If having changed the layout, it is proving difficult to return it to the default settings, the menu route **Block | Reset Layout** may be used.

Each row in the build grid is a period, the top two rows being a double-period session. Each blue header carries a number in brackets which simply indicates the vertical position of the row. There are fifteen rows in the preceding example, but depending on the resolution of the computer display, it may only be possible to view twelve without scrolling. The other number in the blue header indicates fits. For example, in row [3] the other number three indicates that this session could be scheduled only at three places in the timetable displayed at the bottom-left.
3. Click and hold onto the blue header for row [3] and note that three periods in the Timetable grid turn white.

4. Click and drag from the row [3] header onto period Thu2 and release. The single period session is scheduled as unlocked. It could be locked by right-clicking either of the yellow cells and selecting Lock followed by either Hard or Soft.

5. Right-click either Scheduled cell and select Delete to delete the session from the timetable.

If there were only three periods out of the 25 at which this session could be scheduled, then could you easily find out what the problem was with the other 22?

6. Click row [3] header and this time drag, but do not release, over various non-white periods and note the information displayed in the Clash column.
The preceding graphic shows row [3] being tested at Tue5. The three in the light green timetable cell (at Tue5) shows that if the session were to be scheduled here, then three other blocks (already on the timetable) would have to be displaced.

The Clash information shows the reasons for the displacements, together with an additional problem of running out of HU rooms.

Teachers $RM, $EP and $BPA are already scheduled at this period for years 9, 13 and 10 respectively and placing the session here will entirely displace the blocks that contain these three teachers.

7. Even though it may not be considered a good idea, schedule the session at this period (Tue5), note the warning, then click the OK button to confirm.

8. Change back to the Bands process and note that, at Tue5, there are now gaps for bands 9y, 10y and 13a.

9. Reload the T6 (7) Local file, as this is the quickest method of undoing the damage.

10. Return to the Block process and navigate to block 7x Tutor Group again.

The light green cells in the timetable grid indicate the number of sessions in this block that could be scheduled at each period, without having to displace anything already on the timetable. For example, Thu2 carries a number four, indicating that four sessions in the build could be scheduled here.

11. Click and hold onto period Thu2 and note the changed colour of some of the headers in the build. Do not release.
Only three sessions turn white and the assumption should be that another cell further down (and not currently visible) should also be white. With higher resolution displays, it is possible to see all four white sessions without scrolling.

12. Without releasing, move onto the Build grid and down past the bottom of the grid.

The build will scroll in response to the attempt to go off the bottom of the grid. This is a quicker way of investigating a large build than using the normal scroll bar (although this will work, but not while the timetable cell is on hold). Attempting to hover over any header in the build that is not white will result in clash information that indicates the reason(s) why the cell has not turned white.

13. Experiment with scheduling the session of this block.

One (artificial) way of scheduling via this process is match up low numbers in the timetable grid with low numbers in the build grid. So, pairing up two fairly inflexible factors which is a difficult period and a difficult session. This approach solves two problems in one.

14. Reload the T6 (7) file before continuing with the next step by step.

**Step by Step 56 – Autoscheduling with the Block Process**

Autoschedule functionality is available with this process and can be used in conjunction with manual scheduling.


This artificial exercise simulates partly scheduling the block by hand.
2. Click the **Schedule** button (which means autoschedule) and note the effect. The graphic displayed below shows one example of the process and it is most unlikely that your own data would correspond with it, given the random nature of the scheduling algorithm. Briefly return to **Bands** to view the result.

![Graphic display showing the scheduling process](image)

3. Change the block to **7y Tutor Group**, the only block yet to be scheduled, then click the **Schedule** button and see if the software can finish the process completely.

When autoscheduling a linear block in this way the software may move (unlocked) sessions from other blocks and may manipulate the build while scheduling.

**Step by Step 57 - Working in Reverse**

It is sometimes the case that a timetabler might wish to schedule a certain block at a particular period without deciding exactly what the contents should be.

Take the case of the 7x tutor group block scheduled in the previous step by step. One approach to scheduling this type of flexible structure is to fix the time at which the sessions will occur, but reserve judgement until later as to exactly which subject will be scheduled for which group at which session.

In terms of the way T6 works, this amounts to scheduling an unbuilt block and building it later. Those who have constructed on paper might recognise this approach; identify firstly where the block is going and sort the details later.

There is no guarantee that the block will build once everything else has been scheduled around it, but then it is the same when attempting to schedule a built block; it might not be possible without changing some of the resources allocated to the classes.

1. As a quick example of this approach reload the file **T6 (7)** and select the **Block** process.
2. Browse to **7x Tutor Group** and click the **Unbuild** button. Repeat for **7y Tutor Group**, then return to the **7x** block.

The situation created is the preceding one described; two blocks are unbuilt and timetablers intend to schedule them as such.
3. Click the **Schedule** button and respond to the warning by clicking the **No** button. Repeat for the 7y block.

Due to the random nature of the routine, there will be a variety of results and delegates need to bring each set of data into line by using a previously saved set of data.

4. Load a new Local file T6 (8).

5. Browse to block 7x Tutor Group.

The numbers in brackets in the cells of the build and in the Fit column of the Pending Sessions section are an indication of flexibility in attempting to build the block. Before any session has been placed in the build, each of the pair of numbers in the brackets is identical.

6. Select the **Fit** heading to order the **Pending Sessions** section according to flexibility with the lowest numbers at the top.

7. The top three pending sessions are D Sc sessions for 7A, 7B and 7C respectively. Drag these onto the top two rows of the Build grid (it is the only place they can go).

8. Click and hold on the remaining top session, a single for 7A Fr.

The graphic displayed below illustrates the situation. There are three white cells and one green cell. This corresponds to the numbers in brackets (3-4) alongside this pending session, as follows; there are three (white) places in the build where this session could fit without displacing any cluster already in the build. There is one (green) place where an existing cluster would have to be displaced to accommodate the 7A Fr pending session. This means that if disregarding displacements, there are four places in the build where this session could fit.
The list of pending sessions at the top-left can be filtered using the drop-down list to display only those of a single group. This is particularly useful for building one group at a time, concentrating on one column at a time in the build. It is easier to achieve this if the rows in the build are ordered by period, rather than by slot number. Selecting the top (empty) cell of the build toggles between these two orders.

9. Place the **7A Fr** session on row 7.

The numbers in the build grid indicate how many of the Pending Sessions could fit at this period.

10. Hold down the cell for row [5] **Mon4** for group 7B.

The information {4-5} indicates that four sessions could be placed here without displacement of existing sessions in the grid and a further session could fit, but would cause a displacement. The corresponding pending sessions change colour and the list of pending sessions is automatically filtered to those of the group in question (7B).

The green session is 7B Sc and the reason for the displacement is that Sc has already been placed in the build at rows [1] and [2] (Mon1+2) and row [5] is also on Mon. Therefore, placing Sc on row [5] would break the 1pd rule for 7B Sc.

Those familiar with T4 will remember the manual groups scheduling screen. This enabled the timetabler to schedule one group at a time in a similar way to that described in the preceding text. While it was still the case that the three groups 7A, 7B and 7C could not be treated in complete isolation, it was useful to be able to isolate them when scheduling. The main difference between the T4 routine and the above concept of building a single group is the visual presentation. The build uses a column, whereas the T4 routine used a timetable grid of periods and days.
In Nova-T6 it is also possible to view the task as a timetable using the F8 function key.

11. Press the F8 function key.

![Graphic Illustration](image)

The graphic illustrates the situation with group 7A selected, the Pending Sessions section is ordered by fits, which are those most difficult to place being at the top and the show subjects check box deselected.

The same numeric information is carried in each white timetable period as in the (empty) cells in the build. The periods at which this block has been scheduled are picked out with a blue border. Double period sessions (as with Mon1 and 2) use a single border across both periods.

The grey periods indicate the presence of sessions from other blocks that serve the same band(s) as group 7A. So, 7A cannot be scheduled at a period where 7x Maths has already been placed.

The yellow cells indicate sessions from this group (7A) that have already been scheduled, in our case Science and French.

The white periods have nothing so far scheduled for 7A and are presumably the ones to use first for the pending sessions. The black star in each white period indicates the degree of flexibility, with the small stars representing the most flexible. Fri 2 carries the largest star and the smallest number of fits (2-2). So the stars are for those who like pictures and the figures are for those who like numbers.

It is better to schedule initially at periods where there is minimum flexibility; one with a large star and a small number.

12. Select the **Show All Sessions** check box at the top.
13. Select Fri2 and hold down the left mouse button.

Only two of the pending sessions may be scheduled at this period. These have white backgrounds. One indicates a fit of 5-8 and the other 9-12. All other things being equal, delegates should opt for the 5-8 white pending session because this session, being higher in the list, is less flexible.

While clicking and holding at Fri2, an additional column called Clash appears in the Pending Sessions area. This indicates what each teacher is doing at the selected period.

This information is available both for Pending and Scheduled Sessions.

There is no information in the two white Pending Sessions rows because the teacher is free. This why they are white.

14. Schedule the session by dragging the cursor from the period onto the Ge Pending Session.
15. Select the top **Fr Pending Session** and hold down the mouse button.

In the preceding graphic:

- the pale yellow timetable cells with the shadowed circles indicate that this session (7A/Fr) could be scheduled at these periods without displacing any other session. The size of the circle, the background colour and the numbers all indicate the degree of flexibility for each period.
- the green coloured periods indicate that the Fr session could be scheduled here, but that the existing sessions for the current group (7A) would have to be displaced.
- the blue borders indicate the fifteen periods at which the block has already been scheduled.
- every timetable cell indicates what the teacher in the selected Pending Session ($AG$) is doing. If there is no dark red text then the teacher is free. This functionality can be switched off by deselecting the **Show Staff Clashes in cells** check box at the top.
- the **Show All Sessions** check box is selected and as a result, those sessions already scheduled are listed below the Pending Sessions.

It is worth noting that 7A/Fr has to be scheduled for a total of two sessions. When scheduling the second session, the existing session is picked out on the timetable with a black box (Wed5 in the preceding graphic).

16. Place the session at **Thu3** by dragging and releasing over the appropriate timetable cell.

17. Also schedule the **Ar** session at **Mon3**.
The graphic displayed below illustrates that (while clicking the 7A Art session) if this session was to be scheduled at certain periods, it would cause a facility overflow (the red squares in the centre of the period cells). These periods are not available for this session, but the principle of the red squares is worth noting.

Whilst group 7A is being scheduled, the other groups should also be considered. Let us look at group 7B.

18. Change the filter on the Pending Sessions section to 7B and select and hold on the Ar session with teacher $KB and facility AR.

The yellow periods indicate scheduling possibilities. The paler the colour and the larger the circle is, the less flexible the period.
Period Mon3 is coloured pink. This indicates that the 7B/Ar session could be scheduled there, but a session for another group in the same block would have to give way.

In our example the current 7B/Ar session is taught by KB, who is also the teacher of the 7A/Ar session previously scheduled also at Mon3. This is evident from the red text in the Mon3 timetable cell. The presence of the red square also indicates that even if SKB had been free, there would be a facility overload unless 7A/Ar is deleted from the timetable.

19. Change back to 7A, ensure that the Show Subjects check box is deselected and note the teacher of the Ar session already scheduled at Mon3.

20. Change again to 7B and schedule the Ar session at Mon3.

21. Change again to 7A and note that 7A/Ar has been descheduled (without warning).

22. Select and hold period Mon3 and note the pink colour on the Pending Session for 7A/Ar.

This has the same meaning as a pink period. Note the red, indicating facility overload.

23. Press the F8 function key to return to the normal Build grid and note that various cells are already built.

24. Click the Build button and opt for building the complete block.

There is no guarantee that the work previously carried out in the group mode has been left untouched because the sessions were not locked to the build.

It would be useful to be able to pull up a teacher timetable when in the group mode display.

25. Point to any teacher’s code in Pending Sessions, Scheduled Sessions or a timetable cell. Hold down Ctrl and left-click.

The relevant teacher timetable is displayed. If this is left open and the same action is performed on a different teacher code, the timetable swaps.
Step by Step 58 – Editing the Timetable Via the Build

When a single session is scheduled, it is the build on the relevant row that determines which cluster (class) is scheduled at that period. Delegates will appreciate that once the block is scheduled, changing the build will have the effect of editing the timetable. So, the sessions stay at the same periods, but the classes may shuffle round inside the block, therefore changing the timetable.

This is exactly how some timetablers work, particularly in the last stages of construction. They do not wish to move sessions from their current locations, but they are prepared to shuffle the contents in an attempt to achieve a better result. It is the linear blocks that lend themselves to this kind of approach.

1. Before continuing load the new file T6 (9), select the Block process and browse to block 7x Tutor Groups.
2. Select the empty blue cell at the top-left corner of the Build grid.

This reorders the build so that the rows are in period order, rather than in slot order.

Before performing an edit, delegates will look at the useful way in which the timetable in the block process displays a split class. Two year 7 English classes are split, as shown in the graphic displayed below.

3. In the build for 7x Tutor Groups click and hold the cell for 7B and Mon:5 (taught by teacher BPE).

The four occasions when this class is timetabled are highlighted on the timetable in a magenta colour, using two shades. The darker shade indicates the three periods taught by the selected teacher BPE, while the single session taught by JA has a lighter background.

4. Click and hold over the cell for 7B at Tue:5 and note that the shading swaps round.
Delegates will now return to the issue of editing the timetable via the build.

7A has Ar with $KB$ at Mon4. If, for example, it would be preferable to have this scheduled on a Tuesday, rather than Monday:

5. Click and drag 7A/Ar downwards through the week and hover over Tue4.

The Clash information shows that only the existing 7A/Re class is preventing 7A/Ar from being moved to Tue4.

A green cell shows that classes in this block would be displaced if 7A/Ar were to be moved to this period.

A grey cell shows that blocks except this one would be affected and it is not possible to move to this location.

6. Release the mouse button so that 7A/Ar is moved to Tue4.

7A/Re is displaced from the grid and back into the Pending Sessions list. It is now necessary to try to find a way of placing it back in the grid in a different position. It would be easy if it would fit where the 7A/Ar originally came from.

7. Drag 7A/Re from the Pending Sessions sections and hover over the empty cell at Mon4.
The cell is grey which indicates a problem and the clash information gives the details.

It is 13C/Hi1 that is preventing 7A/Re moving to Mon4. This is because $AP teaches both. One solution would be to change some teachers (which is drastic) as a first line of attack. Another solution would be to let the auto routine build the rest of the block and see what happens to 7A/Re.

8. Click the **Build** button and note the result.

The auto build routine promptly puts both classes straight back where they came from. Before trying again, look at the year 7 timetable for Mon4.

9. Select **Timetable | New | Year/Band** and note the classes in **Year 7 at Mon4** and compare it with the build row for the same period.

10. Click the **Close** button to close down the timetable and again drag **7A/Ar** from **Mon4** to **Tue4**. Right-click the cell and select **Lock** from the displayed menu to lock the class to the cell with either a soft or hard lock.

11. Click the **Build** button and note that the software finds a solution by performing a multiple shuffle in which 7A/Re goes to Fri2 and 7A/Gg moves from Fri2 to **Mon4**.

The procedure has also edited a year 8 block by shuffling round three classes in that build to achieve the required build in the year 7 block.
This example might seem far-fetched but it serves to illustrate that by manipulating the build, you are actually editing the timetable. Look again at the timetable at Mon4.

