
Enabling Business Managers to Automate Staff Scheduling for Improving Business Profitability

Summary

To compete in a global economy many businesses are operating 24/7 or extending the working day to deliver more products and services. At the same time staff desire more flexible working. Scheduling staff to meet business requirements has become a complex task. Staff scheduling is not an IT or HR problem, it is a business manager's problem. Furthermore, business managers who undertake this process manually will spend considerable time to deliver good schedules. This white paper describes how business goals are achieved when business managers are provided with the tools to deliver staff scheduling strategy. It describes how costs can be controlled and harmony in the workplace maintained.

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Published: June, 2008

Introduction – Business and Staff Scheduling

With around 60% of UK and US employees working shifts, flexible hours or part-time hours, staff scheduling has a major impact on company profitability. However when managers face the prospect of spending large amounts of time scheduling their staff manually, scheduling is often overlooked if not completely neglected. Recent trends for extended or 24-hour operations allied to increasing staff preference for flexible working means that companies which are unable to establish an efficient staff scheduling strategy are likely to suffer.

Flexible working is on the government agenda with a commitment to raising awareness of work life balance. Employees seek increased quality of life, and this may mean less time spent at work, with more time for other activities. For their part, businesses seek high employee productivity, reduced absenteeism and retention of talent. Underpinning all of these goals is the need to achieve profitability.

In previous times there were traditional office hours and shift work. Now there are annualized hours, consolidated hours, compressed work week, flexi-time, job share, part-time, split-working, nine-day fortnight, and the list continues to grow. So how do business managers make sense of all this in the day to day business routine?

Paper and pencil and spreadsheets are the most common methods for scheduling. They are the tools people are familiar with, can be readily accessed with little effort, and are totally flexible. They do however have two major drawbacks. First, staff scheduling involves highly repetitive tasks that are very time consuming to format and prepare. Second, they do not offer the comprehensive workflow that is needed in managing complexity for planning and publishing good schedules.

Manual methods also hinder the way business managers approach staff scheduling. For example, the way we think about the working week is not necessarily the best way to arrive at a good scheduling solution. That is why spreadsheet schedules are almost exclusively prepared in multiples of 7-day patterns. Consequently many managers are unaware of more efficient and effective patterns of work involving 4, 8, 9 or 16 day cycles. The first goal of staff scheduling is to both effectively *and* efficiently meet a business requirement and there may be many ways of achieving this. Business managers who can readily adopt a structured approach and put into operation variable staff schedules will be more profitable.

The benefits of a structured scheduling approach can be seen with teams as small as 7. The average manager typically has around 35 staff members to manage. Indeed managers with teams of greater than 50 are few. This is because large teams become unwieldy and are difficult to manage effectively.

The workflow requirements for good staff scheduling go well beyond what is achievable with paper and pencil or with spreadsheets. Using these methods, a conscientious manager is likely to spend one hour to schedule the shifts and days-off for a single staff member for a month. So scheduling a department of 40 people might take the same manager an entire week, with no time for other tasks.

There is a need therefore for a company to ensure business managers have access to the tools that enable them to adopt a structured approach to staff scheduling.

Staff Scheduling Workflow Is Important

Intellicate recognize that business managers need to deliver variable staff schedules over long time ranges. Schedule24™ provides the workflow for adopting a structured approach to staff scheduling. A major feature of automating the repetitive aspects of staff scheduling is the reduction in time required to produce good staff schedules.

Schedule24 provides the user with a heuristic scheduling environment (a method that often rapidly leads to a solution that is reasonably close to the best possible answer). This enables user experience and knowledge to influence the scheduling outcome. This can be contrasted with managing scheduling as an optimization problem. This requires the user to define what is feasible and what an optimum schedule is, usually by applying constraints. Except for the most trivial scheduling problem this process is more complicated than actually doing the scheduling. As a consequence, and despite the usage of the word *optimization* in marketing, this approach is fraught with rapidly diminishing returns and for most businesses often proves too expensive.

