

Automated Scheduling Using **CELCAT Timetabler 7**





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With 30 years of timetabling experience and over 400 customer sites around the world, CELCAT is uniquely placed to deliver pioneering advancements in automated scheduling.

Timetabler Automation is the latest addition to the *Timetabler 7* software suite, enhancing an already accomplished portfolio with fully automated scheduling.



In a Nutshell

Timetabler Automation helps you to express and record the rules needed to shape your ideal timetable, and then - carefully balancing your constraints, goals and preferences – crafts a solution for you!

Revolutionary

What makes *Timetabler* Automation so special? Whether you're new to automated scheduling or have already dabbled, think about what you really want from such a system and then compare your requirements with the following wish-list.

- **An easy way to specify the scheduling rules.** “I don't want to enter lists of mysterious codes or have to learn a special language just to tell the software what our goals and constraints are!”
- **The freedom to use automation in tandem with manual timetabling.** “I want to be able to manually timetable some events with the confidence that automated scheduling won't mess with them”
- **Sufficient complexity to cater for all of my rules.** “We have some pretty tight constraints and unusual goals, so the scheduling engine would need to accommodate some esoteric stuff!”
- **To be able to model the timetable with reduced (or increased) resources.** “This would allow us to determine the feasibility of running our existing courses in reduced teaching space”
- **A clear picture of any relationships and dependencies between resources and events.** “When I set up my rules I'd like to be able to visualise the maps that I create”
- **To be able to preview the automatically generated timetable before I make a decision to accept it.** “Ideally, I'd like to examine the automated results in a familiar timetable grid and then be able to tweak the events before I approve the solution”



- **To be free to distribute the tasks across the institution.** “For example, I'd like most departments to be responsible for entering rules that govern their teaching activities. Some schools should actually auto-generate their own timetables and contribute them to the master schedule, but for other schools we'll handle the whole process centrally. Flexibility is the name of the game!”
- **A clever scheduling algorithm.** “I want to be sure that the software is smart enough to cope with our demands. We don't want to be left with the most challenging parts to do manually!”
- **Support and consultancy.** “It's all very well having an automated scheduling system available to us, but we'd also like to call on expertise in what is a totally new arena”
- **To be in control.** “I don't want to feel that we're at the mercy of an unmanageable system - the automated scheduling process should respond in a predictable and repeatable way”

Timetabler Automation delivers a 'no compromise' approach in all of the above areas. Read further as we explain some of the secrets.

Real-World Success

CELCAT is a keen participant in the research community that flourishes around the field of automated scheduling. Our considerable experience in this sphere, coupled with focussed customer collaboration helps us to transfer the theory into practice; it has given us the tools and methods we need to achieve consistent success in a 'real-world' setting.

Simplifying Rules

For users of automated scheduling systems the main concern is always about formulating and recording the rules that regulate the scheduling engine (e.g. limiting staff availability, specifying room suitability, etc). Indeed, for some the complexity of this operation is enough to justify a

purely manual approach to timetabling. However, *Timetabler* Automation simplifies this task using a ground-breaking concept called *templates*.

In Automation, a template is simply a skeletal representation of a planned teaching activity. A template has many of the attributes of a teaching event, such as room, teacher, time, weeks, etc, but you don't have to specify all of the values. Instead you can leave them under complete control of the scheduling system or selectively apply rules to govern the software's decision-making process.

So a template is just like a normal event in your timetable but its elements can enjoy a degree of freedom. And it's this latitude that Automation exploits in order to turn templates into tangible events and clash-free timetables.

Big savings arise from the ease with which templates can be generated, reused and copied. For example, it's possible to take an existing timetable – even if it is currently full of conflicts – convert it to templates and allow Automation to work its magic!

Over 160 different types of constraint can be employed when designing your templates and inter-resource relationships. Furthermore, the individual application of constraints can be weighted according to your requirements, allowing you to establish 'hard' rules that should never be broken and others that have less significance. All of this is accomplished using the familiar and well-liked *Timetabler* graphical user interface.

Flexible Implementation

CELCAT *Timetabler* has always supported the timetabling process in a devolved or centralised environment (or even a combination of both). The Automation component is just as flexible – it's been designed that way so you won't need to make any unpleasant compromises! This means, for example, that individual departments can input their own staff constraints, or even generate their own timetables, perhaps leaving some events to be roomed centrally. Alternatively, the timetabling team can take control of the whole process.

This unparalleled flexibility is a standard feature of the CELCAT Site Licence offering. We give you the options, and you make the choices to suit your way of working.

Curriculum and Resource Modelling

Imagine the freedom to model your timetable, experimenting with the rules, resources, and curriculum options to identify solutions that you never thought possible! *Timetabler* Automation gives you the tools needed to run these 'what-if' scenarios, analyse the results and understand the principal factors that drive a particular solution. Then tweak your rules and unleash the scheduling engine once more! And at any stage, if you like what you see then simply accept part or all of the solution into your timetable.

Interactive Timetabling

A good quality camera typically features automatic aperture sizing and focusing – functions that allow you to concentrate on composition and other more artistic considerations. But a professional photographer also values the camera's 'manual override', a mechanism that allows him to take control of some or all of the automated features. It's a similar story with automated scheduling - interactive timetabling, with its ability to override the scheduler's automatic functions, is seen by expert timetablers as a vital facility.

The good news is that all of *Timetabler's* interactive features are available to you in Automation, which means you can manually modify events using click-and-drag operations, perform comprehensive clash checking, invoke the timetabling Advisers and Wizards, etc. Manual and automated timetabling are seamlessly integrated in *Timetabler 7*.

So is it an interactive software package with powerful automated options, or an automated scheduler with impressive interactive functions? Whichever way you look at it, *Timetabler 7* blends the best of each approach.



The Schedulers' Choice



Address 21-23 Mercia Village
Torwood Close
Westwood Business Park
Coventry
CV4 8HX
United Kingdom

Telephone +44 (0)24 7646 9930
Fax +44 (0)24 7642 0994
Email info@celcat.com
Web www.celcat.com