12. Press the **F11** function key to call back the previously viewed timetable.

It is evident that the original class 7A/Ar is locked at Tue4 and that 7A/Gg has replaced it at Mon4.

The same shunting process can be carried out using group mode. It is likely that most timetablers will prefer this as it is easier to visualise the timetable.

13. Reload the **T6 (9)** file, navigate to block **7x Tutor Groups** and press the **F8** function key. If necessary filter to group **7A**.

14. Drag **7A/Ar** from **Mon4** and hover over **Tue4**.

The software indicates that there are three other places where this class could be placed (where the teacher is free). Dropping onto a green period would displace the existing class for 7A. Dropping onto a pink period would displace not only the 7A class but also one from either 7B.
15. Drop the **Art** class onto **Tue4** and lock it with either a soft or hard lock.

Class 7A/Re is displaced back to the Pending Sessions section (not shown).

16. Click the **Build** button and opt for building just the current group.
The software performs the same switch to achieve the objective. It is sometimes helpful to check the **Show Subjects** box. The class names and teachers are replaced by the subject name.

![Subject Grid]

**Step by Step 59 – Can Anyone Else Take This Class?**

It is frequently asked whether or not Nova-T6 is capable of selecting staffing at the same time as scheduling the classes. Unfortunately, the answer is no.

Another version of this request is to what extent can Nova-T6 find alternative teachers when scheduling becomes difficult? Again, this is a reasonable request, given that timetablers have to do it. The answer is as before.

There is one area in which Nova-T6 can provide assistance, but it is the responsibility of the timetabler to initiate the help. It could be summarized as; who else could take this class?

The implication in this request is that the session (and therefore, the class) is already scheduled. The timetabler is trying to free up a teacher for use somewhere else and hence, they need to find an alternative teacher for the original class. If the class is scheduled for two or more periods, it might involve trying to find another teacher who is available on all occasions or it might mean splitting the class between two or more teachers.

When looking for an alternative teacher the information that would be useful is the teachers’ loadings, allocations and current timetables. All this has been pulled together into a single routine.

It can also be used when no teacher has been assigned to a class and the question being asked is who could take this class? It is relatively common for some classes in KS3 to be scheduled without staffing and the assumption is that it will be possible to sort them later.

1.  Reload in the **T6 (9)** file and in the **Block** process browse to **7x Tutor Group**.

2.  Right-click the **7B/ Fr** wherever it appears in the build and select **Edit Staffing** from the menu displayed.

3.  Click the **Show Grid** button at the bottom-right of the new screen.
4. Change the radio button from **Available to All Staff**. If necessary, select the teacher **MK** in the left-hand list.

Firstly, an explanation of the radio buttons which act as filters. The set of three labelled Subject, Department and All Depts determine which teachers are listed according to their subject specialisms, as defined in **Plan | Teacher Departments**. When set to subject only those teachers with Fr in teacher departments will be listed. When set to depts the net is widened to those defined with subjects comprising, for example, the MI department, which could include Fr, Ge, Sp. More teachers are likely to be listed in most sets of data. When set to all depts teachers of any specialism are listed.

The other pair of radio buttons apply a further filter to those already filtered. The All Staff radio button should be interpreted as all those selected by the previous action. The Available radio button filters the list to those who are able to take all sessions of the class in question (in this case 7B/Fr).

The preceding graphic shows the settings of **Subject** and **All Staff**.

5. Experiment with the radio buttons but then ensure that your own settings correspond to those in the graphic.
The grid, as shown in the graphic displayed below shows timetables with the yellow cells being the occasions when 7B/Fr has already been scheduled. Superimposed onto this is the timetable of the highlighted teacher, in the case of the above graphic, MK. The white cells indicate that he is available (free) and the grey cells that he is teaching. Pointing to the various cells brings further details below the grid.

To the left of the timetable grid is a column where the information about the yellow cells is detailed as text.

S for single, the Periods at which 7B/Fr is already scheduled, the current Teacher assigned to the class, a column for the highlighted teacher, also MK in our graphic; UPD is short for update.

The In Use column indicates just how available each teacher is. MK, with a figure of zero, is the only one who could take both sessions and already is. AG could not take any without having his classes transferred to someone else. JXE is in use for one session but could take the other.

The Dept column compared each teacher’s current allocation to Fr with that listed in Plan | Teacher Departments. The first figure is what has been allocated, (not necessarily scheduled) the second is from teacher departments. The total column shows the same sort of comparison, but for all subjects. It compares each teacher’s total allocation with the loading (first column in teacher departments).

In the preceding graphic it can be seen that, although no member of staff appears to have spare in dept (Fr) and SD is actually over limit, quite a few have spare in total. This probably points to out of date information in teacher departments, in terms of the subject specific data and most staff members would take more notice of the Total column.

Of the two occasions, let us assume that staff members are trying to free up MK at Wed5.

6. Select the JL teacher and check availability by looking either at the grid or the text to the left of the grid.

JL is available for the Wed5 session, but not the Fri4.

7. Remove the tick in the Upd column for Fri4, as shown in the graphic displayed below.

8. Click the Replace button.

The class is transferred from MK to JL for this session only. Had the Assign button been used then both teachers would have ended up with the class on Wed5.
9. Select JL and MK in turn and note their respective commitment to 7B/Fr.
10. Click the Close button to close the routine and change to the Classes process.
    Investigate the teachers assigned to 7B/Fr.

Step by Step 60 – Breaking the Rules 1: the 1pd Rule

Nova-T6 is designed to monitor a variety of rules and settings and to ensure that staff members do not inadvertently contravene them when scheduling manually. There are times when a rule is broken because the staff member knows better.

Consider the 1pd (one per day) rule. The various settings of the 1pd rule were discussed in Step by Step 46, but it is also possible to override the setting when scheduling a particular session, rather than to change the setting, which would affect all other sessions of the block.

One example is a part-time teacher assigned to all periods of a block, but only in school for three days a week. It might be necessary to schedule two sessions on the same day, but not to create a double-period session.

1. To track this more easily, return to the T6 (5) dataset, in which no scheduling has yet taken place.
2. Select the Bands process and schedule one session of 7x Maths at Mon1.
3. Attempt to schedule another session at Mon5 and note the response of the software.
4. Release the session at Mon5 and note the further response.
There are two approaches to the above warning. Simply confirming the Displaced Units screen will result in the Mon1 session being removed and the Mon5 session being scheduled. The other approach is to override the warning by placing a tick in the Lock/Cash column.

5. Select the Lock/Clash cell and confirm the Displaced Units screen.

Both sessions are scheduled, but the penalty for overriding the rule is that they are hard locked automatically. This is T6’s way of coping with the breaking of the rule. Locked sessions are ignored by the auto routines (except acknowledging the resources in use).

Any attempt to remove the hard lock on either session will result in one session being removed from the timetable.

The other two single sessions will be placed on other days, either manually or by using autoschedule. The rule is still in place, but overridden in this instance.

6. Remove the lock on either of the sessions and note the response.

The session remaining on the timetable is still hard locked although there is probably no need for this arbitrary inflexibility. In most cases, staff members would release the lock themselves by right-clicking the cell and selecting unlock.

It is not therefore possible, when overriding the 1pd rule in this way to retain the flexibility of two unlocked sessions on the same day. This should not be a great problem, since in the majority of cases, staff would probably want to decide themselves which two periods would receive this kind of treatment.

A completely different approach to this is to place two sessions on the same day and disregard the rule completely.
7. Remove any remaining sessions from the timetable and change to the **Auto** process.
8. Right-click the **7x Maths** block and select **One per Day Rule** followed by **Suspended**.
9. Ensure that the radio button at the bottom-right is set to **Current** and select **Schedule**.
10. Change back to the **Bands** process and look at the result.

Your own data may be different than in the preceding graphic.

11. Attempt to drag all the sessions onto a single day of your choice.

This is the penalty for completely suspending the rule. On a partly completed timetable, autoschedule may well move these sessions all onto one day. Staff members would interpret suspending the rule as meaning; put two sessions on a day but no more.

**Step by Step 61 – Breaking the Rules 2: Double-booking Teachers**

There are occasions when it is necessary to double book teachers. It might be that a year 10 and a year 11 class be considered as joint (vertical). The staff member has decided not to use derived years for this purpose, but simply to define a class in both year groups with the same teacher assigned, then to overlay the classes when scheduling (manually). This would require the overriding of the unwritten rule that teachers should only take one class at once.

This situation would be simulated by scheduling two Maths blocks (for different year groups, but which contain the same staffing) at the same period.

1. Remove any existing sessions from the timetable and schedule one session of the **7x Maths** block at any period in the week.
2. By pointing to the **Scheduled Session**. Note the staff involved, LV, FB and DM.
3. Change the row to band **8x** and select **8x Maths** and note that the staffing is identical.
4. Drag a session of this block to the same period as the **Year 7** block and hover over it looking at the response of the software.

![Diagram of scheduling process]

5. Release the session and override the warning by placing the tick in **Lock/Clash** and clicking the **OK** button to confirm.
6. Noting that the sessions are both locked, view the **Year/Band** timetable, as shown in the graphic on the right. All three teachers are double-booked.

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**Step by Step 62 – Breaking the Rules 3: Double Booking a Band**

This should be regarded as one of the most dangerous practices; deliberately scheduling two blocks serving the same band of students at the same period. Under normal circumstances this is bound to put a clash on a large number of student timetables and you might be forgiven for wondering under what circumstances anyone would ever want to achieve it.

The most common example is in sixth forms and is usually (although not exclusively) linked to the fragmenting of blocks. So, overlaying part of one block on top of part of another that serves the same population of students. This can only be carried out manually, as the timetable would need to know under what circumstances this could be achieved without causing problems for the students.

It is not common practice to set out to cause this fragmentation, but is usually a response to some difficulty encountered later in the construction process. For example, a school might schedule years 13 and 12 early in the process, but not take a decision about fragmenting these blocks until the year 9 started locking up. The purpose of the fragmentation is not to solve a difficulty with year 12/13, but one lower down the school.

Smaller schools sometimes leave the sixth form classes until the other year groups have been largely completed. The year 12 and 13 blocks are then fitted around the existing timetable and this can only be achieved by fragmenting a good proportion of the blocks. Some sessions may even end up in lunchtime or twilight periods.

In completing the training dataset timetable, use has been made of fragmentation in years 12 and 13, but not of the double-booking of bands. This is possible because the number of periods assigned to the sixth form curriculum is less than the number of periods in the cycle and it is possible to use these gaps for the extra sessions.
Delegates will work on blocks that have not already been given the treatment.

1. Remove any sessions from the timetable and change to the Model process. Look at Year 13, blocks A and D.

Both require five periods and all groups within the blocks also require five periods. If for example, on one of the sessions for option A, staff wish to leave off Pe and place it on its own at a different period when option D has been scheduled. This means that option A will need to be scheduled for a total of six periods, even though the constituent groups will only get five each.

2. Right-click the Title area of Option A and select Minimum Periods. Define six as the requirement, then click the OK button to confirm.

3. Change to the Block process and browse to this Option A block in Year 13.

It is already built, but an extra row has been created in the build.

4. Click Pe on row [5] and drag it down to row [6].

It is evident that the sessions for this block are now DS4, rather than DS3. It is also evident that when row [5] is scheduled, only four classes will be placed on the timetable. When row [6] is scheduled, it will be just one.

One problem that can be encountered when using autoschedule later in the process is that the software manipulates the build in this block and corrupts the idea. It is necessary, therefore, to block the empty cells so that nothing can be placed in them.
5. Right-click each of the empty cells and select **Protect Empty Slot**.

<table>
<thead>
<tr>
<th>Build</th>
<th>13A/Pe1</th>
<th>13A/Ch1</th>
<th>13A/Gp1</th>
<th>13A/Del1</th>
<th>13A/Tel1</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>Pe</td>
<td>Ch</td>
<td>Gg</td>
<td>De</td>
<td>To</td>
</tr>
</tbody>
</table>

Timetablers are attempting to overlay row [6] of this option A block on top of option D.

6. Change to **Bands**, select the **Option D** block in **Year 13** and schedule one of the single sessions at **Mon1**.

7. Select **Option A** and find the session that only contains the **Pe** class. If it was the bottom row in the build, then it will be here.

8. Click and drag this session onto **Mon1** and hover over it.

9. Release the session, override the warning by selecting the **Lock/Clash** cell and click the **OK** button to confirm. Hover over the now black cell and examine the details at the lower-right.

It is evident from the information that 13A/Pe1 has been superimposed on top of option D. If any of the students in the Pe class have also selected any of the classes in option D then they are double-booked. The ultimate result will be a clash on their timetable.

10. Look at the **Year/Band Timetable** for **Year 13** and check that all classes are visible.
Step by Step 63 – Breaking the Rules 4: Splitting a Double-Period Between Two Teachers

This process is not strictly breaking the rules, but timetablers need to be aware of how this can be achieved.

An example scenario is an option block which requires only one session which is a double. Most of the groups within the block are taught by a single teacher for the double. One group needs two teachers that will swap round half way through the double-period.

1. Change to the **Model** process and create a fictitious **Year 14**. Create one block as shown in the following text:

   The block should contain just three subjects (Ar, Gg and Hi) for two periods each. The identifier is A.

   ![Diagram of Year 14 block](image1)

2. Change to the **Classes** process and add staff, splitting the Ar class between AA and AB, as shown in the graphic displayed below.

   ![Attributes and Year 14 classes](image2)

3. Select the **Sessions** process and define the Gg and Hi classes, together with the block shape as D. Leave the Ar class as SS.

   ![Diagram of block process](image3)

4. Select the **Block** process and attempt to build the block.

   The routine refuses to build the block even though logically it dictates that it should have no problem. What is causing the failure is T6’s inability to understand that two single sessions of the same class are enabled to form a double.
The solution is to relax the 1pd rule on this block from active to cluster by staff (using the auto process).

5. Change to the **Auto** process and set the **1pd** rule for the **Year 14** block as shown in the graphic displayed below.

![Graphic showing the Auto process and One Per Day Rule](image)

6. Change back to **Block** and click the **Build** button.

![Build Process Graphic](image)

There is now no problem with building this structure and the double session is now shared between two teachers.

**Step by Step 64 – Optimising the Timetable**

At various times during or after construction of the timetable it is useful to be able to improve badly distributed classes. This poor distribution might have arisen from the use of either manual or auto scheduling. The Optimise process analyses the timetable according to three possible parameters. A session is identified that is judged to be particularly in need of improvement. Optimise offers a range of solutions to select from. The main differences between this and the autoschedule routines, is that a range of solutions are presented and the impact on all classes affected by each solution is available for scrutiny. Not only can this routine be used to improve sessions already on the timetable, but also for scheduling them in the first place. Using Optimise in this way gives those who wish to retain full control of the scheduling the opportunity to benefit from the powerful autoschedule algorithms.

To best appreciate Optimise, change to a set of data in which years 10 - 13 are scheduled.

1. Load the **T6 (6)** dataset and check the scheduling on the **Bands** process and note that the timetable is half finished.
2. Change the process to **Optimise**, select the **Score** radio button, then click the **Go to Top** button.