Many underestimate the complexity of staff scheduling. Schedule24 workflow helps the user avoid much of this complexity by using well defined stages for the scheduling process. Data input at any stage is integrated and managed throughout the overall scheduling process. Whether you are dealing with simple traditional office hours or more complex 24/7 shift combinations, the screen navigation and actions are the same.

Five stages or processes facilitate the scheduling task as follows:

- Adding and removing staff
- Designing and allocating staff to shift patterns and days-off
- Adding business information to a schedule
- Analyzing staff scheduling activity
- Printing and publishing email and web schedules

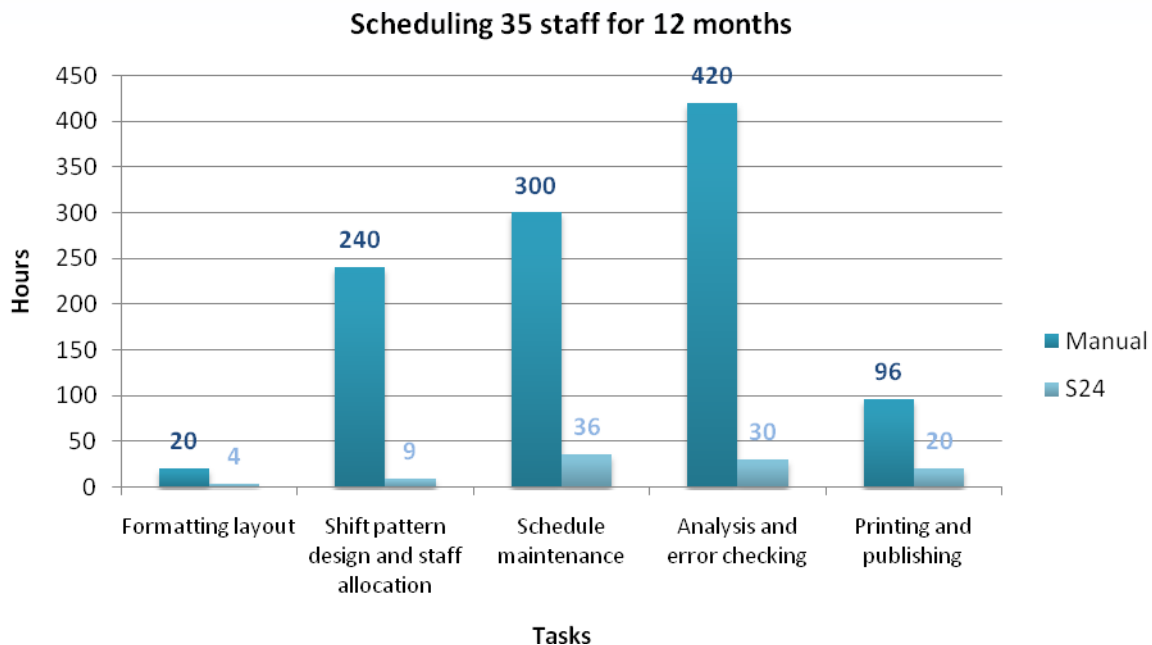
Barriers to good scheduling

A typical scenario for manual scheduling begins with the formatting and preparation of date ranges. Most schedules are formatted by listing staff alphabetically on the left hand side of a grid, with the days along the top of the grid. Spreadsheets are popular for designing such layouts. However, where other scheduling formats are required the workload increases dramatically. For example, a daily schedule usually requires a format that orders information chronologically so the first employees working that day are listed at the top. Once a scheduling format has been committed to paper people rarely have the energy to change it.

The next stage involves establishing a pattern of shifts and days-off that can be propagated throughout the schedule. The effort required to map out and understand shift patterns, especially for longer date ranges, means they are kept simple and typically prepared for a month in advance or less. It is not unusual to have additional paper systems for recording different kinds of information such as leave and sickness and this increases the risk of further error. When absences such as sickness and leave begin to

take their toll, changes to shifts are needed for maintaining an up to date schedule. This process can be very time consuming.

