

# Optimisation tool to automate the allocation of previously allocated work patterns

## RosterAssignment

**merlot.aero-RosterAssignment is an online software application that addresses the automated allocation of previously created work patterns (also called pairings or ‘tours of duty’) to crew members, taking into consideration airline rules, balancing, previous assignments, training plans, crew constraints and other requirements. Duties can be allocated via PBS, equalised or hybrid depending on airline requirements.**

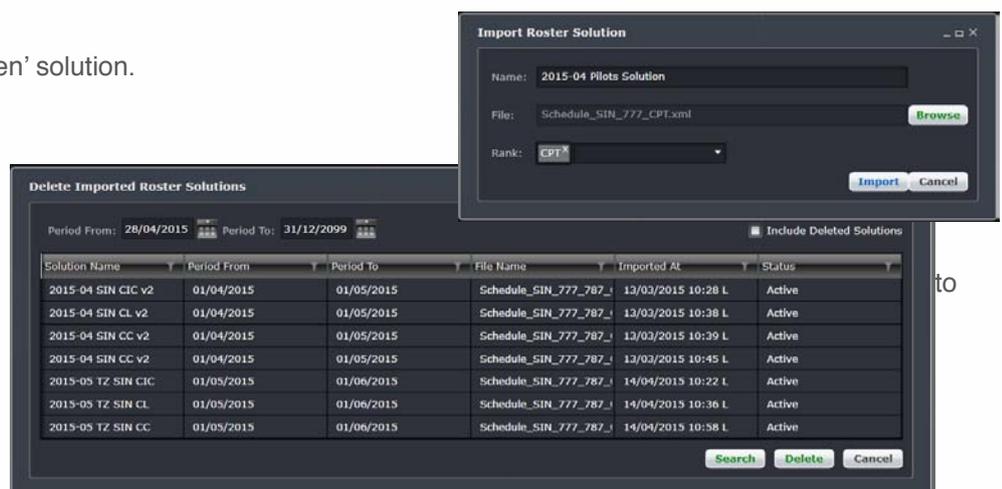
merlot.aero-RosterAssignment forms part of the merlot optimisation family of products. Our vision is to create seamless optimisation to provide users with assisted and automated decision tools across planning and operation functions encompassing:

- **Tactical:** intuitive, easy to use tools to generate (both automatically and user triggered) solutions, to everyday operational and monthly planning ‘problems’.
- **Strategic:** powerful, robust analytical tools to perform strategic what if analysis to make empowered informed and accurate strategic decisions.

## Maximise the use of precious crew resources to operate a schedule

Explore the benefits, key features and functionality that the merlot.aero-RosterAssignment has to offer:

- Create the most efficient rosters based on previously created work patterns.
- Use granular constraint definitions.
- Accept different constraints based on different crew bases and rules.
- Support various iterations as required.
- Models independently different objectives to produce better ‘real world’ solutions.
- Capable of performing ‘minimum crew’ solutions to determine the absolute lowest number of crew required based on particular set of constraints.
- Available as a bureau or ‘self-driven’ solution.
- Scalable and cost effective.
- Support for various allocation methods from PBS (preferential bidding) to equalised creation (via various different methods) hybrid (combining requests and equalisation).



The screenshot displays two overlapping windows from the merlot.aero-RosterAssignment application. The top window is titled 'Import Roster Solution' and contains the following fields:

- Name: 2015-04 Pilots Solution
- File: Schedule\_SIN\_777\_CPT.xml (with a 'Browse' button)
- Rank: CPT (with a dropdown arrow)

Buttons for 'Import' and 'Cancel' are located at the bottom right of this dialog. The bottom window is titled 'Delete Imported Roster Solutions' and features a table with the following data:

Solution Name	Period From	Period To	File Name	Imported At	Status
2015-04 SIN CIC v2	01/04/2015	01/05/2015	Schedule_SIN_777_787_1	13/03/2015 10:28 L	Active
2015-04 SIN CL v2	01/04/2015	01/05/2015	Schedule_SIN_777_787_1	13/03/2015 10:38 L	Active
2015-04 SIN CC v2	01/04/2015	01/05/2015	Schedule_SIN_777_787_1	13/03/2015 10:39 L	Active
2015-04 SIN CC v2	01/04/2015	01/05/2015	Schedule_SIN_777_787_1	13/03/2015 10:45 L	Active
2015-05 TZ SIN CIC	01/05/2015	01/06/2015	Schedule_SIN_777_787_1	14/04/2015 10:22 L	Active
2015-05 TZ SIN CL	01/05/2015	01/06/2015	Schedule_SIN_777_787_1	14/04/2015 10:36 L	Active
2015-05 TZ SIN CC	01/05/2015	01/06/2015	Schedule_SIN_777_787_1	14/04/2015 10:58 L	Active