3. Ensure that the settings in the top-middle area correspond to those in the graphic.

   Three levels of importance may be entered for each year group and each column: high, medium and low. If no entry is made then the factor is ignored. Day analyses the extent to which sessions are compressed into adjacent days, rather than being spread out through the cycle. Per analyses the spread between mornings and afternoons. Wk analyses the spread between week one and two where the cycle spans two weeks.

   ![Diagram](image)

   The weekend value gives a measure of flexibility as to how Monday and Friday would be treated. The value zero treats them as adjacent days (as Mon/Tue would be treated), one treats them as though there was one day between them.

4. Select the **10x English** block from the left-hand list. Change the **Depth of Search** to **four**, then click and drag the **Tuesday yellow** session onto the blue header that represents **Friday**.
This indicates to the Optimise routine that the session currently on Tuesday afternoon is to be moved to any period on Friday.

5. Click the **Search** button and note when the clock face (at the top-right) stops and returns to grey.

Multiple solutions will be generated. The graphic displayed below illustrates a situation where, when 100 solutions were generated, the routine stopped because of the setting in *max*.

![Graphic Illustrating Solutions](image)

The solutions are listed in the top right-hand box. In the graphic they have been ordered by the value in the change column.

A positive number indicates an overall improvement not only for the class/block under focus but for all those involved in the move. The higher the change figure, the better the solution is likely to be.

Each solution involves a number of moves and these are detailed in the lower-right box. The graphic shows the 10x English session moving from Tue3 to Fri4.

6. Investigate some of your own solutions, eventually choosing one of them and selecting **Implement** to accept and carry out the proposed edit.

At this point we will focus on using Optimise for scheduling sessions, rather than moving existing ones.

7. Scroll down the list of classes/blocks to **9y English**.

This has all four sessions yet to be scheduled (red background), as shown in the graphic displayed below.
8. Click and drag any of the sessions to Mon3.

9. Search for solutions and investigate the details of the move.

With the Show Full Solution check box selected more information is available. The preceding graphic shows a double session of 12 option B being moved from Mon3/4 to Wed1/2 and (to accommodate this) the single at Wed1 being moved to Mon4, therefore freeing up Mon3 for the 9y English block.

For further details regarding optimise please see Unit 14 of the handbook, available via the documentation button on the SIMS home page.
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Chapter Introduction

This chapter details the various timetable displays and editing that can be achieved from them. The first process following scheduling is likely to be rooming. Rooming can be regarded as either the end of the scheduling process or the beginning of the editing process.

Step by Step 65 – Automatic Rooming

Step by Step 10 through to 14 dealt with the data entry that is a prerequisite to automatic rooming. At this point, delegates will recap on the process.

1. For each of the following points briefly visit the menu route and refresh your memory.
   Load in the T6 (9) file before working through the points below.
   - **Plan | Rooms** contains the list of rooms available. It is not possible to place a class or teacher in a room which is not listed.
   - **Plan | Sites** enables split site schools to define the existence of more than one site. Schools with only one site are advised to define one to facilitate more effective auto-rooming. The current data has one site S (for school).
   - **Plan | Room Sites** enables matching of the list of rooms to the list of sites. In our data all rooms are on site S.
   - **Plan | Subject Rooms** enables particular rooms to be declared as suitable for particular subjects.
   - **Plan | Teacher Rooms** enables particular rooms to be associated with particular teachers. This is likely to be the most powerful aid to auto-rooming in situations where the majority of teachers occupy their own room. Even when only a few fall into this category, it is still worthwhile defining them. In the current data most of the teachers have been assigned a room.
   - **Plan | Automatic Rooming Requirements** sets up rules in which certain subject areas or particular classes in the subject area, can opt in or out of the auto process.
While it is possible to see the rooms as they are being placed on the timetable by auto-
rooming, it is not necessary. Delegates will open a timetable display that will show the
absence of rooms, then use the rooming routine while viewing the timetable.

2. Select **Timetable | New | Year/Band** from the menu bar and look at **Year 7**.

3. Select **Tools | Allocate Rooms**, leave the options regarding current rooming as the
default top one, deselect the **Include rooms suitable for subject** check box, then click the **OK** button to confirm.

On confirmation, a subject filter is displayed with all the subjects initially selected (yellow). A particular subject may be selected or deselected by double-clicking the appropriate code. The **Select All** and **Clear All** buttons are self-explanatory. The **Department** button may be used to select groups of subjects.

4. Deselect **Pe** and **Wx**, then confirm the subjects to be included by clicking the **OK** button.

The reason for deselecting the check box lies in the way the auto room allocation uses the information in **Plan | Subject Rooms**. In attempting to room a class, if the teacher has not been given a room in **Plan | Teacher Rooms**, then the routine looks in subject rooms for a list of suitable rooms for the subject on the class. If it finds more than one (unoccupied) then any one is selected. Herein lies the problem, when the same class is scheduled at another period, the routine may not select the same room, even though it might be free. This might result in inconsistent rooming right across the departments. Deselecting the check box prevents the routine from attempting to find a suitable subject room, therefore leaving the class unroomed. It is preferable to have classes unroomed, rather than be placed in impractical rooms.

Most, but not all classes will be assigned a room according to the various preferences. The rooms begin with # and have been placed in brackets because while they are on the timetable, they are not resources attached to classes in the curriculum plan. This is perfectly acceptable but it does mean that in the future, should any block be descheduled and re-
scheduled, it would need to be re-roomed.
The following flow chart details the algorithm used by the auto-rooming routine.

The Auto Rooming Process

Check both the subject and this particular class via Plan | Automatic Rooming Requirements

Do not room this class

No

Check the permitted site(s) for a class in this year group via Plan | Sites

Check Plan | Teacher Rooms

No

Use this room

Yes

Does the teacher of this class have a defined room for this subject and for

Check Plan | Teacher Rooms again

No

Give up.

Yes

Use this room

If required check Plan | Subject Rooms

Is any room defined for this subject

No

Yes

Use one room
Step by Step 66 – Manual Rooming

Manual rooming can be carried out from virtually any timetable display. There is one in particular that is specifically designed for this task. Delegates will deal with this now as it would most likely be used soon after the auto-rooming process.

1. Click the **Close** button to close down any existing timetables, then select **Timetable | New | Classes without Rooms**.

![Classes without Rooms](image)

The **Refresh** button removes classes from the timetable that have been given rooms since the display was opened. The **Subject Filter** button provides the same filtering as described in the previous step by step.

2. Right-click the name of the top class for **Mon1** and note the menu.

In keeping with all the other timetable displays, there is considerable editing possible. For now, delegates will restrict themselves to the add room item. This classes without rooms timetable is different only in that it filters the classes displayed to those without rooms.
3. Select **Add Room, M1**, then click the **Confirm** button.

This has only roomed the class for the current period and there is no guarantee that the same room will be available on the other occasions when this class is scheduled.

4. Right-click (**#M1**) in the timetable cell, then select **Delete Room M1**.

**NOTE:** An alternative way of deleting the room is to select (**#M1**) in the timetable cell, then press the **Delete** key.

5. Right-click again and select **Add Room** (or type **R** when pointing to the class name). Change the filter to display **All rooms** and select **M2** (a room that is occupied by another Maths class at this period). Click the **Confirm** button to confirm and note the options presented.

The only logical alternatives are presented. Swap is not possible under the present circumstances and is greyed out, as shown in the graphic displayed below. Move would take the room away from the existing class, 8x/Ma2, and give it to our class.

6. Click the **Cancel** button to abandon the change.

More information is required when it comes to manual rooming. For example, if a Maths class has been scheduled on four separate days and has not yet been given a room, timetablers would want to know whether the same room might be free on all four occasions. There is an extra piece of functionality to supply this information, considerably speeding up the process.

7. Select the top-left class **8x/Ma3** and ensure that a room has not already been supplied.
8. Either type X or use Ctrl and R to bring up the additional information.

The Room Allocation screen filters the periods to those used for the current class (8x/Ma3) and also is capable of filtering the rooms to those suitable for the current subject (Maths). This information is entered via Plan | Subject Rooms. If this information is missing then no rooms appear if the Rooms Suitable for Subject check box is selected. The order of the rooms is by availability with the number of periods available in the second column.

The cells with the yellow background indicate the classes currently assigned to Maths rooms.

Room M4 is available on all four occasions and all other things being equal, would be a good choice.

9. Click in the appropriate empty cells to assign the room or select the room name at the left to assign to all available cells.
A further click removes the assignment for the current class. It is also possible to assign the class to an occupied room, in which case the displaced class is added to the Classes Without Rooms screen, once the arrangement is confirmed.

10. Experiment a little with this routine.

11. Load in a new file T6 (10). This contains a 99% roomed timetable.

12. Go to Cycle and add a Reg period before period one and make it non-teaching. This would ultimately be filled with NCCs identifying form tutors.

**Step by Step 67 – Timetables**

At this point, delegates can look briefly at the range of timetable displays and concentrate on a few.

1. Select Timetable | New.

The list of available timetables is fairly comprehensive. We will start with the teacher timetable.

2. From the menu select Teacher and Mrs Abell.

The ordering of the teacher list is determined by the setting in Tools | Ordering.
A drop-down list of staff is available, (also controlled by the arrow buttons) as shown in the preceding graphic. This means that a succession of individual timetables can be printed without having to resort back to Timetable | New | Teacher.

Batch printing of either Staff or Room timetables is available via the menu route Timetable | Batch Printing (see step 15 below).

3. Click the Yin Yang symbol to re-orientate the Timetable grid. Return it to its original state.

4. Right-click the Yin Yang symbol.

This toggles between showing and hiding the non-teaching periods and operates on teacher timetables of various kinds. The print routines pick up the setting when entering the print preview screens.

5. Click the Options button within the Timetable display.
A choice is given of displaying either systematic names and or user defined labels. Unless the labels have been overtyped deliberately in the classes process then these two kinds of labels will be identical.

Sometimes it is convenient to include facilities particularly when constructing, but then to hide them on timetables intended for other people. Individual facilities may be flagged as; Show in Timetable Displays (via Plan | Facilities | Edit Facilities). The lower option of Show Selected enables some to be displayed and others not. The other two possibilities are apparent. The default setting is to Hide All facilities. Without intervention, facilities will never be included in timetable cells.

There are three colour schemes: highlight locked classes, show individual block colours and highlight facilities. When viewing a timetable F5 toggles through the three possibilities.

It is possible to browse around timetables in a similar fashion to the right-mouse navigation within T4, only in T6 it is a double-click. Typing N is an alternative to the double-click.

6. Point to one of the rooms on the timetable and double-click to move to the room timetable.

7. From the Room timetable double-click the initials of a teacher (not AA).

8. Click the Close button to close down any additional timetables, leaving just the original timetable for AA.

Other functionality may be called from a timetable display by right-clicking. The graphics displayed below show the effect of right-clicking a room (left) and on the class name (right).

The menus are different depending on what particular item in the timetable cell is right-clicked. The purpose of the menu beginning with the word Jump, is to enable moving around the various areas of functionality in Nova-T6 while staying focused on the same block. Model through to Auto refers to the processes called by these names, and already described earlier in the course.

The Add Staff and Add Room items enable additional teachers or rooms to be assigned to the scheduled class. Neither of these additions will be written back to the curriculum plan (classes) but simply added to the timetable as additional attributes.
Add Staff is the most likely route for adding support staff. It is possible to add such non-teaching personnel to the list in Plan | Teachers even though they are not (and should not be) defined as teachers in the personnel section of SIMS. There is a routine in SIMS specifically designed to define classroom staff (non-teachers whom are required to feature on the timetable). The route for entry of this data is Focus | Person | Manage Classroom Staff. These assistants do not previously need to be known to the structured query language (SQL) system.

For further information please see Unit 10 of the Academic Management manual, via the documentation button on the SIMS home page.

The item Edit Staff(ing) is an alternative method of replacing or adding additional teachers to the class, but in this case, the changes are written back to the plan. The Edit Staff routine was described in detail in Step by Step 57 when it was being called from the block process.

9. Experiment with the various items on the menus when right-clicking a timetable cell.

T6 maintains a list of recently viewed timetables and these may be recalled either by selecting Timetable | Recent and choosing one from the list or by pressing F11. Multiple use of F11 results in recent timetables being overlaid. F12 may be used to close all timetables.

10. Experiment with the available timetables on the Timetable menu item. One of particular interest is usually the Selection timetable.

Each timetable display is equipped with both a Print and Copy button. The copy routine can be used to create a file or to send to windows clipboard. Timetables do not tend to transport well via clipboard.

As a general principle, it is not the intention to provide in T6 print routines that are the equivalent of the proof printing in Nova-T4, but rather of the quick printing. This is regarded as sufficient for the construction of a timetable.

If timetablers use the sophisticated configuration available in Nova-T4, then they may export the timetable from Nova-T6 to Nova-T4 and carry on using the proof printing. In due course, new print routines will be added to SIMS and these will be roughly equivalent to the proof printing.

There will be a minority of schools using T6 who do not use the rest of the SIMS system as their MIS. For these schools the advice is to construct and maintain the timetable in Nova-T6 and export to Nova-T4 for the purposes of arranging cover, assigning students to classes, printing class lists and proof printing of timetables.

11. Experiment with the Print and Copy buttons using a small timetable.

12. Select Timetable | Settings.

The Use Dual Monitor check box provides an opportunity to use the extended desktop functionality of Windows. When using either a laptop or a PC with a dual graphics card, it is possible to display all the timetables on a separate monitor.
F11 may be used to open recently used timetables. The **Max Recent Timetables** setting determines the length of T6’s memory in this respect.

The preceding graphic shows the upper section of the standard timetable display.

13. Click the **Print** button located within the timetable display.

The unreadable preceding graphic illustrates the full print preview screen. Delegates will work through the various sections in detail.

The upper left section enables the choice of printer, entry of an optional title (with a button at the right-hand end to return to a default title) and provides a zoom slide bar that enables the timetable information to be reduced or enlarged, purely for ease of readability. If no text is entered into the title field then a default one is supplied and can be seen on the display at the top of each page. In the case of the current timetable, the default Title is All Staff. The yin yang symbol changes the orientation of the display, so that a column changes from being a period to a member of staff. This can radically affect the number of pages taken up by the whole display.
It is important that the correct printer is specified before manipulating the configuration, because the suitability of the layout is affected by individual printer drivers. It is also important that the orientation of the paper is initially set. This is achieved by clicking the **Select Printer** button and selecting the intended orientation. Changing this will often affect the number of pages taken up by the printout.

It is worth noting that the paper size and source of paper (tray) may also be changed. Confirming by clicking the **OK** button does not send to the printer, but returns to the configuration screen.

The bottom left section provides information on how many pages the current configuration will take. It also enables selection of which pages should be printed.

The default setting is print first page only. If the setting is changed to print selected pages then the **Select All** and **Clear** buttons activate and a check box appears at the top left corner of each page in the display, therefore enabling quick manual selection (or deselection) of particular pages to be printed. The timetable is sent to the printer by selecting the large **Print** button and if multiple pages are involved a suitable warning is displayed.

The preceding example is generated when the **Print all pages** radio button has been selected. On confirmation of this warning (by clicking the **Yes** button) the timetable is sent to the printer without further dialog.

Only one type of font is available for the printout, but in three sizes.

In graphic displayed below, the selected font is Arial and the point size for the title is 24, the class names 12 and the codes 9.
The preceding graphic illustrates these font settings with the display on maximum zoom. The title; All Staff is 24 point, the class name 10y/Sc2 is 12 and the room code S1 is nine.