Manual data is difficult to retrieve and organise so analysis of scheduling activity is ignored, and information about working hours for payroll purposes often has to be gathered from elsewhere. Finally, manual schedules rapidly become out of date, and are difficult to retrieve and update once they have been published.



Based on a company delivering 24/7 services using a five shift rotation with assignments and break scheduling. Includes monitoring and tracking leave and other absences.

The costs associated with staff scheduling are difficult to define, although the amount of time spent on the scheduling task should be easy to measure. A person manually scheduling 30 staff for a year will cost the business at least \$15,000 (these costs increase with more complex scheduling). More difficult to define are the costs associated with the consequences of poor staff scheduling (such as workplace stress) or misunderstood schedules. Controlling overtime costs is a benefit most companies understand, but much higher costs are involved in less obvious areas of activity. One example is vacation scheduling. Approving and scheduling leave is not the same as scheduling leave and approving it. Combinations of staff leave can impact the business through skill mix though the overall leave headcount is met. Similarly recruiting costs may arise when new hires leave after a few weeks because their hours were not what they expected. Mention can also be made of the costs incurred by staff when they are confronted with unplanned schedule changes at short notice, especially those with caring responsibilities. Staff scheduling is in fact a mission critical process for a company operating extended or 24 hour working.

Another problem caused by the absence of a definable workflow is that the staff scheduling process can be perceived as being arbitrary, therefore inviting *ad hoc* changes, often for reasons unconnected with the business. These are difficult to control, and it is difficult to encourage an ordered and responsible

approach to staff deployment, when staff schedules are littered with corrections and amendments. Workflow enables managers to deliver consistent and timely staff schedules. Such schedules will then be viewed as an integral part of business management associated with company goals and therefore treated with respect, rather than a “rough guide” for when to turn up at work.

These are not new problems, but they are prevalent. It is not surprising therefore that staff scheduling skills are high on the company agenda. Staff scheduling has traditionally attracted the focus of large corporations as part of deploying large record-based HR and Payroll systems. Consequently staff scheduling, or workforce management, has acquired a reputation for the kind of project timescales, consulting and IT support that only corporate budgets can feed. Many companies simply do not have the project time, budget or access to IT support to deploy these solutions and as a result continue to see their business suffer.

Enabling the Business Manager – Requirements for a Solution

One way of improving business performance whilst overcoming obstacles such as protracted timescales and IT support is to provide business managers with scheduling software that they can use themselves.

What kind of software tool would this be? The following are some of the basic requirements for such a tool:

- The scheduling tool should be simple to use by any user having basic computer skills and it should not require any knowledge of programming. *This is a key requirement if managers are to use the software.*
- Ideally, this tool should conform to industry standard operating systems and networks and work alongside other familiar office suite software. *This requirement facilitates rapid low cost deployment and low training overheads.*
- This tool should enable both new and more experienced managers to engage and work with standard concepts associated with good staff scheduling in the workplace. *A key requirement for understanding how staff scheduling can deliver cost-effective practices.*
- The tool should be operationally proven by different organizations and be well supported via helpdesk and maintenance releases. *This requirement is essential for user confidence.*
- The tool should provide clear business benefit to the company, by enabling managers to deliver variable staff schedules that match business requirements without expensive and time consuming deployment overheads. *This requirement avoids rapidly diminishing returns on the business benefits delivered.*

The Schedule24™ Solution

A solution that meets all these requirements is Schedule24™ offered by Intellicate Ltd. Schedule24 offers a unique workflow enabling users to define, deliver and maintain a scheduling strategy in the workplace. It is used by both consulting professionals in workforce scheduling, and business users that prepare and publish staff schedules as part of their business routine. Schedule24 has enabled companies like the Telegraph Media Group, Mabey & Johnson, Greater Manchester Police, Institute of Medicine and Veterinary Science, Severn Trent Water and Teletech Inc. to adopt a cost-benefit approach as opposed to cost-cutting for managing business efficiency.