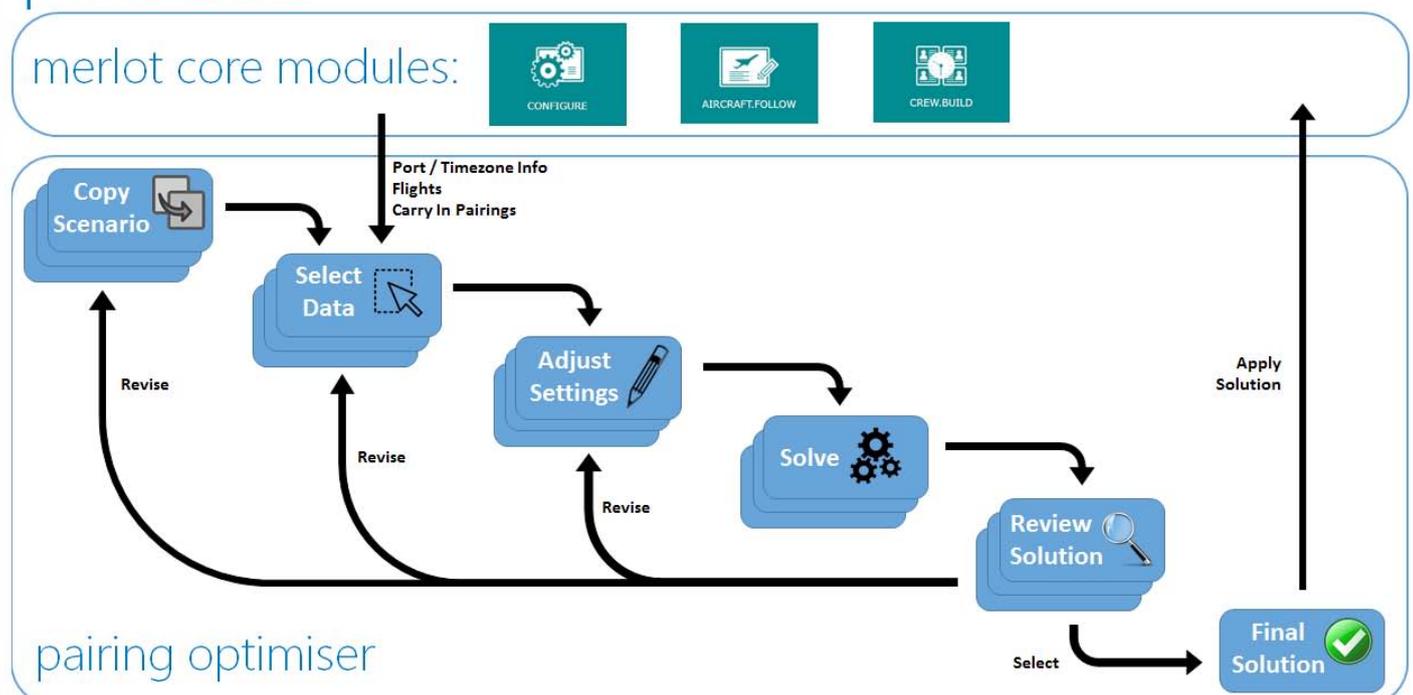
Buttons for 'Search', 'Delete', and 'Cancel' are located at the bottom right of the table window.

## Designed with the user in mind

The RosterAssignment process using the Roster Optimiser has been designed to seamlessly fit as an integral part of the complete the end to end crew planning process within merlot.aero, as well as providing powerful options for high quality roster solutions. This offers:

- **Process integration.** Simply insert the use of merlot.aero-RosterAssignment at the point in the process that planners would normally manually create rosters. Leveraging the pre-planning, training, and pairing tasks already completed with the merlot.aero core modules.
- **Data selection.** The ability to use filters to quickly define and include sets of crew and associated work into scenarios ready for solving.
- **Configuration definition.** Able to specify configuration to enforce hard rules and guidelines, as well as variety of soft roster objectives. The soft objectives are then able to be prioritised and weighted to reflect 'real-world like' decision tradeoffs.
- **Optimiser Approach.** A truly global optimised solution, viewing all crew members, pre-assignments and work demand at once, generating a vast multiple of possible legal solutions, with the final one selected based on the solution that best satisfies the various soft objectives.
- **Solver performance.** Using unique algorithms taking into account multiple objectives, able to generate complete solutions in a fraction of the time compared to existing providers.
- **Solution generation process.** Once the initial scenario and data has been defined the ability to solve and then easily make revisions to generate subsequent improved solutions.
- **Bidding / Request methodology.** Ability to easily switch between the variety of different methodologies for awarding of crew member bids / requests. From true PBS (preferential bidding) by seniority to equalisation award (via various different methods) to hybrid (combining requests and equalisation).