One major determining factor of how many pages it will take to print is the size of each timetable cell and the headings.

The sizes are shown in hundredths of an inch, so a cell width of 100 is one inch, the cell height of 60 is 0.6 inches. If it is the intention to pin up the pages like a spreadsheet then the row heading Rpt check box may not be necessary and may be deselected.

The graphic displayed below shows by changing some of the settings, the number of pages has been reduced from 28 to 12.

Configuration of the footer is also possible using numbering and timestamp. The graphics displayed below illustrates the maximum possible information.
The current configuration settings for this type of timetable are saved if the print preview screen is closed using the large **Close** button. The T6 dataset is subsequently saved.

Click the **Reset** button to return to the original default settings (if required). There are different defaults for each type of timetable.

14. Experiment with the settings.

Further configuration is possible by clicking the **Configure** button at the top right of the print preview screen.

There are seventeen logical (check box) parameters plus two settings selected using radio buttons. All eighteen affect the appearance of the printout. The preceding graphic shows the default settings.

**Display Staff and Room Names in Headers**

<table>
<thead>
<tr>
<th>All Staff</th>
<th>All Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mon. 1</strong></td>
<td><strong>Mon. 2</strong></td>
</tr>
<tr>
<td>AA</td>
<td>10y/Sc2 S1</td>
</tr>
<tr>
<td>Mrs A Abell</td>
<td>PPA</td>
</tr>
<tr>
<td>DA</td>
<td>13A/Ch1 S4</td>
</tr>
<tr>
<td>Mr D Andrews</td>
<td>13B/B1 S4</td>
</tr>
<tr>
<td>SA</td>
<td>7A/Sc S2</td>
</tr>
</tbody>
</table>

Check box selected  
Check box not selected
With the check box deselected it is likely that the setting for the row heading would need to be reduced to something like thirty in order not to leave a gap to the right of the codes.

**Show Staff and Room Prefix Symbols**

<table>
<thead>
<tr>
<th>Year/band</th>
<th>Year/band</th>
</tr>
</thead>
<tbody>
<tr>
<td>n.2</td>
<td>n.2</td>
</tr>
<tr>
<td>Mon:3</td>
<td>Mon:3</td>
</tr>
<tr>
<td>Mon:4</td>
<td>Mon:4</td>
</tr>
<tr>
<td>7A/Hi</td>
<td>7B/Hi</td>
</tr>
<tr>
<td>BPA</td>
<td>BPA</td>
</tr>
<tr>
<td>H3</td>
<td>H4</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>7A/Ar</td>
<td>7B/Re</td>
</tr>
<tr>
<td>KB,A3</td>
<td>AW,H2</td>
</tr>
</tbody>
</table>

Check box selected

Check box not selected

The preceding example is taken from a year/band timetable which features both staff and rooms in the cells.

**Bracket Additional Staff and Rooms**

<table>
<thead>
<tr>
<th>Year/band</th>
<th>Year/band</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon:2</td>
<td>Mon:2</td>
</tr>
<tr>
<td>Mon:3</td>
<td>Mon:3</td>
</tr>
<tr>
<td>Mon:4</td>
<td>Mon:4</td>
</tr>
<tr>
<td>7A/Sc</td>
<td>7A/Sc</td>
</tr>
<tr>
<td>SA,(AG), (S9)</td>
<td>SA,AG, S9</td>
</tr>
<tr>
<td>7A/Hi</td>
<td>7A/Hi</td>
</tr>
<tr>
<td>BPA</td>
<td>BPA</td>
</tr>
<tr>
<td>(H3)</td>
<td>(H3)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>7A/Ar</td>
<td>7A/Ar</td>
</tr>
<tr>
<td>KB,A3</td>
<td>KB,A3</td>
</tr>
</tbody>
</table>

Check box selected

Check box not selected

In the preceding example teacher AG has been added to 7A/Sc after the class was scheduled. So AG is not in the plan. The code of the planned teacher is always placed first, it is easier to spot the support teacher when the code is bracketed. The rooms are bracketed because they have also been added post scheduling. Any rooms attached to classes in the plan would not carry brackets. This setting helpful in differentiating those responsible for the class (in the plan) from those supporting the class (added later). This is particularly the case when viewing a single teacher timetable. The following example shows what each of the two members of staff (SA and AG) would see on their respective timetable printouts under the present arrangement at Mon 2.

**SA’s timetable**

<table>
<thead>
<tr>
<th>Mon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>7A/Sc (S9)</td>
</tr>
</tbody>
</table>

**AG’s timetable**

<table>
<thead>
<tr>
<th>Mon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>11y/Fr2 (L2)</td>
</tr>
<tr>
<td>7A/Sc (AG), (S9)</td>
</tr>
</tbody>
</table>
Underline Main Class Teacher:

If using the bracket as a means of differentiating the main class teacher from the support staff, then it will fall down if both have been in the plan from the start. This setting provides an alternative method which will work in either situation. The graphic displayed below shows the same arrangement of AG giving support for SA.

There are circumstances in which a class may be shared (split) between two or more teachers at different periods. The graphic displayed below shows 7B/En split between BPE and JA, with BPE identified as the main teacher.

Year timetable – BPE underlined as the main teacher

Year timetable JA not underlined

Staff members may or may not find this differentiation helpful, depending on their concept of the main class teacher in SIMS.
Omit Key Attribute:

This setting enables filtering out what might be regarded on certain timetables as redundant information. For example, in the all staff timetable it is not helpful for the same staff codes to be contained in every cell. The graphic displayed below shows both versions of the timetable cells.

![All Staff](image)

Check box selected

Check box deselected

Show One Class Only (but Indicate Clashes)

There are times when a particular teacher may have deliberately been given two classes at the same period. It is not uncommon for a teacher to merge a year 12 class and year 13 class and to teach them both at the same period. It might also be that a particular support teacher may have been given two classes to support at the same period, dividing their time between the two. With arrangements like this the printing issue is one of clarity versus space. The two possibilities are shown in the following graphics displayed below, in which AG has been added to 7A/Sc and 7B/Sc at the same period.

![Teacher: AG : Mr A Gray](image)

Check box deselected – both classes visible at the appropriate period, but at other periods lots of space.

Check box selected – less space but less information provided.
Right Align Row Headers
When this check box is selected, (as displayed in the preceding example) the period headers move across to the timetable grid, as shown in the graphic displayed below.

<table>
<thead>
<tr>
<th></th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11y/Fr2 (L2)</td>
<td>7x/Ma3 DM,(M2)</td>
<td>9Y3/Fr (L2)</td>
<td>[PPA]</td>
<td>9X3/Fr (L2)</td>
</tr>
<tr>
<td>2</td>
<td>7A/Sc SA,(S9)</td>
<td>11y/Fr2 (L2)</td>
<td>[PPA]</td>
<td>8x/Fr3 (L2)</td>
<td>11y/Fr2 (L2)</td>
</tr>
<tr>
<td></td>
<td>7B/Sc LC,(S6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Transpose Orientation
This has the same effect as using the yin yang in which orientation of the axes is reversed. The existence of this setting enables the staff member to decide what the default orientation should be.

Centre Page Title, Underline Title and Repeat Title on Each Page
These three settings affect the title of the timetable printout and are self-explanatory. If the centre page title check box is deselected the title justifies to the left.

Use Header Cell Frames and Centre Column Headers

<table>
<thead>
<tr>
<th></th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10y/Sc2 S1</td>
<td>9y/Sc1 S1</td>
<td>11y/Sc2 S1</td>
<td>12A/Bi1 S1</td>
<td>12A/Bi1 S1</td>
</tr>
<tr>
<td>2</td>
<td>[PPA]</td>
<td>9y/Sc1 S1</td>
<td>11y/Sc2 S1</td>
<td>12A/Bi1 S1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The preceding example illustrates the situation with both settings selected. Frames are drawn round the days and periods and the days are centred. If deciding not to centre the days, then they justify to the left of the appropriate cell.
Display Period Breaks

If this setting is checked then the gaps between cells which correspond to period or day breaks will be filled with different shades of grey with solid black being used for the day break. The graphic displayed below shows part of a year/band timetable with a soft break after period two and a medium break after four.

Indicate Locked Classes

It is sometimes appropriate to indicate on a timetable which classes are locked, for example, during the construction phase. For public consumption it is unlikely that locks would mean anything. If this setting is selected then locks are indicated by underlined bold text on the class name, as shown in the graphic displayed below.

Single Line Display

This controls whether or not the resources (teacher or room) are placed on the same line as the class name.
Facilities
A three way choice is presented as to whether or not facility codes should appear on the timetable; Hide Facilities, Show Facilities and Show Selected.

In the preceding graphic, codes HU and AR represent facilities. When facilities are defined in T6 there is an option to select a check box relating to timetable display.

Only those facilities with the Show in Timetable Displays check box selected will be displayed when selecting the print setting Show Selected. The staff member has control over how many facilities, if any, should be included on the printout.

Colours
A four way choice is provided as to whether or not colour should be used on the printout. The possibilities are:

- No Colour – colour is not used on the timetable
- Display Block Colours – use the appropriate colour for the background of cells that belong to a block which has a colour defined in the curriculum plan
  The colour is defined by right-clicking the block in the model and selecting set colour from the available menu.

- Display Site Colours – when defining multiple sites for rooms (Plan | Sites), it is now possible to identify a colour for each site.
This can then be used when viewing timetables (when roomed) as a help to detecting changes of site. The graphic displayed below illustrates site colour being used on an individual teacher timetable.

Periods where no room is timetabled have no background colour. Classes in room PF are on a different site to the other classes and the cell background is different. In this example there are changes of site during the day, but only where there is a break in between (after period two and four).

- Highlight Facility Use – this works in conjunction with the previous setting in that, if facilities are not included, then there is nothing to colour.

The preceding graphic illustrates the grey shading on cells in which a facility is in use.

The timetable printing configuration settings are stored in the SPL file. Having spent a considerable amount of time experimenting with settings, delegates will no doubt want to use them with other SPL files, for example, next year's timetable. If, for example you are working on a SPL file that does not contain the print configuration settings, but you know that they do, selecting **Tools | Import Timetable Printing Settings T6** prompts you to browse to another SPL file (but not to load the file). When the file is specified a confirmation message is displayed, as shown in the graphic below.

It is possible to batch print individual staff and room timetables, as opposed to printing them one by one. We will first change to a different set of data.

15. Select **Load** followed by **Load new file**. Select **Load Local Dataset**. From the **2014** folder select **T6(10)**, and click on the **Finish** button.
16. Select **Timetable | Batch Printing | Staff** from the menu.

The **Print Multiple Teacher Timetables** display enables the manual selection of any number of individuals. The **Subjects** button enables automatic selection of those who teach a particular subject or range of subjects.

17. Click on the **Subjects** button and then the **Department** button, and select **Ma**. Click the **OK** button to confirm your selection.
The subjects defined in Plan | Subjects, belonging to the Department Ma are selected in yellow.

In this instance just two subjects are automatically selected. It is possible to add to this selection either by manually selecting individual subjects, or using the Department button again.

18. Confirm the current selection by clicking on the OK button.
Those staff who teach either or both of the subjects Ma and St are listed. It is possible to further add to this list by individually selecting those on the left or to remove individuals from the right.

19. Confirm the current selection by clicking the **OK** button.

You are directed to the print configuration screen. The timetables are displayed vertically one above the other.

The routine for Batch Printing room timetables is virtually identical.
Chapter Introduction

The tools and reports menus are vital to the correct operation of the software and delegates are advised to become familiar with the contents of this chapter.

Step by Step 68 – Tools

1. Select Tools.

Allocate Rooms, Partial Schedule Trials, Combing Chart and Clash Table have already been detailed earlier in the guide, but the others are given coverage in this step by step. Ignore the item Remove Partnership GUIDs.
2. Select **Tools | Set SQL Link Path**.

A single path is required in order for Nova-T6 to be able to communicate with SIMS (SQL). It points on the local machine to the folder containing the file command pulsar.exe and will almost certainly be the SIMS folder.

Non-SIMS users of Nova-T6 would not enter a path.

3. Click the **Cancel** button to close the display and select **Tools | Remove SQL Links**.

In Chapter 13 links between Nova-T6 and SQL are given explanation. If a timetable has been exported from Nova-T6 to SQL, the curriculum plan in Nova-T6 will be aware of it and will hold information that will enable it to re-link on subsequent occasions. There may be times when it is required to remove this internal information, possibly because of the transfer of parts of a curriculum plan from one academic year to the next. Staff members would not want a developing timetable to contain link information that is irrelevant because it has not been exported to SQL.

4. Click the **No** button in response to the prompt regarding removal of links.

5. Select **Tools | Set Subject for Statistical Returns**.

Certain routines within SIMS carry out analysis based on activity codes. These codes are prescribed and will not necessarily match those used on the timetable. For example, Further Maths may be coded as Fm on the timetable, but for the purposes of the statistical returns should be regarded as MA.

The Census in England does not now require this information, whereas the statutory return for Northern Ireland does.
SIMS uses levels and subjects to create courses. Level GCSEF (GCSE Full) + subject En = GCSE English Full course. Once courses have been created it is, for example, possible in SIMS Assessment to filter a list of classes to those of a particular course. Once students are placed in the classes they are deemed to be studying the course attached to the class of which they are a member. This is not strictly accurate as a class could comprise students studying a variety of courses. Course Manager in SIMS enables fine tuning of the relationship between students and courses. The accuracy of this data is vital to the census return, particularly in the case of Post-16 students, and funding can be lost if the information in T6 is wrong.

Whilst for the moment, we can content ourselves with assigning levels to classes in the T6 curriculum plan, we do need to investigate the links that exist between SIMS and T6 with regard to levels.
7. Click the **Configure** button.

The message displayed in the preceding graphic is generated when the **Configure** button is selected, but also when the **Refresh Base Data** routine has not been run since the Summer 2013 release (version 7.152).

8. Select the **OK** button in the prompt, and note the resulting information in the **Configure** window.

9. Close both this window and the **Assign Levels** window by clicking the **OK** button in each.
10. Run the routine **Data | Refresh Base Data from SQL**, accepting ‘today’ as the date, **blacka** as the **User Name** and **abcd** as the **Password**.

11. Select **Next** until the levels page is obtained, and scroll down until some with yellow backgrounds appear.

The levels that have already been used in the T6 file are flagged as **In Use**, and highlighted in yellow. It is possible to import additional levels into T6 by clicking on the appropriate row. Successive clicks toggle between **Not Reqd** and **IMPORT**.
If a whole series of levels is required, such as all the BTEC full course, then this group may be selected from the drop down list and the tick button selected.

12. Replicate the situation shown in the preceding graphic. Click on the Finish button and confirm the Refresh process by clicking the OK button.

13. Return to Tools | Assign Levels.
The new levels have been imported, and the previously existing levels now carry a description. The Show/Hide buttons to the right can be used to toggle between a tick and a cross (active or inactive) for levels. It is not possible to use them to bring in additional levels. This requires reusing the refresh routine. Only those levels that are active (carrying at tick) are contained in the T6 drop down list when assigning levels to classes.

14. Manually, turn **BTAw1** to inactive.

15. Close the window by clicking on the **OK** button.

16. Select year **12** in the left column, block **12g College** in the middle and class **12W/Wx2** in the third column.