The use of Schedule24 enables business managers to actively involve themselves in the deployment of their staff. This includes being able to understand and approve flexible working arrangements that benefit both business and staff. The Schedule24 solution enables managers to adopt a proactive, as opposed to a reactive, approach to business as their planning extends much further ahead.

Schedule24 delivers feature-rich functionality to the manager's desktop at an affordable cost. Information can be shared between other S24 users in the company and schedules published dynamically to the web or by email. It is ideally suited for businesses that do not have access to an IT infrastructure or support. Even where a larger deployment is required valuable IT resources can be released for more mission critical operations.

For business managers and the business as a whole Intellicate Schedule24 offers the following key benefits:

Save time and resources: Significant time can be saved by automating staff allocation to shift patterns, including combinations of different shift patterns, over much longer date ranges. Intellicate Schedule24 provides a cheaper and faster alternative than manually preparing, updating and publishing staff schedules.

Deliver quality schedules: Even simple manual schedules require constant checking to prevent errors and mistakes. Schedule24 workflow means staff scheduling is not only delivered faster with fewer errors but more complex scheduling can be undertaken to better match staff supply to business requirements.

Empower business managers: Schedule24 integrates several information processes into one smooth workflow to offer managers unparalleled insight into how staff are being deployed. Powerful analysis tools allied to budget management mean staff scheduling can be effortlessly and comprehensively handled in a wide range of contexts by the business managers themselves.

For the IT department Schedule24™ offers the following benefits:

No specialist IT support required: Schedule24 can be deployed as a desktop application by a user having basic computer skills, alternatively via Citrix or Terminal Server to support concurrent users over industry standard networks. This means IT resources can focus on more complex projects.

Using Schedule24™ Software

Schedule24 supports both unstructured and structured scheduling approaches. Structured scheduling enables higher levels of automation, which is described here. Automating the complete staff scheduling process involves five easy to understand steps.

Step 1 – Starting the schedule

When you select a blank schedule you are prompted to enter information about your staff. This will immediately generate a familiar grid layout displaying individual staff by row down the left hand side. Similarly a perpetual calendar displays each day by column along the top. You are ready to go to the next step.

Step 2 – Automating the schedule (shift pattern) designs

Either design a new shift pattern or download one from a library of shift patterns used in a wide range of industries from www.intellicate.com web site. You select the date at which you want to insert and activate a shift pattern, or combination of patterns, for the schedule. In the Team Manager use the mouse to drag and drop staff into the shift pattern of choice. This will automatically generate your staff schedule and you are ready for the next step.

Step 3 – Adding more information to the schedule

A perpetual schedule will be displayed with staff allocated to their shifts and days-off for each calendar day. Using straightforward point and click navigation to any date in the schedule users can select staff and highlight date ranges to record information about sickness or other absences. Similarly users can schedule vacation and other leave, assignments, breaks and other free-text information.

Step 4 – Analyzing the schedule

Analyze scheduling activity for staff headcount, distribution and budget costs. The cover count displays a customizable list that dynamically updates staff head counts, working hours and budget costs for each day at the bottom of the schedule. The distribution profile has a zooming timescale to display staff distribution over time by sub group category e.g. job title, shifts, by team or department.

Step 5 – Printing and publishing the schedule

Once users are satisfied with the schedule it can be printed or published to a web location or emailed to staff using a range of formatting options. A range of comprehensive management reports are also featured.

Creating a schedule does not have to be a rigid step-by-step process however. Once a schedule has been created the user can access any of the above stages depending on what they wish to do.

In summary, Schedule24 offers powerful features for designing and automating staff scheduling without the need for programming skills. It has the familiarity of other Microsoft Office software, with a similar learning curve. Scheduling information can be exported in industry standard formats (Word, PDF, Access, Excel and HTML). It does not require specialist IT support and can be easily installed on industry standard desktops and laptop PCs. It is easy to use and business managers with basic computer skills can deploy it themselves in around two hours.

Where is Schedule24™ Software Useful?

