Rostering - Monash University

Background

Monash University is the largest university in Melbourne, Australia and received nearly 25% of the total applications to universities in 2018. The academic year is split into 2 semesters with exams taking place at the conclusion of each semester. Theses exams take place across approximately 12 venues, which are split across 3 locations

Monash uses a casual workforce to invigilate the exams and must build a new roster every semester.
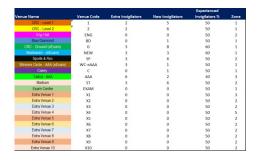
The problem is quite complex as there are approximately 1000 exams, 12 venues across 3 locations and approximately 250 staff. Depending on their level of experience, staff can either be allocated 60 or 40 seats. Staff can only work at venues they are certified and one the days which they are available. Additionally, staff may wish to be rostered in the same location as a preferred partner, such as a spouse, or to avoid being rostered in the same venue as another staff member.

The goal of the system was to generate a roster which maximise coverage of exams whilst satisfies the constraints outlined above.

Integration

Microsoft Excel was chosen as the interface to the system due its ease of use and to reduce costs. As Monash already had the relevant information stored in spreadsheets this would reduce the change management required to implement an additional system.

Venue Name	Venue Code	Extra Invigilators	New Invigilators	Experienced Invigilators %	Zone
CRC - Level 1	1	2	5	50	1
CRC - Level 2	2	2	6	50	1
Eng Hall	ENG	0	0	50	2
Blue Diamond	BD	0	1	50	1
CRC - Ground (eExam)	G	3	8	60	1
Newhaven - (eExam)	NEW	3	3	60	1
Sports & Rec	SP	3	6	50	2
Winners Circle - AAA (eExam)	WC-eAAA	3	1	50	1
Casey	C	0	1	50	1
Talbot - AAA	AAA	6	2	40	3
Stadium	ST	3	6	50	2
Exam Centre	EXAM	0	0	50	1
Extra Venue 1	X1	0	0	50	3
Extra Venue 2	X2	0	0	50	2
Extra Venue 3	X3	0	0	50	2
Extra Venue 4	X4	0	0	50	5
Extra Venue 5	X5	0	0	50	2
Extra Venue 6	X6	0	0	50	2
Extra Venue 7	X7	0	0	50	2
Extra Venue 8	X8	0	0	50	2
Extra Venue 9	X9	0	0	50	2
Extra Venue 10	X10	0	0	50	2

The Solution

The Opturion solution has two main functions:

Rostering

As the exam period approaches, the exam schedule is determined externally and then passed on to the department. The department simultaneously gathers the relevant staff information necessary for the optimisation.

Once all necessary information is present the details are added to the Excel workbook and an initial roster is built. This initial roster allows the department to determine the required number of invigilators along with potential shortfalls.

Knowing this ahead of time allows the department to either provide further venue training for existing staff or to hire additional staff.

OPTURION
Intelligent Decision Support

Re-rostering

During the exam period, the situation may change, with exams being moved to different venues, staff availability changing, or additional exams being added. This provides an additional challenge as after the initial roster has been approved, staff are notified of their work schedules and hence it is necessary to minimise the amount of disruption caused by the changes. The Opturion system allows the department to perform a re-roster, which builds a new roster with the additional goal of minimising changes to the existing roster. For example, if a staff member had been allocated a venue during a shift, the system would preference them keeping this allocation over working in another venue.

Additionally, removing a shift entirely is only allowed if the staff member is no longer available. Only staff who have agreed to receive additional shifts during a re-roster are considered during this process.

Further Information

Please contact Opturion for a demonstration, or give us some data that we can use to identify potential benefits.

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https://www.opturion.com/

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Customer Outcomes

The system went live during 2015 and has been used every semester since to build Monash's invigilator rosters. This has streamlined the rostering process and allows the department to ensure every roster is compliant with Monash's regulations and procedures while ensuring the maximum amount of coverage.