Note that the list of items in the drop down list does not include **BTAw1**.

It is possible to assign levels to a whole year group, to a block or to an individual class. The level **Gen** should be used as a miscellaneous level only as a last resort. Any classes with the level **Unknown** should be changed, otherwise the timetable cannot be exported to SQL. Most schools use the level KS3 for the majority of classes in years 7 to 9.

**NOTE:** The curriculum and timetable cannot be exported from T6 to SQL while any class is missing a recognised level.
When the timetable is exported to SQL the levels information is used by Course Manager in SIMS. Course Manager enables the fine tuning of course information for individual students.

One possible source of error concerning levels is the use of the transfer curriculum routine described in book A. After carrying out a transfer in which, for example, blocks from the current year 12 are to be moved into next year’s 13, staff members are strongly advised to check the levels of the year 13 classes. It is better to spend a little time checking levels rather than to risk sending into SQL year 13 classes still marked as GCEAS, when they should have been changed to GCEA.

For further information on Course Manager please see the manual Managing Courses in SIMS which is accessed via the documentation button on the SIMS home page and by selecting other handbooks.

The item Import Timetable Printing Settings, enables print configurations carried out in a different T6 file to be imported into the current one. Selecting this item directs you to the T6 file that contains the required settings.

17. Select **Change Password**.

![Change Password](image)

In the training dataset the password is abcd. Delegates are requested not to change this on the training machines.

In the school situation the default password is system and this should be changed at the earliest opportunity.

18. Click the **Cancel** button to close the **Change Password** screen.

19. Select **Tools | Auto Save Options**.

![Auto Save](image)
T6 regularly carries out an auto-save to protect against the inadvertent loss of data. This is in addition to the files created manually via the Save button. There are two processes for auto saving. One is more regular than the other. The preceding graphic shows that the more regular save (creating files starting with %) is to be carried out every three minutes, whereas the less regular one (creating files starting with $) should be every 30 minutes. The bottom two figures indicate that the software should create five such files before starting to reuse the names; overwriting the file. The reason for the twin process is that there is a better guarantee that a file will exist with the required data if one process covers 15 (5 x 3) minutes of work and the other 2.5 (5 x 0.5) hours. All four figures in auto save options may be changed as required.

20. Click the Cancel button to close the Auto Save Options screen, then select Tools | Ordering.

The teachers may be ordered By Code, By Surname or By Department. The most popular one is likely to be By Surname.

The subjects may be ordered By Code, By Description or By Department.

These settings are used for all listings within T6.

21. Click the Cancel button to close the Ordering screen, then select Tools | Define Period Times.
The preceding graphic shows the display at a stage when data has not previously been entered. Your own version should already contain times. One of the reports available in T6 uses this data to calculate the length of each period and from that, it works out how many hours each person spends teaching (see later).

Although there are text boxes for entering Duration and Break, most staff members prefer just to enter the times by typing them in. The display defaults to Mon and once the times are complete the Copy button enables all the times to be copied into the remaining days. It is then possible to change day and edit any that should be different. It would be possible for each day to carry completely different times.

It is sometimes necessary to inform SIMS of a change of cycle and/or period lengths. The first stage is to ensure that the data on this screen is correct. For more information on sending a new cycle, see later.

**Step by Step 69 – Reports**

1. Load the file T6(11) from the 2014 folder. Select Reports from the menu bar.

![Image](image_url)

The first item All Plan reports automatically runs the following reports in this order:

- Unbuilt blocks
- Block verification
- Staff verification
- Unstaffed classes
- Cluster/Session Mismatches
- Facility Allocations
- Duplicate Curriculum Names.

We will deal with each report in turn in the order as presented on the menu. More information on certain items is contained in the Appendix, in which case this is indicated.
2. Read through the following brief explanations and try out various reports as you work through the list. Some reports may not return any data.

- block verification carries out on all blocks the same check as that provided by the Verify button on the sessions process. Blocks failing this test cannot be built and will also be listed under unbuilt blocks.
- staff verification seeks to discover whether any teachers cannot be scheduled because there are not sufficient suitable spaces on the timetable to accommodate their sessions. The sessions of any teacher failing this check cannot be fully scheduled and should be investigated before continuing.
- facility allocations gives a list of all clusters with facilities assigned to them.
- block comments provides a means of printing all comments that have been attached to blocks on the model screen.
- unbuilt blocks lists those blocks whose build is incomplete (those with sessions still in the pending sessions section).
- unstaffed clusters detects whether any classes for any sessions have not been allocated a teacher.
- class summary produces a list of classes for one or more year groups. For each class it is possible to include any or all of block, level, SQL code and PX GUID (only required by those using Partnership Xchange).
- cluster/session mismatches draws attention to cluster sessions whose attributes do not correspond exactly to the assignments displayed on the classes screen. This points to the intentions entered on the classes screen that might not have been correctly interpreted on the sessions screen.
- scheduled clashes identifies those sessions on the timetable in which certain rules have been broken. Double-booking a teacher or a band will be interpreted as a clash.
- duplicate class names diagnoses potential problems that could be encountered when transferring data between T4/T6/SQL. The solution is usually to change the identifier on the block or the group name on the group.

For more information on how systematic class names are produced please see the Appendix.

- period types lists those blocks which have been assigned one of the twelve period types
- teacher hours indicates for each teacher how much time is spent in the classroom (as opposed to in school). This is compared with the number of hours as defined in the Empl column of Plan | Teacher Departments. To be strictly correct, ‘spent in the classroom’ is taken to mean anything on the teacher’s timetable and this would include NCCs. Blanks are not counted towards the total. The calculation takes into account the varying lengths of periods as defined in Tools | Define Period Times. As it is common for most NCCs to be added to the timetable once it is ‘complete’, this report could be used during the construction of a timetable to give a more accurate indication of loading than simply the number of periods. For further information please see Appendix D.
- curriculum analysis provides eleven sets of lists:
  - list classes for a year and list classes for a subject(s). A single year may be selected or all years. Either a single subject or any combination of subjects may be selected. This report is particularly useful in collecting requests for assigning teachers to classes or for checking that the correct ones have actually been assigned. A further filter gives a choice between all classes or just those not fully scheduled.
Curriculum Management Using Nova-T6

Tools and Reports

- teacher info - periods allocated displays for each teacher the number periods in each year group on the plan. Three further columns give the desired loading, the total number of periods allocated and the number of periods scheduled (if any) including NCCs.

- teacher info - periods scheduled reads the timetable and for each teacher, reports the number of periods scheduled for each year group. Four further columns give the number of NCCs, frees, total of periods taught and finally, blanks.

- teacher departments.

<table>
<thead>
<tr>
<th>Miss B Patel</th>
<th>Ci</th>
<th>2</th>
<th>Cg</th>
<th>1</th>
<th>Hi</th>
<th>5</th>
<th>Re</th>
<th>8</th>
<th>++</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>9</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

This is more complex. Firstly, the subjects listed are those entered in Plan | Teacher Departments. Any subject identified as ++ indicates a discrepancy between the loading as specified in teacher departments and the actual number of periods allocated in the plan. Secondly, the figure to the right of the subject code is that also entered in teacher departments. In the preceding example Miss Patel has eight periods entered for Re in teacher departments. Thirdly, the figure under the subject code identifies for how many periods this subject has been allocated in the plan (classes). Fourthly, the remaining figure indicates the number of periods actually scheduled. Before the timetable is constructed all of these will be zero.

- teacher use analyses the scheduling of staff across the timetable. It is possible to include or exclude Alternative Curriculum activities, unscheduled lessons, NCCs and Usage %. Individual subjects may also be included or excluded. For further information please see Appendix D.

- room use is identical to ‘teacher use’.

- subject staffing is similar to the teacher departments report, supplying the same staffing information for one or more specified subjects.

- curriculum summary shows for each block in the Model the subjects contained in it together with the number of periods specified. For further information please see Appendix D.

- list class timetables enables the selection of year groups and subjects and indicates for each class, the period, the teacher and the room. For further information please see Appendix D.

- contact ratio analysis and curriculum plan and the timetable with respect to the amount of contact and non-contact time for the staff in each department. For further information please see Appendix D.

- timetable comparison enables two datasets (previously loaded into memory) to be compared. Only differences are listed. This is a convenient way of being able to print the changes that have been made on the timetable since the last update to staff

- extra attributes lists teachers and rooms that have been added to the timetable after scheduling (they are not specified in the plan). This means that the majority of the rooming will fall into this category together with support staff and teaching assistants.
The preceding graphic illustrates the filters set to display only teachers. Mr Gray has been added in a support capacity to class 7/x/Ma3. Whether or not Mr Gray is actually a teacher (or another category of assignable person) is up to the school to decide, but he exists in Plan | Teachers.

It is possible to remove these additional teachers and rooms from the timetable by selecting the appropriate remove cell. This places a tick in the cell and on confirming with the OK button, the timetable will be edited.

It is possible in T6 to add extra staff and rooms to NCCs once they have been scheduled. Hence the two-way filter between classes and non-class codes.

- multiple timetable conflicts is only relevant when a school is using the SIMS multiple timetable functionality, that enables different cycle sizes for different parts of a school to be sent to a single SIMS database. No further details are given during this course.
This chapter contains:

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Chapter Introduction

This chapter deals with the mechanisms for successfully transferring the T6 timetable into SQL (SIMS).

Step by Step 70 – Links Between T6 and SQL (SIMS) Part 1

It is possible to import the basedata codes (subjects, rooms and teachers) held in SQL into T6. This procedure has already been described in Step by Step 2. The data can be refreshed in T6 at any time. Staff members would want to be clear of the possible consequences if some of the codes in T6 have been edited in the meantime.

It is possible to add, edit and delete codes in T6 without going via an SQL refresh. It is important that the room and teacher codes match when sending the curriculum and timetable from T6 to SQL.

One other piece of information that should match in T6 and SQL before a successful export of the plan and timetable is the cycle size. The most likely time for a school to change its cycle size is between academic years. The timetable for next year may have a different cycle size than the timetable for this year.

The act of sending the plan and timetable to SQL does not set up a new cycle in SQL. This requires a separate procedure and it should be run before sending the new timetable to SQL.

If this step is not deployed, then when an export of the timetable is attempted the software prompts accordingly and the attempt is aborted.

Let us assume that up to now the cycle size in SQL has been five days x eight periods. The new timetable uses five days x (five teaching periods plus one registration period).

Timetablers will send this 25+5 period cycle and specify that it should start on the first (student) working day of the new academic year as defined in SIMS (in our case 04/09/2014).
1. Reload the T6 (11) file. Check via the Cycle process that it contains the registration period.

2. From the menu bar in T6 select Data | Export Timetable Cycle to SQL.

3. Note the prompt and confirm by clicking the Yes button.

The quantity, type and labels of the days and periods are automatically read from the cycle process of T6. Clarification may be required regarding the Start Time and End Time of each period. These times (while not being used by T6) are read by other areas of functionality in SIMS, such as Cover 7 and lesson monitor. It is quite a common occurrence that when a school changes the timings of the school day, nobody corrects the times on SIMS. The way to correct this is to send a new timetable cycle from T6 with the correct times defined. The number of days and periods may be the same as in previous years, in which case the send just corrects the times.

The start time and end time may simply be overtyped for each period on Monday, then the Copy button is used to replicate the times throughout the other days of the cycle. It is possible to overtype any of these times for any day so that odd times may be defined. There is no mechanism here for identifying which periods may not be in use on particular days. For the purposes of sending the new cycle this is not important.

If following the definition of the first period, a time in minutes is entered into the duration and break boxes, clicking the Propagate Times button will work through the other periods of the day using the same length of period and break. The fixed week cycle check box should only be deselected when the number of days in the cycle does not match the number of days in session, for example, a six day cycle being delivered Monday to Friday.
NOTE: It is very important to ensure that the Start Date is set correctly and the routine defaults to not specifying any date. This would normally be the first (student) working day of the new academic year.

Fill in the data for Monday, as shown in the graphic displayed below, (or modify existing data slightly) and click the Copy button to copy the other days. Also use the same Cycle Name and Start Date as shown in the following graphic.

4. Click the OK button to confirm the display and log onto the SQL database. Use blacka as the User Name, abcd as the Password.

In the graphic the X denotes a non-teaching period. This flag may be set or removed by double-clicking in the appropriate type cell.

It is not necessary to carry out this process before every academic year, but only when changes are necessary.

Step by Step 71 – Links Between T6 and SQL (SIMS) Part 2

Once SQL and T6 are in step with regards to the timetable cycle, it is then possible to export the curriculum plan and the scheduling (of the timetable) from T6 to SQL. This is a necessary process for a number of reasons. Firstly, it is not possible to place students in classes if the export has not yet taken place. This is because until an export has been carried out, there are no classes to place students in. Secondly, the student and staff timetables also become available to SIMS in Lesson Monitor and Cover.

The process of placing students into classes in SIMS is time-consuming and to facilitate this process, the timetabler may well judge that the curriculum and timetable should be sent to SQL long before the timetable is completed. It is common for the transfer to be first carried out when a range of classes have no teacher and are not even scheduled and roomed. This is acceptable because the process of placing the students into classes is dependent only on there being a correct plan in T6. When the timetable is complete the transfer will be repeated. This is what happens all through the academic year; the timetable changes and needs to be transferred again.
It is the job of the curriculum matching wizard to manage the export to SQL. It is called every
time an export is requested and oversees the process.

1. Select **Data | Export Curriculum and Timetable to SQL**.
2. Ensure that the dates as shown in the graphic displayed below, are the ones entered
into the **Start Date** and **End Date** boxes, then click the **OK** button to confirm.

![Export Curriculum and Timetable to SQL](image)

If any classes in the curriculum plan have not been given levels, (for example, GCSEF,
GCEAS, GCEA) a warning is displayed as shown in the graphic below.

![Warning](image)

This prevents an export to SQL.

If there are any duplicate systematic names in the curriculum plan then these will also
prevent the export and a suitable prompt will be generated.

The purpose of the **Export Band Structure Only** check box is to enable just band structures
in the plan to be sent to SQL, leaving out all the curriculum blocks. This is useful when
preparing SQL for use with the options software. If this check box is selected then a suitable
explanatory prompt is generated.

Whenever the timetable is sent to SQL it is necessary to specify between what dates the
timetable is valid. For those working on next year’s timetable this date range will be the
working academic year. Once the academic year has started, the most likely date range for
exporting modifications to the timetable will be from now until the end of the year. Selecting
the **Today** check box automatically places the current system date as the start date. This is
not what is required at the moment.

3. Log onto the SQL database using **blacka** as the **User Name** and **abcd** as the **Password**.
The first screen of the wizard carries useful information and occasionally warnings.

Sometimes the warnings are described as critical, in which case the export cannot take place. Others are polite reminders that will not prevent the submission (export), but do need consideration.

One critical error that is not likely to be encountered on the present course is the non-matching of the cycle sizes between SQL and T6. Had the 25+5 period cycle not been exported, the wizard would have refused to continue if the existing cycle in SQL was different.

There are however, some unrecognised teacher codes. In T6 Mr Andrews has been given the code DA and has been placed in the plan and on the timetable. There is no such code in SQL attached to anyone entitled to be placed on the timetable. It might mean that the manage classroom staff routine has not been correctly used to define either the existence of DA or the dates between which he is entitled to be on the timetable. The other problem is teacher DNE. This is Mr Newton. He does exist in Manage Classroom Staff but with the code DN. It would be a simple matter to change either SQL or T6 so that the codes correspond. If nothing is done to correct these mismatches and the export is completed, any class in T6 having either DA or DNE will have no teacher in SQL.