Schedule 24 is not designed for personal time, appointment or diary scheduling e.g. Microsoft Outlook, or project time scheduling e.g. Microsoft Project. Schedule24 has been designed to match and maintain staff supply to business requirements.

Users of Schedule24 have found it to be an invaluable solution for a wide range of business problems associated with staff scheduling in the workplace. For larger businesses it has proven to be a rapidly deployable and affordable alternative to more expensive and complicated systems, which have often had less functionality than Schedule24.

The following are specific examples of how Schedule 24 has been applied in the workplace:

- Delivered 30% increase in 24/7 staff levels from existing employees.
- Maintaining staff schedules electronically reduced staff conflicts and saved supervision time
- Standardization of staff schedules reduced payroll supervision time by 75%.
- Defined staffing level grades for media teams changing to 16/7 extended hours working.
- Development of alternative staff schedules for staff management negotiations.
- Calculating and managing staff commission plans.
- Delivered a significantly low cost alternative to converting staff schedules to spreadsheets.
- Calculating cost projections for staff compensation and overtime reduction.
- Auditing staff schedule patterns against business agreements.
- Establishing staff headcount and costs for new business growth plans.
- Generated accurate and up to date production hour's forecasts on demand.
- Enabled implementation of 24/7 proactive control of company network assets to meet customer and regulatory demands.
- Publishing schedules online to remote workers.
- Statistical counts for regulatory reporting.

Case Study – Severn Trent Water

Severn Trent Water Ltd made a business decision to implement 24-hour pro-active control of company network assets. This decision was taken after extensive evaluation set against a background of increasing customer and regulatory demands.

Historically the company had operated an emergency service which utilized duty personnel operating from home in each county within the company operational area. Information was disseminated from county-based control rooms monitored by a single person out-of-hours.

It was evident that this mode of operation was becoming increasingly unsustainable given the large geographical area. This included the industrial heartland of central England with the major conurbations of Birmingham and the West Midlands, Stoke-on-Trent, Leicester, Nottingham and Derby and several other major towns and cities. A project team was tasked with shaping the new Network Management Centres. They produced a plan whereby two centres would operate as a mirror of the other with control and telemetry capabilities, staffed on a 24/7/365 basis.

Initially the centres each had 45 staff drawn from existing company personnel, but who had never worked shifts before. As an interim solution a Lotus 1-2-3 spreadsheet was devised which was used to allocate staff to shifts and to control and record their shift patterns.

Whilst this solution worked in the short term it soon became evident that in the longer term a more flexible solution was needed. The spreadsheet soon grew very large in size and required a large amount of LAN bandwidth. It was also not robust, frequently crashing with loss of data. This had to be restored from backups, which were not up to date and the process proved frustrating for staff and managers alike.

Compatibility testing over the company LAN demonstrated Schedule24 could be deployed on Windows NT and packaged and distributed using SMS. Different users were given the trial software so as to encompass a full range of computing abilities. The software proved easy to learn and flexible.

The final stage was to formulate a business case for deploying the software as a solution to the increasingly pressing need for effective rostering. This was given further priority as the company had decided to move from a Lotus Suite based business to a fully MS Office based business, resulting in a need to convert the existing spreadsheet to Excel at great cost or to move to a standard packaged solution.

The business case decided that the best course of action was to implement a rostering package and that this was to be Schedule24 Professional. The trial had shown that this fitted the needs of the managers and staff, was flexible and robust.

Case Study – Telegraph Media Group

Telegraph Media Group publishes The Daily Telegraph, The Sunday Telegraph and The Weekly Telegraph. Their recent move to a state-of-the-art office in the middle of London has placed them at the centre for business, commerce and politics. The broadsheet Daily Telegraph is the leader in the quality newspaper market, with sales of around 900,000 copies a day.

In November 1994, telegraph.co.uk was created, establishing the Telegraph as the first online daily UK newspaper in the UK. In addition to content from the print editions, covering everything from news to lifestyle features, telegraph.co.uk enables readers to take advantage of online offers covering a wide range of products and services as well as interactive content.

