



# Multinational Restaurant Chain

## Highlights

The customer is a successful multinational restaurant chain with around 500 locations. It has a special business model that aims to drive down costs with no compromise around the quality of its food. Therefore, it is always looking for ways to increase efficiency.

This groundbreaking business is solving a complex rostering challenge with a bespoke solution developed by Software Imaging Limited's Enterprise Technology Services practice based on its Alenabled optimization engine. Now, a task that used to take each restaurant management team a couple of days for each two-week scheduling period can be completed in minutes.

## Overview

### A unique rostering task

The company had been in touch with Software Imaging Limited for some years following an introduction by a mutual business partner. In 2020, it approached us for help with a rostering challenge.

The task of assigning staff to the various roles in the company's many restaurants was complicated. Restaurant managers used a spreadsheet populated via a semi-manual process from the company's HR systems. The difficult job of rostering remained a largely manual activity – one that required up to two days of management time per branch for every two-week period. This reflected the company's painstaking

approach to assigning the right people to the right task, while ensuring that costs were controlled and regulations met. Then there was the time taken to let all staff know their working hours for the coming period.

In addition, there was a lack of management information. The spreadsheet gave no real-time visibility of the status of the workforce planning process, and it was difficult, for example, to check that a completed roster complied with business targets. Nor could managers easily see whether any staff were available for redeployment to other restaurants.

# Challenges

The company therefore decided to look for a computer application to help with, and partially automate, the task, seamlessly ingesting data from HR systems. Because it was in a hurry to find a solution, it initially explored the idea of working with a package supplier, but found that the package in question would not accommodate the company's complex business rules.

In some ways, the rostering challenge is a typical one. For each branch, management has to assign staff to cover a range of tasks throughout the week in the different zones of the restaurant. For example, the kitchen zone might require different people to prepare each specific type of food, as well as to clean. The front-of-house zone's tasks would include greeting and seating, table service, clearing away used dishes, and so on. Again, each task might require specific skills or experience.

However, some aspects of the requirement are more complicated than usual, because the company's business practice and local labor laws impose additional constraints on how staff can be deployed. For example, if someone works more than a certain number of hours in a shift, they are entitled to a specific number of breaks of a predefined length. There are also limits on how much overtime someone can work per day, per week, and per year.

These complexities are compounded by the fact that many staff work part time or on a casual basis, or may be from overseas; there are different constraints for these types of workers. Where possible, the company takes account of staff's preferences and needs – for example, the fact that students can only work at certain times. All this helps to control costs and keep workforce satisfaction high.



# Solution

The company soon realized that it needed more than a package could provide, but it could not afford the cost and delay typically associated with a bespoke solution. That's when it turned to Software Imaging Limited's Enterprise Technology Services practice, which specializes in using technology in innovative ways to provide bespoke solutions to business problems.

After detailed discussions to understand the unique characteristics of this customer's business challenge, Software Imaging Limited applied its Solutions Engineering methodology to identify which technologies could best solve it. The result was an innovative approach based on a powerful optimization engine (see panel)

Adoption of the optimization engine, coupled with an Agile development approach, has enabled Software Imaging Limited to rapidly develop a bespoke solution addressing all the company's rostering objectives. The

rostering task is now fully automated. The optimization engine is preconfigured to know about the constraints (for example how many hours staff can work or what breaks are needed). Staff input their availability information themselves via a self-service portal, which they can use from home via their own mobile or other device.

All that a branch's management team now has to do is to choose a template aligned with the work pattern for each day of the week, identify any staff that they want to pre-assign to given roles, and then press an "auto-schedule" button. The optimization engine then comes up with the best solution available, assigning staff to the empty slots based on their skills, availability and the pre-defined constraints about hours and so on. Managers can then tweak the roster until they are satisfied. Then the resultant information is electronically distributed to the relevant staff.



## The Software Imaging Limited (SIL) optimization engine

The engine incorporates an AI-related technology called a genetic algorithm. This type of algorithm finds the optimal solutions to a problem through an iterative process that resembles Darwinian natural selection (hence the name “genetic”).

At each iteration, a set of possible solutions are evaluated, and the best are selected as the basis for the next generation of solutions. The process stops when the problem is solved or after a pre-set time. Optimization can take place in the cloud, distributed over many servers, making it cost-effective and performant, even when solving complicated problems.

## Results

Software Imaging Limited's approach has enabled the customer to solve its business challenge using leading-edge AI technology without needing any AI expertise of its own. Each branch can now complete a roster for a two-week period in a matter of minutes, instead of the previous average of two days. If anything changes – for example, if a member of staff becomes unavailable during the week because of sickness – it is easy to create a new schedule. Because the system is using data from existing systems such as HR and payroll, double keying is eliminated.

Without needing to spend time cross-checking, management can be confident that the roster produced is the best possible one for the restaurant and its staff, and that all employment regulations are satisfied. Having the best roster is a way to save money as well: For instance, management can sometimes reduce running costs by making more appropriate use of part-time and temporary staff. In addition, restaurant customers are assured a great experience because the most suitable staff available are assigned to each task.

Valuable management information provided by the system includes a monthly calendar view showing each day's roster, plus the ability to see instantly how well those rosters meet various company targets, and whether any unallocated staff are available for deployment elsewhere. Dashboard reporting of performance is available at both individual outlet and regional levels.

For staff, too, this is a convenient solution because they find out in good time what their working week will look like, and have access to a convenient electronic record of the part of the roster that affects them.

The solution will bring projected annual savings of more than £3.5m, largely through eliminating the administrative effort that used to be required to produce schedules. In addition, management now has far better visibility of resource use and profitability.

## Next Steps

Future plans for the solution include possible rollout to other restaurants around the world and further integration with external systems. It will all add up to even greater automation, freeing managers to focus on their real job of giving restaurant customers the best experience at the most competitive price.

# Interested in finding more about Software Imaging

Software Imaging is a software development company that creates innovative bespoke solutions and software products to solve businesses' most challenging issues.



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