It is however possible to add teachers to T6 who are actually non-teaching assistants. These can be placed on the timetable to produce more accurate timetable printouts. In SIMS the menu route **Focus | Person | Manage Classroom Staff** enables the definition of those people who should be accepted onto the timetable in SQL.

4. Do not make any attempt to correct the mismatch of codes.
5. Click the **Next** button.

The wizard lists the structures being sent to SQL. In the preceding graphic, a few structures are already linked. This would indicate a prior export from T6 to SQL, possibly in connection with the use of Options. If this is the case, the likely linked items will probably be base bands x and y in year 10.

6. Select the top type of structure (**Scheme Bands**) and note that the details are displayed to the right.

It is not necessary to look at each kind of structure. Note that year 10 is missing from the list of Unlinked Structures.
7. Click the **Next** button to move to what is known as the **Merge Curriculum** screen.

![Merge Curriculum Screen](image)

This page of the wizard displays the curriculum plan in T6 (on the left) and in SQL (on the right). Although this is the first time delegates have carried out an export into SQL using the date range 04/09/2014 to 22/07/2015, a previous send has been carried out to facilitate the use of Options. The orange colour and exclamation marks single out those structures in T6 that do not have comparable structures in SQL (new ones). The teachers (in the plan in T6) are displayed in brackets alongside each cluster (class).

8. Click the **Next** button.

![Verify Changes](image)

The wizard reports the names of all the new structures that will be created in SQL if the export is completed.

The preceding graphic shows the names of the groups that will be created.
On subsequent transfers data may appear in either or both of the additions or the modifications sections, depending on what changes have been made to the curriculum plan in T6 since the previous export.

9. Click the **Next** button, view the final page, then click the **Submit** button.

It usually takes only a couple of minutes for the full export to take place.

10. Click the **Finished** button when the button appears.

At this point any unrecognised codes are again displayed as a reminder that some data will not have been exported.

In the graphic displayed below, teachers DA and DNE are not recognised and have been removed from the classes. They have not been removed from the timetable in T6.

A backup of the T6 data is saved to the document management server (DMS) and T6 is then saved under the same name as previously, so that SQL link information is now contained in the data.

11. Without making any change to T6 re-run the export and note that all structures are linked and that there are no new ones.
12. On the **Merge Curriculum** screen change the **by State** to **All Items**. Browse to the **7xy PSE** block on both sides and note that in T6 (left) the teacher of group 7F is shown as **DNE**? while in SQL (right) there is no teacher, as shown in the graphic displayed below. This is to be expected, given the problem with DNE.

![Graphic of Merge Curriculum screen](image)

13. Click the **Cancel** button to cancel the export.

There is another screen in the export routines that most schools will (should) never see, as shown in the graphic displayed below.

![Graphic of Dual Submission screen](image)
It is triggered when the T6 data about to be submitted contains no reference to a year group that has previously been exported. In the preceding example there is no year 11 in the T6 data but SQL already contains year 11 classes.

This is an unlikely scenario in most schools unless there has been a mistake. For some schools it may be intentional. Consider a school made up of two smaller units, such as a prep school catering for years 1 to 6 and a senior school catering for years 7 to 13. The school may well wish to produce one timetable covering all year groups, but it may be the responsibility of different individuals to produce a timetable for each unit. In this scenario two different spl files are created, one for each unit but the cycles for each of the units would have to be similar. The timetablers would have to be careful of blanks if staff were shared between the two units. It could well be the case that a particular individual, at a certain period, would have a class in one T6 file and a blank in the other. The dual submission routine would not give the class precedence over the blank, so the advice is to remove such blanks before submission.

**Step by Step 72 – Links Between T6 and SQL (SIMS) Part 3**

The question now arises as to what the procedure should be for editing the timetable during the course of an academic year and ensuring that SQL is up to date with the changes.

For the moment let us assume that no changes are made in T6 in advance of the date that they are intended to take effect. This is an assumption and staff members are not constrained to work in this way, but it is helpful first for us to consider a simple approach in which any change made in T6 takes effect now and lasts for the rest of the year.

There are changes that can be made in T6 that affect the curriculum plan and the timetable, other changes just affect the timetable.

For example, two teachers swapping rooms is unlikely to affect the plan because most rooming is carried out after the timetable has been constructed and therefore, does not feature in the plan. Adding an additional teacher to a class on the timetable (Step by Step 64) will not affect the plan. Even rescheduling classes to other periods in the cycle does not impact on the plan (if the same resources are attached to the classes).

Take the rotation of teachers around a block. This is sometimes called a carousel but involves staff rotating rather than students. By this, staff members mean that the students are still in the same group (for example, maths set 1) but the group is to be taught by a different teacher, possibly from now until the end of the year. This requires an edit both to the curriculum plan and to the timetable.

The following step by step represents one way of achieving such an edit.

1. Select the **Block** button and browse to 8x Maths.
It is evident that FB is assigned to 8x/Ma1, DM to 8x/Ma2 and LV to 8x/Ma3. These classes are scheduled and roomed, although the rooming is not displayed on the block screen.

An example scenario is that FB should move to Ma2, DM to Ma3 and LV to Ma1 and it is now October 2013:

2. Right-click any of the four cells under the heading 8x/Ma1 and select **Edit Staffing** from the menu displayed. Also click the **Show Grid** button at the bottom.

   ![Diagram](image)

   It is evident that FB is assigned to four single period sessions.

3. Click the **Remove** button.

   ![Diagram](image)
FB is removed from all four sessions because the Upd column contained a tick in each of the four rows. It would have been possible to remove FB from just some of the sessions by adjusting the number of ticks.

4. Without closing any windows right-click any cell in the build, under the heading 8x/Ma2 and select Edit Staffing.

![Scheduling software interface](image)

DM is already assigned to this class and FB is now free to take over.

5. Select FB in the left-hand staff list, then click the Replace button.

![Staffing list and grid](image)

6. Right-click any cell in the build for 8x/Ma3 and use Replace to assign DM to this class.
7. Right-click any cell in the build for 8x/Ma1 and use either Assign or Replace to place LV with this class.

8. Click the Close button to close the Edit Staffing screen.

For the purposes of this export, let us assume that the date from which the carousel is due to take effect is Monday 20th October 2014.

9. From the menu select Data | Export Curriculum and Timetable to SQL.

10. Make this date the Start Date and leave the End Date as before.

11. Click the OK button to confirm the date range and log onto the SQL database using the User Name blacka and the Password abcd.
12. Move through the wizard noting that nothing is unlinked and stop on the **Merge Curriculum** screen. Change the **by State** to **Changes only**. On the left (T6 plan) select 8x/Ma1, right-click and select **Locate Linked Item** from the menu displayed.

The C’s identify changed items and the plan on the right still holds the teachers as previously sent to SQL, whereas on the left is the current (and edited) T6 plan.

13. Click the **Next** button and note the summary regarding changed teachers.

14. Continue through with the wizard, click the **Submit** button to submit the data and confirm any prompts by clicking the **OK** button. Click the **Finished** button.

The SQL database now holds two timetables: one from 04/09/2014 to 19/10/2014 and the other from 20/10/2014 to 22/07/2015. They are identical in all respects except for the teachers scheduled for block 8x Maths. This variation in SQL can be viewed in T6.

15. Select **Data | Get Timetable Variation** and supply the date range **04/09/2014** to **22/07/2015**. Log on using the **User Name** blacka and **Password** abcd.
The timetable variation table shows the changes of staffing to the three classes.

<table>
<thead>
<tr>
<th>Period</th>
<th>Class</th>
<th>Staff</th>
<th>Room</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon 1</td>
<td>Bv/Ma1</td>
<td>FB</td>
<td>M3</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LV</td>
<td>M3</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td>Mon 1</td>
<td>Bv/Ma2</td>
<td>DM</td>
<td>M2</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FB</td>
<td>M2</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td>Mon 1</td>
<td>Bv/Ma3</td>
<td>LV</td>
<td>M1</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DM</td>
<td>M1</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td>Wed 1</td>
<td>Bv/Ma1</td>
<td>FB</td>
<td>M3</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LV</td>
<td>M3</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td>Wed 1</td>
<td>Bv/Ma2</td>
<td>DM</td>
<td>M2</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FB</td>
<td>M2</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td>Wed 1</td>
<td>Bv/Ma3</td>
<td>LV</td>
<td>M1</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DM</td>
<td>M1</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td>Thu 4</td>
<td>Bv/Ma1</td>
<td>FB</td>
<td>M3</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LV</td>
<td>M3</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td>Thu 4</td>
<td>Bv/Ma2</td>
<td>DM</td>
<td>M2</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FB</td>
<td>M2</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td>Thu 4</td>
<td>Bv/Ma3</td>
<td>LV</td>
<td>M1</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DM</td>
<td>M1</td>
<td>04 Sep</td>
<td>19 Oct</td>
</tr>
</tbody>
</table>
This chapter contains:

Further Information on Block Scheduling Colours

Consider a situation in which the timetable has been completed except for two linear blocks in year 7. The whole school closes early on Friday, so period Fri 5 is not used. To identify this on the cycle, a Set Exclusive Period type has been placed at Fri 5. The block process is about to be used to schedule one of the remaining linear blocks, each of which contain three groups with a range of nine subjects for fifteen periods in total.

On opening up the process the situation is as shown in the graphic displayed below.
The meaning of the colours on the timetable is described in the graphic displayed below.

**Light Green** - At this Period, three of the block sessions in the Build grid could fit without displacing anything already on the timetable. Select this period to find out which three.

**Dark Green** - At this Period, 14 of the block sessions in the Build grid could be scheduled here however existing sessions from other blocks would be displaced.

**Red** - At this period, no block sessions in the build grid may be scheduled here because (in this instance) a Set Exclusive period type has been placed on the cycle.

**Orange** – The selected block session could fit here but would displace three existing blocks, at least one of which is locked.

**Red** – The selected block session cannot fit here under any circumstances.

**Light Green** – The selected block session could fit here but would displace three existing blocks.

**White** – The selected block session could fit here without causing any disruption to the existing timetable.

On the previous page it can be seen that row [3] in the build grid it also contains a number three without brackets. This indicates that there are three periods in the cycle where this block session of 7A/Hi, 7B/Hi and 7C/Fr may be placed. Selecting the blue header results in a colour change in the timetable display, as shown in the graphic displayed below.
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Export to 3rd Parties

T6 is equipped with a third party export routine which corresponds to a similar routine in T4. The routine is accessed via the menu route Data | Export to Third Party Systems. When the menu route is selected a dialog is displayed.

The location in which the export files should be placed may be specified. Specify whether to use comma separated or XML format; specify the number of characters.

If the current data does not contain 4-character room codes then it is possible to select the appropriate check box. If T6 already uses some 4-character room codes, then the check box is already selected and is inactive. If the cycle is greater than 99 then the check box is inactive. As T6 never uses more than 3-character staff codes, this check box is always active.
Editing the Timetable in SIMS

Introduction

In SIMS two items on the menu route Focus | School | Academic Structure (Edit Lesson Staff and Rooms and Rotate Timetabled Staff/Rooms) enable the timetable to be changed in SIMS. The former is useful when a single teacher or room need to be changed at a particular period. The latter enables some or all of the teachers or rooms in a block to be rotated at all periods relevant to the block.

Before looking in detail at the two routines, delegates should explore some background. Two very different kinds of rotation or carousel are operated in most schools.

For example, a year 9 Technology block in which the classes are named 9x/Dt1, 9x/Ft1, 9x/Tx1 and 9x/Rm1. It is the intention that throughout the year, all students should study each of the four different subjects changing every nine weeks or so. In this instance the same teacher is likely to continue to teach the same subject all year, but the students will move from class to class to gain experience in each subject. In this type of carousel it is the students who are moving group, not the teachers. This being the case, the rotation has nothing to do with the timetable and no work is required in terms of timetable editing. The rotation should be carried out using the Student Rotation Carousel Wizard available under the Allocate button when viewing the tick grid of a scheme in Academic Management.

Another example is of a year 9 Science block in which the classes are called 9x/Sc1 to 9x/Sc4. The intention is that by the end of the year each group of students should have been taught by all four teachers. In this case, it is not the students who are changing group, but the teachers (along with their rooms). While it would still be possible to carry out this arrangement as described in the previous example, it would mean that students starting in set one might move to set four, then two and finally set three. Most schools would not be in favour of a rotation in which the students change sets. What is needed is an edit to the timetable. No change should be made to student assignments, but from time to time the timetable is edited so that the teachers are placed on a different class. This second type of rotation has in the past only been possible in T6 and required a subsequent send of the curriculum and timetable to SQL.

One of the effects of the workforce reform agreement has been the increased use of administrative staff in undertaking tasks previously carried out by teachers and managers. It is now relatively common for administrative staff to be asked to perform these rotations. The second type of rotation requires detailed knowledge of T6. There is an alternative method, but schools need to be aware that there are consequences associated with using the SIMS routines. Firstly, within SIMS a discrepancy will be created between the curriculum plan and the actual timetable and secondly, a discrepancy will be created between the data held in T6 and SIMS. For a more detailed explanation, see the following text.

As an example of a timetable change is as of today, a change has been made to the timetable in SIMS using the new rotation functionality. In this scenario be aware that:

1. in SIMS the timetable will be correct, but the curriculum plan will be unchanged. So the main class teacher (displayed in brackets when viewing the tick grid of a scheme) will not be changed. This discrepancy will not crash SIMS, but is certainly likely to confuse the staff. Using the bracketed teacher as a pointer to whose set it is will be flawed. It is not uncommon for students to be placed in classes based on who the teacher is, rather than what the class name is. There is currently no mechanism within SIMS for updating the main class teacher. Any correction has to come via an export from T6 and assumes that the Nova curriculum plan carries the correct teacher.
2. After performing the rotation change in SIMS, those using T6 as the maintenance engine will encounter a different issue. SIMS now carries a different timetable from the one held in T6, for at least part of the year. There is no automatic mechanism for correcting this discrepancy. If using a construction dataset, T6 is subsequently used to make other (possibly more substantial) changes and the curriculum and timetable is exported to SQL. The original changes carried out in SIMS (if they lie within the start date and end date of the send) will be overwritten without warning by the timetable coming from T6.

3. To prevent this inadvertent loss of information it is necessary within T6 to use the concept of a maintenance dataset. In the circumstance being described (one rotation), if a maintenance dataset is created, the part of the curriculum and timetable affected by the rotation in SIMS will in T6 carry a temporal lock, because (for at least part of the date range) T6 and SIMS do not correspond. The lock prevents any change to the affected structure, both in the plan and timetable. Information is available as to the nature of the discrepancy and the dates involved. While it is true to say that other changes can be made in T6 and the subsequent export will not overwrite the changes made in SIMS. There is no way in T6 to edit the locked parts (except by releasing the locks). If staff members assume that over a period of time further changes are likely to be made in SIMS (perhaps affecting other structures), then the number of locks being created in T6 is likely to increase over time, therefore making the timetable more difficult to edit in T6.

4. If in the T6 maintenance dataset particular locks are released, then the restriction on the editing of those structures is removed. A subsequent export will cause the change carried out in SIMS to be overwritten because it is the lock that is the safeguard.