Nothing short of a revolution has taken place in media publishing in the last 5 years. Getting the technology right for moving into the multi-platform media age is only part of the story. Not only is there more to report but it has to be reported faster. Behind every news item is a team, investigating, validating and writing. Good journalism is needed 24 hours a day, seven days a week.

The Management team realized that re-alignment of traditional working practices was essential if they were to meet deadlines, in addition to safeguarding profitability.

Facilitating journalist talent between editorial desks increased flexibility of response and reduced the need for casual overtime staff. However this made tracking of resources more difficult and it was important for journalists to see planned and published schedules at least two months in advance. Future management of schedules had to move beyond paper and pencil.

During the course of their review of the business requirement the Management Team were able to download and evaluate Schedule24 Professional. No specialist IT support was required, and they were able to work directly with the software. Schedule24 Professional was initially used to help define the business requirement, in particular the staffing levels in relation to different grades and shift patterns during the working week.

A strategy evolved as an understanding of the business requirement became clearer. Alternative schedules were developed. Above all, the schedules were presented in an operational format, clearly showing needs in terms of working hours and days-off (including weekends) throughout the course of a whole year.

A cost projection of the actual schedules could be mapped against management goals including staff compensation and overtime reduction.

Once the business requirement was established, then a scheduling strategy was designed to meet it. Schedule24 Professional continued to be deployed to manage the agreed workforce scheduling and deployment plans for journalists on a day-to-day basis. The immediate benefits included having a system that delivered a common standard for workforce scheduling and the means for measuring and evaluating staff deployment.

Case Study – Mabey & Johnson

The Mabey Group of Companies is a major British engineering organization that specializes in bridging, steel fabrication and construction products. The group has over one thousand people employed in around forty locations throughout Europe, the United States, the Americas and Asia Pacific - as well as a network of agents worldwide.

It is no accident that Mabey and Johnson are the largest supplier of panel bridging systems in the world. Keeping track of staff working hours, overtime and activities has been critical for maximizing the production capacity of a skilled workforce. In particular, the management of production hours has a direct impact on delivery schedules.

The Production Manager doubted the accuracy of the combination of spreadsheets that were being used to pull information together across different departments, and also suspected that information was not being presented in the best manner to support operational decision making.

Essentially information needed to be shared and represented consistently throughout different parts of the organization. This included Team Leaders who managed actual production through to HR Management. For the Production Manager this meant access to the solution was needed from anywhere in the organization.

Although spreadsheets were easily understood and could be quickly formatted to represent information in any number of ways, they failed when it came to establishing common standards for information sharing. Also information became isolated, uncoordinated and quickly out of date.

A pragmatic approach was adopted by the Management Team at the outset. The low cost of Schedule24 Professional was attractive but not essential. In fact cost was not a deciding factor, but the time required to get a system up and running was. Moreover it had to deliver the functional requirements for scheduling multi-disciplinary teams. A short evaluation of Schedule24 Professional over a few days proved positive, in particular its deployment on a Citrix server over the Windows™ network. This meant it could be accessed by Team Leaders on the production line and Management Support in HR.

Automated schedule production was implemented within two days and the Management Support team delivered product training to the Team Leaders engaged on the production line. This enabled Team Leaders to directly manage their team deployment on a 24/7 basis. This included recording Sickness and Leave, in addition to scheduling training activity when it was required. This information could then be accessed for forward planning of production hours by senior managers.

About Intellicate

Intellicate Ltd is a privately held company based in London, United Kingdom. A leading provider of workforce management services, its Schedule24™ technology has defined best practice in staff scheduling solutions since 2000. Intellicate has customers across all industry sectors in 15 countries.

Intellicate is committed to the highest levels of customer service and support for its Schedule24™ product range which provides the workflow needed by business managers to deliver flexible working strategies in today's competitive markets.

Intellicate is confident that its feature-rich workflow and easy to use software can deliver significant benefits in workplace management and offers a free fully supported 30-day evaluation of its software. This enables prospective customers to fully evaluate the software in their own work environment to ensure it meets their business requirements before investing.

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