For more information on maintenance datasets please see chapter 16 of the T6 handbook.

When it comes to the type and regularity of timetable changes, no two schools are alike. Some require very few (if any) staff carousels while others have multiple subject areas requiring regular carousels, but not all with the same frequency. Some schools are constantly amending the rooming and staffing while for others the timetable is virtually static throughout the academic year. Some changes are known well in advance while others are carried out when required. Some changes last from today to the end of the academic year. Others apply only between certain dates. It is therefore very difficult to give generic advice as to the best method for carrying out these changes.

Given this variation, what practical advice may be offered as to how or even whether to make use of the new SIMS timetable edit routines?

a) If it is likely that all timetable changes for the whole academic year may be carried out in SIMS, then SIMS becomes the sole maintenance engine for the timetable and not Nova. There may be unforeseen changes to teaching personnel making it necessary to reschedule part of the timetable. Moving classes from one period to another cannot be carried out in SIMS and requires the use of T6. This being the case, it is probably inevitable that some changes in SIMS will be lost.

b) In SIMS avoid making changes that take effect in the future. For example, if the teachers attached to a block are to be rotated four times in the academic year, enter each rotation when necessary and do not put all four in at the beginning of the year. This means that if changes are lost they are kept to a minimum.

c) If possible try to synchronise carousels in different subject areas rather than create overlapping changes.

d) If T6 (as well as SIMS) is being used to maintain the timetable throughout the year then maintenance datasets should be created and close consideration should be given to the information displayed alongside any locks.

e) If the timetabler as well as some of the administrative staff are involved in making changes to the timetable, then they would be well advised to work in very close liaison to ensure that work is neither overwritten nor unnecessarily duplicated.
The following case studies are explanations only.

**Case Study 1 – Changing Room to a Free Room for Just One Period**

1. From the SIMS menu select **Focus | School | Academic Structure | Edit Lesson Staff and Rooms**.

   ![SIMS screenshot](image1)

   An example scenario is that teacher CH who teaches 10T/Te1 for a double and a single period wants to move from room T1 to T4 (a free room) as of today, but just for the single period:

2. In the **Find Lesson** screen, filter by subject **Te** and **Curriculum Year 10**. Click the **Search** button.

   ![Find Lesson screenshot](image2)

3. Select the lesson for **Mon5** and either double-click or click the **Open** button. Select the **EDR** of the **Working Academic Year** restricted from **today**.

   ![Select Effective Date Range screenshot](image3)
4. Confirm by clicking the **OK** button.

If it is the intention that this class should move from T1 into T4 then two processes are required; remove T1 and add T4.

5. Select the orange timeline for the room and click the **Remove** button, noting that the change is applied only within the EDR.

6. Select **Add Room**, type **T** in the Room filter, then click the **Search** button.

Information is provided about the occupancy of the room for the periods either side of the relevant period. This is a useful aid to making consistent arrangements for multiple period sessions.
7. Confirm by clicking the **OK** button.

The process of changing a teacher for a period is identical except that the appropriate button is **Add Staff**.

**Case Study 2 – Swapping Rooms with Another Class for One Period**

At the last period of the week KB teaches 7D/Ar in room A3 and SW teaches 9x/Ar1 in room A1. If they were to swap rooms just for this period:

1. Type **Ar** in the **Subject** field and **Year 9** from the **NC Year** drop-down list. Click the **Search** button.

Four matches are found because in year 9 two classes of Art are timetabled, each for two periods.

2. Select the correct row for the last period of the week (Fri5), then click the **Open** button (or double-click).

3. Accept as the **EDR** the **Working Academic Year** restricted from today.

It is now required to place the class in room A3, as currently it is occupied by a year 7 class.
4. Click the **Add Room** button, deselect the **Free** check box, then click the **Search** button.

It is evident that A3 is presently occupied by 7D/Ar.

5. Select **A3** and confirm the selection by clicking the **OK** button.

The routine spots the conflict and presents the three possible alternatives (apart from using **Cancel**).

6. Change the selection to swap by selecting the **Swap** radio button, then confirm by clicking the **OK** button.

The exchange of rooms is complete, but it would be interesting to look at the result from the perspective of the other class; 7D/Ar at Fri5.
7. Click the **Save** button to save the change then click the **Browse** button. Change the **NC Year** filter to **Curriculum Year 7** and click the **Search** button. Select the lesson for **7D/Ar** noting that rooms **A3** and **A1** are both identified.

<table>
<thead>
<tr>
<th>Class</th>
<th>Period</th>
<th>Staff</th>
<th>Rooms</th>
<th>NC Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>7B/Av</td>
<td>Tue 2</td>
<td>Mrs K. Butters</td>
<td>A3</td>
<td>04/09/2007 - 23/07/2008</td>
</tr>
<tr>
<td>7C/Av</td>
<td>Mon 3</td>
<td>Mrs M. Williams</td>
<td>DRS</td>
<td>04/09/2007 - 23/07/2008</td>
</tr>
<tr>
<td>7D/Av</td>
<td>Fri 3</td>
<td>Mrs M. Williams</td>
<td>A3</td>
<td>04/09/2007 - 23/07/2008</td>
</tr>
</tbody>
</table>

This does not necessarily imply that both rooms are used simultaneously, but that between the validity ranges of 04/09/2007 and 23/07/2008, both rooms are used.

8. Either double-click **7D/Ar** for **Fri5** or select the row and click the **Open** button.

It is evident that this class has moved in the opposite direction to class 9x/Ar1. The process of exchanging teachers for one period is virtually identical.

**Case Study 3 – Rotating Teachers and Rooms Around in a Block**

The routine most useful for carrying out rotations is found by selecting **Focus | School | Academic Structure | Rotate Timetabled Staff/Rooms**. There are certain circumstances in which it is not possible for the routine to perform the change.
The blocks shown above represent a small section of a year 10 curriculum plan in T6. The maths blocks, one for each band, have a degree of linearity that is not present in the others. Set one in each block is sharing time between maths and statistics, whereas the other two sets have only maths. For this reason the rotation routine cannot include set one in the process. It would be possible to rotate sets two and three, but not one. In the other blocks shown in the preceding graphic (option A and PE) any combination of rotation is possible within each block.

At this point we will look further at the limitation on the maths blocks.

1. Select **Focus | School | Academic Structure | Rotate Timetabled Staff/Rooms.** Click the magnifying glass alongside **Selected Block.** Select **Curriculum Year 10** from the **Year Taught In** drop-down list and click the **Search** button.

![Select Curriculum Scheme](image)

The 10x Mathematics block identifies the destination groups as class 10x/Ma2, 10x/Ma3 and group 10x/Ma1. The word, **Group,** is a hint that linearity is involved.

2. Ensure that block **10x Mathematics** is selected, then confirm by clicking the **OK** button.

As expected, 10x/Ma1 is not listed for inclusion in the rotation. Delegates will now move to a block in which all groups may be included.
3. Click the **Selected Block** magnifying glass icon, select **10x English**, then click the **OK** button to confirm.

![Screenshot of Nova-T6 CMNT6B-4-05](image)

All three classes are included for possible rotation and by default all resources are selected. It is possible to remove all ticks for either rooms or staff by deselecting the All Staff and All Rooms check boxes at the top right. Individual resources may be deselected by selecting the appropriate box.

The instructions at the bottom of the screen provide a useful summary of the necessary steps.

An example scenario is that all three teachers are to move to a fresh class, taking their room with them. JA is to move to 10x/Ma3, ML to 10x/Ma1 and JS to 10x/Ma2. As there are only three classes and that it is possible to move resources either up or down the list, there is no necessity to rearrange the order of the classes in the list to achieve this particular objective. A simple rotate staff/rooms up would suffice. To better illustrate the functionality delegates will reorder and move resources down.

4. Select class **10x/Ma3** and click the **Move Class Up** button.
5. Click the **Rotate Staff/Rooms Down** button.

![Diagram showing classes with checkboxes for staff and rooms]

The correct staff and rooms are now associated with the correct classes.

6. Click the **Apply** button, followed by the **Close** button.

To see the changes, look at one of the classes in detail.

7. Select **Focus | School | Academic Structure | Edit Lesson Staff and Rooms**.

8. Type **10x/En1** (or **10x/en1**) in the **Class** filter and click the **Search** button. Open the first entry.

![Resource Usage table showing timelines for different staff and rooms]

The change of resources is made clear by the timelines.
This chapter contains:

**Partnership XChange**

Schools are increasingly participating in collaborative ventures with other schools, colleges and places of employment. This means that the timetables of various establishments need to be brought into line. As students from a particular establishment will be attending lessons at a different establishment, there will be a requirement to transfer attendance and assessment data between establishments. There is also the need to make certain basic details (such as emergency contact details) available (read-only) to schools that receive students.

Partnership Xchange is a CAPITA product that facilitates the transfer of this data between establishments. Nova-T6 contains functionality to assist in the production of a partnership wide timetable and the main route to this functionality is via the **Data** menu. No further explanation of this additional functionality is contained in this guide. For further information refer to Unit 19 of the Nova-T6 manual.
Appendix D

This chapter contains:

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Reports

Further information on the following reports is contained in this appendix:

- Teacher Hours
- Teacher Use
- Curriculum Summary
- List Class Timetables
- Contact Ratio.

Teacher Hours

If, for example, the following information has been entered into Plan | Teacher Departments and Tools | Define Period Times:

The data is as contained in the file T6(11).

Teachers AA and AG have been defined as being employed for 19 hours. The timetable periods are all one hour long, with the exception of Reg which is ten minutes.

Teacher AA is a form tutor and her timetable carries non class codes at the Reg periods to indicate that fact. She teaches 15 periods and also has 2 PPA periods on the timetable.

Teacher AG is not a form tutor, teaches 19 periods and has 2 PPA periods on the timetable.

The Teacher Hours report interprets this, as shown in the graphic displayed below.
This report does not differentiate between different NCCs and counts them all towards the total, with the exception of Blanks which are not counted.

AA teaches 15 hours, plus 2 hours PPA, plus 50 minutes form time. This totals 17:50 as indicated. As this is below the expected 19 hours of Employment, the report indicates that 1:10 is remaining, and the current total on the timetable is 93% of the ‘target’.

AG teaches 19 hours in the classroom plus 2 PPA hours. The total is 21 hours and this exceeds the ‘target’ of 19 hours, being 110%.

This report is of limited use when NCCs have been added to the timetable, but will be more helpful during the construction phase when it is likely that NCCs are not yet present on the timetable.

**Teacher Use**

This routine analyses the scheduling of staff across the timetable. When the routine is invoked, a dialog is displayed allowing various parameters to be configured.

The report generated will consist of a row of statistics for each member of staff.

The report analyses all the lessons to which the teacher has been assigned and counts the total number of periods for each subject.

NB Lessons counted include both those on the plan and those to which the teacher has been allocated on the timetable.

The report also counts the actual number of periods on the timetable at which lessons, NCCs or Blanking codes are scheduled.

In particular, the following may be specified:

a) The Years to be considered (this will include Derived Years).

b) Only lessons that belong to a selected year will be counted.
c) Whether Alternative Curriculum should be considered (it will be treated as a “pseudo-year”).

d) The Subjects to be considered

e) Only lessons for classes that belong to a selected subject will be counted.

f) Whether the statistics should be aggregated by Department

g) For example, whether the totals for Ph, Ch, Bi should be summed and displayed as part of Sc (Science).

h) Whether Unscheduled Lessons should be counted in the statistics

i) If this is ticked, then the periods for planned lessons that haven’t been built or scheduled will be counted too. But of course these won’t appear in the “period” calculations, so selecting this option may lead to a more discrepancies between the total number of lessons and total number of periods for each teacher.

j) Whether NCC statistics should be included.

k) If this is ticked, two extra columns will be shown, detailing the number of PPA periods and the number of other NCC periods scheduled on the timetable. NB unscheduled NCCs will never be counted.

l) Whether the overall Usage should be calculated.

m) If this is ticked, then the report calculates the actual amount of time that the teacher is used (either for teaching lessons or for NCCs) and displays this as a proportion (percentage) of the total time that the teacher is employed (for example, blanked off periods are discounted).

---

### Teacher Use

**Years Analyzed:** 7, 8, 9, 10, 11, 12, 13 (and Alternative Curriculum)

**Subjects Analyzed:** All

**Unscheduled lessons included in statistics**

<table>
<thead>
<tr>
<th>Staff</th>
<th>Blank</th>
<th>PPA</th>
<th>NCC</th>
<th>Lessons</th>
<th>Use %</th>
<th>Bk</th>
<th>Be</th>
<th>Ca</th>
<th>Di</th>
<th>En</th>
<th>Eu</th>
<th>Ma</th>
<th>Ml</th>
<th>De</th>
<th>Ps</th>
<th>So</th>
<th>Te</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>2</td>
<td>6</td>
<td>19</td>
<td>15/14</td>
<td>60.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

---

a) The description at the top of the report summarises the Years and Subjects analysed.

b) Most of the columns show a dash, rather than the digit “0” if the relevant value is zero. This is to aid readability.

c) The total number of scheduled Non-class-Codes is split to two figures: those marked as PPA and any other “general” NCC activities.
d) The Lessons column sometimes shows two figures. The first of these is the total number of lessons, which may include planned lessons that are not yet scheduled (according to the specified parameter). The second is the actual number of periods at which the teacher is scheduled to be teaching. Often these two numbers are the same and in such cases only one number will be displayed. There are two reasons why the second number may be different (smaller) than the first. The first is that there are some unscheduled lessons in the plan. The second is that two or more lessons for the teacher are scheduled at the same period, for example, as a clash.

e) The “Use%” figure is calculated from the actual lengths of the periods at which the teacher has been scheduled. This is required because NCCs are sometimes used for Registration periods which are substantially shorter than normal teaching periods. So if no period times have been entered then this figure will be meaningless. The “Use%” figure represents the ratio of the total time across all the scheduled periods to the total time of all periods at which the teacher does not have a Blanking code.

Curriculum Summary

The possible choice of parameters is similar to those in the previous report. The graphics displayed below shows data for Year 10, all subjects, and by Subject.
List Class Timetables

The dialogue for selecting parameters is similar to those already explained. The graphic displayed below shows a typical report for year 10.
For each class the report indicates the number of periods, the actual periods, the teacher and the room.

**Contact Ratio**

This is a sophisticated report, and full details are given in the following paragraphs.

This routine analyses the curriculum plan and timetable with respect to the amount of contact and non-contact time for the staff in each department.

When the routine is invoked, a dialog is displayed allowing various parameters to be configured.

The report generated will consist of a row of statistics, either for each subject, the subjects in each department, or a single aggregated row for the whole school.

It is possible to choose whether to analyse the teaching time by periods allocated on the plan, or by the scheduled minutes on the timetable.
If Curriculum analysis is chosen, this will not take into account any teaching assistants allocated directly on the timetable. It will also not recognise any variation on the lengths of periods.

Timetable analysis is therefore more accurate, but does rely on the scheduling being complete.

It is also possible to mark one or more teachers to be excluded from the calculations. It is common to exclude the Head teacher, and other members of the Senior Management Team whose primary responsibilities are not those of teaching.

The following may be specified:

a) the Years to be considered (this will include Derived Years).
b) only classes that belong to a selected year will be included.
c) whether Alternative Curriculum should be considered (it will be treated as a "pseudo-year").
d) the Subjects to be considered:
e) only classes which belong to a selected subject will be included.
f) whether the statistics should be aggregated by Department
g) for example, whether the totals for Ph, Ch, Bi should be summed and displayed as part of Sc (Science).
h) whether the analysis should consider the Curriculum plan or the actual Timetable.
i) which staff members should be excluded from the calculations.

Part time teachers and Full-Time Equivalence

Initially, all staff are characterised as "Full-time" or "Part-time", according to whether or not each teacher has a blanking code at a period which is active, for example, has not been totally blanked off with Year blanking codes. The teacher’s FTE (full-time equivalent) is calculated as the ratio of non-blank periods to the size of the cycle.

---

NOTE: If the school day is staggered according to year group (different year groups are taught at different periods) during a “long” day, then the Contact Ratio results will need to be interpreted with caution as the proportion of the working day that a teacher might be expected to be in front of a class would be reduced.

---

Curriculum Units

Next the size of a Curriculum Unit is calculated. Different timetables have different numbers of periods in the cycle, and these periods vary in length both from school to school, and sometimes even within the cycle of a single school. The "Curriculum Unit" is a way to standardise across this variation. Traditionally a Curriculum Unit represents a number of periods approximating to 1/9th of a normal working week.

So to calculate a Curriculum Unit in terms of periods, start by taking the number of periods in the cycle and divide by 9. If you are working with a normal 5 day week, then that's all there is to it. Otherwise this figure needs to be scaled down.

For example if you have a 10-day cycle, then the figure needs to be divided by 2. In general the figure is multiplied by 5, and divided by the number of days in the cycle.

The whole formula taken together is: \[
\text{periods in the cycle} \times \frac{5}{9} \text{ days in the cycle}
\]

So for example, given a typical 5 day, 40 period cycle,
Curriculum Unit = \(\frac{40 \times 5}{9} = 40/9 = 4.44\).

For a two week cycle with 7 periods per day, except for Friday on which the day ends after period 6,

\[
\text{Curriculum Unit} = \frac{68 \times 5}{10 \times 9} = \frac{34}{9} = 3.78
\]

If the Timetable is being analysed, so that the calculations are carried out in minutes, then the basic formula is the same, except that in place of "periods in the cycle", the total number of minutes throughout the cycle (the sum of the lengths of the periods) is used instead.

**Establishment**

The "Establishment" figure for a subject represents the number of dedicated teachers who teach that subject on the timetable. When calculating this total, part-timers are only counted as a fraction (their FTE value.) However, if a teacher (whether full-time or part-time) teaches more than one subject then their contribution to the Establishment value is shared out proportionately. These fractional contributions to each subject add up to the teachers FTE.

The calculations are slightly different according to whether the analysis is by "Curriculum" or "Timetable"

**By Curriculum**

For example, if teacher AB teaches four days out of five (FTE = 0.8) and is allocated to teach 10 periods of Maths and 15 of Science, then the calculation would goes like this:

Maths: 10 periods out of 25 (Total Load), Estab. = FTE (0.8) * 10/25 = 0.32

Science: 15 periods out of 25 (Total Load), Estab. = FTE (0.8) * 15/25 = 0.48

**NOTE:** The allocations counted are tallied on a per-session basis, so that the totals for the 'Total Load' used in this case is the sum of the allocations of Teachers to Clusters (on the “Classes” screen).

**By Timetable**

The Establishment calculation doesn't take frees or NCCs into account, it just looks at the lessons.

For example, if teacher AB teaches four days out of five (FTE = 0.8) and teaches 10 lessons of Maths and 15 of Science, then (assuming all lessons are 50 mins long) the calculation goes like this:

Maths: 10x50 = 500 minutes out of 25x50 = 1250 minutes, Estab. = FTE (0.8) * 500/1250 = 0.32

Science: 15x50 = 750 minutes out of 25x50 = 1250 minutes, Estab. = FTE (0.8) * 750/1250 = 0.48

But if the lessons varied in length, the calculation would take this into account, and so the 'By Timetable' and 'By Curriculum' results could differ.

The Establishment figure can be thought of as the total teaching “effort” within a subject but disregarding “time away from the classroom”. The sum over all the subjects represents the total number of staff (taking FTE values into account) for example, the total teaching effort across the school.

**Contact Ratio**

The Establishment figure disregards non-teaching activities. So maybe it would be best described as representing total potential teaching ‘effort’. The Contact ratio calculation reveals how much of that potential effort is actually used.
To do this, the average number of taught lessons per period is calculated, by counting the taught lessons across the cycle and dividing by the cycle size.

**NOTE:** If a lesson has two teachers, this counts twice (as double the teaching effort is expended.)

The average number of taught lessons per period is divided by the ‘Establishment’ figure (the total potential teaching effort) to give the proportion of this potential effort which is realised. Finally the figure is multiplied by 100 for display purposes.

**NOTE:** If the analysis is performed ‘by Curriculum’ then it is possible that a Contact Ratio exceeding 100 is displayed. This can occur if the total allocation for a member of staff exceeds the cycle size. Clearly this is an impossible requirement unless the lessons are going to be doubled up. In effect, with a value over 100, the Contact Ratio calculation is reporting that the department is staffed by teachers with a negative amount of free time.

**Summary of Calculations and Columns Displayed**

For the classes within each subject/department the following calculations are performed:

- **FTIME** = Total number of Full-Time staff allocated to these classes.
- **PTIME** = Total number of Part-Time staff allocated to these classes.
- **INDEPT** = Periods/Minutes of teaching time allocated to these classes with staff who are members of the relevant department. If multiple staff are allocated to a lesson, the allocations are totalled separately. If subjects are aggregated (e.g. into departments), then any departmental allocation within the aggregated set of subjects will count.
- **OUTDEPT** = Periods/Minutes of teaching time allocated to these classes with staff who are not members of the relevant department.
- **NOTTAUGHT** = Periods/Minutes of lesson time to which no member of staff has been assigned.
- **CURRUNITS** = the sum of INDEPT and OUTDEPT, divided by the size of a Curriculum Unit.
- **ESTAB** = for each instance of a teacher in front of a class, the proportion this represents of the teacher’s total teaching activity is assessed by dividing the length of the lesson by the teacher’s total teaching time across the cycle (in periods or minutes as appropriate). This figure is then multiplied by the teacher’s FTE and added to the total.

\[
\text{ESTAB} = \text{SUM} \left\{ \frac{\text{LessonLength} \times \text{FTE}}{\text{TotalTeachingTime}} \right\}
\]
CRATIO = the sum of INDEPT and OUTDEPT is divided by the Cycle Size (in periods or minutes as appropriate. Then this is divided by the ESTAB figure (and multiplied by 100) to give the so-called Contact Ratio.

\[
\text{CRATIO} = \frac{100 \times (\text{INDEPT} + \text{OUTDEPT})}{\text{CYCLESIZE} \times \text{ESTAB}}
\]

The figures calculated above are displayed in separate columns as shown in the graphic displayed below.

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<th>Subject</th>
<th>Full-time Staff</th>
<th>Full-time Dept</th>
<th>In Outside Dept</th>
<th>Part-time Taught</th>
<th>Curr. Units</th>
<th>Estab. Units</th>
<th>Contact Ratio</th>
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Appendix E

This chapter contains:

Chapter Introduction
Timetabling with NOVA T6 - Summary of Process

- in T6 clicking the Help button brings up the online handbook at the appropriate place
- F1 brings up helpful hints for every process
- contact your SIMS support provider.

<table>
<thead>
<tr>
<th>Task</th>
<th>Process Button</th>
<th>Help</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting Started</td>
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</tr>
<tr>
<td>1</td>
<td>Transfer the curriculum</td>
<td>Menu: Data</td>
<td>Transfer Curriculum</td>
</tr>
<tr>
<td>2</td>
<td>Set cycle</td>
<td>Cycle</td>
<td>Check the cycle process to see if it matches the requirements for the new timetable. Add/remove periods as appropriate. Ensure non-teaching periods are correctly flagged.</td>
</tr>
<tr>
<td>3</td>
<td>Set breaks</td>
<td>Cycle</td>
<td>Right-click a blue period number to set breaks, for example, soft for morning, medium for lunch.</td>
</tr>
<tr>
<td>4</td>
<td>Period types</td>
<td>Cycle</td>
<td>Right-click a period to set period types.</td>
</tr>
<tr>
<td>5</td>
<td>Period length</td>
<td>Cycle</td>
<td>Fill in average period length in minutes. Cycle equivalence = 2 if two week cycle.</td>
</tr>
<tr>
<td>Task</td>
<td>Process Button</td>
<td>Help</td>
<td>Notes</td>
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<tr>
<td>6</td>
<td>Teachers</td>
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<td>Your personnel manager will need to manage them in personnel as usual. Remember the manage classroom staff routine.</td>
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<td>Needed for rooming.</td>
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<td>Needed for both auto and manual rooming.</td>
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<td>Pupil numbers</td>
<td>Model</td>
<td>Fill in pupil numbers for next year. To help users see class size.</td>
</tr>
<tr>
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<td>Model</td>
<td>Get the bands correct before starting, including sub-bands if required.</td>
</tr>
<tr>
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<td>Model</td>
<td>Create the blocks. (Identifier rules.)</td>
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<td>Notes</td>
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</tr>
<tr>
<td>Analysis – Staff Costing</td>
<td></td>
<td>Radio button on Class Periods to check staffing. Analysis</td>
<td>Subject Mode Faculty to group by faculty.</td>
</tr>
<tr>
<td>Assigning Staff, Rooms and Facilities</td>
<td></td>
<td>Radio button on all Years, select Department and under attributes select the Staff radio button and select the Department check box. Drag the teachers onto the classes.</td>
<td></td>
</tr>
<tr>
<td>17 Assigning teachers to classes</td>
<td>Classes</td>
<td>Radio button on all Years, select Department and under Attributes select radio button for Rooms. Drag the rooms onto the classes only where essential.</td>
<td></td>
</tr>
<tr>
<td>18 Assigning rooms to classes</td>
<td>Classes</td>
<td>Plan</td>
<td>Facilities</td>
</tr>
<tr>
<td>19 Assigning facilities</td>
<td>Classes</td>
<td>Define multiple period sessions (doubles, trebles). This may be carried out either manually or globally – Sessions</td>
<td>Set Session Lengths.</td>
</tr>
<tr>
<td>Session Lengths</td>
<td></td>
<td>Manually in the Sessions screen.</td>
<td></td>
</tr>
<tr>
<td>Task</td>
<td>Process Button</td>
<td>Help</td>
<td>Notes</td>
</tr>
<tr>
<td>------</td>
<td>----------------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>22</td>
<td>Defining block shape globally</td>
<td>Auto</td>
<td>Globally Auto</td>
</tr>
<tr>
<td>23</td>
<td>Staffing check</td>
<td>Reports</td>
<td>Reports</td>
</tr>
</tbody>
</table>

Part time teachers and non-class codes (NCC) needed before scheduling

| 24   | Part time teachers | NCC | Select blank. Add blocks. Assign and schedule. Lock if needed. Make use of user type periods or bar periods explicitly if flexibility is required. | Define only those that are required to affect the scheduling of classes, otherwise leave until the timetable is complete. |
| 25   | Other non-class codes | NCC | Add other non class codes. Add blocks, assign and schedule. |

Building Blocks

| 26   | Manually building blocks | Blocks | Browse to the block. Manually drag the classes into the build or click the Build button. |
| 27   | Globally building blocks | Auto | Browse to your block. Manually drag the classes into the build or click the build button. Reports - unbuilt blocks. |

Partial Scheduling trials

| 28   | Testing things can fit | Auto | Tools | Partial Schedule trial tests for each department and each year group. |

Scheduling

<p>| 29   | Scheduling | Bands | Use this process for blocks – fixed points first. |
| 30   | Scheduling | Auto | Use this process for auto scheduling. |
| 31   | Scheduling | Blocks | Use this screen for help with linear groups either manual or automatic. Remember group mode (F8). |</p>
<table>
<thead>
<tr>
<th>Task</th>
<th>Process Button</th>
<th>Help</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>32</strong></td>
<td><strong>Locking individual sessions</strong></td>
<td>Blocks or bands</td>
<td>Lock fixed points by right-click.</td>
</tr>
<tr>
<td><strong>33</strong></td>
<td><strong>Locking globally</strong></td>
<td>Auto</td>
<td>Auto</td>
</tr>
<tr>
<td><strong>34</strong></td>
<td><strong>Optimising</strong></td>
<td>Optimise</td>
<td>Use this process to check distribution and improve.</td>
</tr>
<tr>
<td><strong>Rooming</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>35</strong></td>
<td><strong>Choosing auto room requirements</strong></td>
<td>Any</td>
<td>Plan</td>
</tr>
<tr>
<td><strong>36</strong></td>
<td><strong>Auto allocate rooms</strong></td>
<td>Any</td>
<td>Tools</td>
</tr>
<tr>
<td><strong>37</strong></td>
<td><strong>Manually allocating rooms</strong></td>
<td>Any</td>
<td>Timetable</td>
</tr>
<tr>
<td><strong>Non class codes after scheduling</strong></td>
<td></td>
<td></td>
<td>Filter uses data from plan/subject rooms.</td>
</tr>
<tr>
<td><strong>38</strong></td>
<td><strong>Adding PPA time</strong></td>
<td>NCC</td>
<td>Non-class codes/+ to add PPA code and select. Remember F8.</td>
</tr>
<tr>
<td><strong>39</strong></td>
<td><strong>Adding other NC codes</strong></td>
<td>NCC</td>
<td></td>
</tr>
<tr>
<td><strong>Non teaching Periods</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>40</strong></td>
<td><strong>Add registration periods</strong></td>
<td>Cycle</td>
<td>Right-click Periods to add registration periods.</td>
</tr>
<tr>
<td><strong>41</strong></td>
<td><strong>Set registration periods as non teaching</strong></td>
<td>Cycle</td>
<td>Right-click Registration Periods and set as non-teaching.</td>
</tr>
<tr>
<td><strong>Sending New cycle to SIMS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>42</strong></td>
<td><strong>Sending the changed cycle</strong></td>
<td>Any</td>
<td>Data</td>
</tr>
<tr>
<td><strong>Sending Timetable to SIMS</strong></td>
<td></td>
<td></td>
<td>Only if changed since last year.</td>
</tr>
<tr>
<td><strong>43</strong></td>
<td><strong>Check duplicate class names</strong></td>
<td>Any</td>
<td>Reports</td>
</tr>
<tr>
<td>Task</td>
<td>Process Button</td>
<td>Help</td>
<td>Notes</td>
</tr>
<tr>
<td>----------</td>
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<td>-------------------------------------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>44</td>
<td>Unbuilt Blocks.</td>
<td>Any</td>
<td>Reports</td>
</tr>
<tr>
<td>45</td>
<td>Send timetable to SQL.</td>
<td>Any</td>
<td>Data</td>
</tr>
<tr>
<td>Academic Management – Students in sets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Allocate students to sets in SIMS.</td>
<td></td>
<td>Carried out in SIMS Academic Management.</td>
</tr>
<tr>
<td>47</td>
<td>Print student and staff timetables.</td>
<td></td>
<td>Print timetables in T6 or SIMS.</td>
</tr>
</tbody>
</table>