## process...

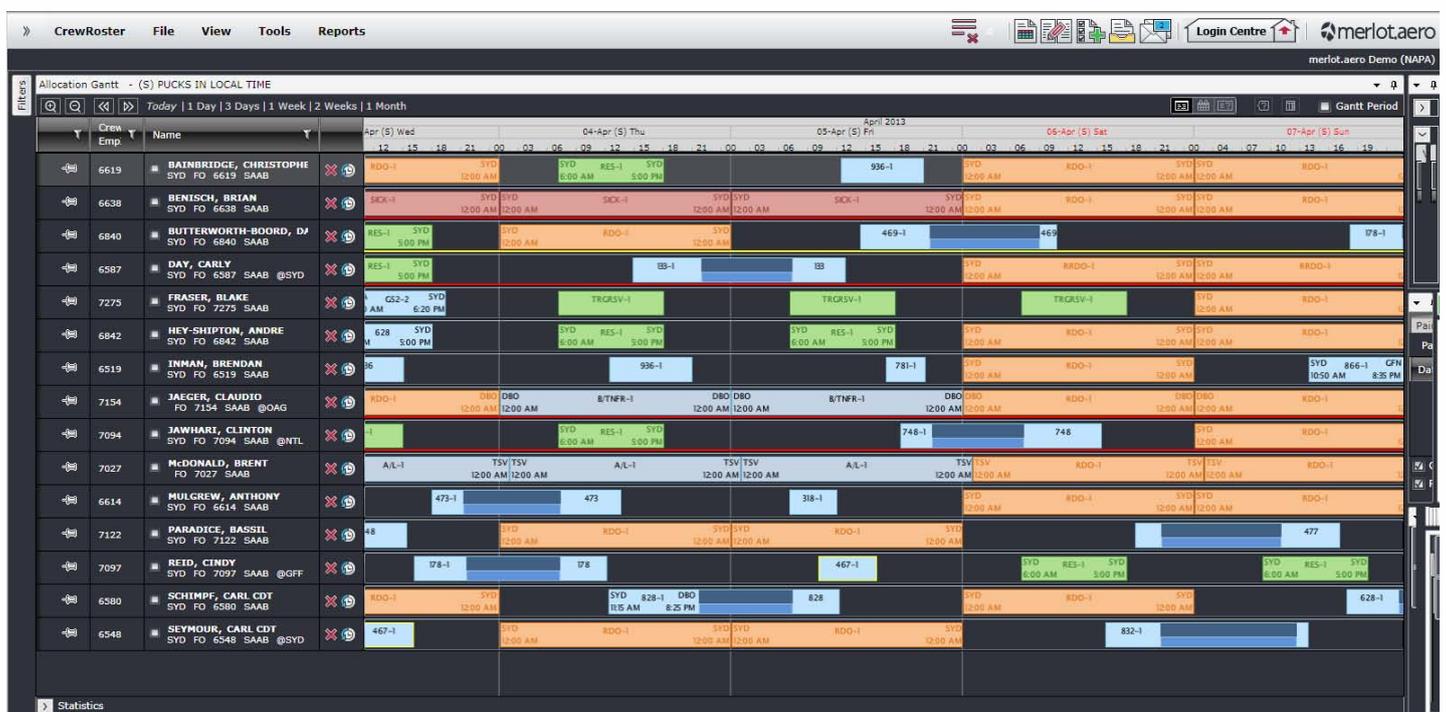


## The right data when you need it

In addition to the created crew rosters, accurate and relevant summary and statistical data is displayed to facilitate the solution review decision-making process.

This includes statistics and reasons why crew members were unable to be granted particular requests, pairing and reserve coverage indications, and realised average assigned hours per crew member. Tools within the merlot.aero core modules can also be used to provide additional information on generated solutions in relation to visualisation of the solution and distribution of the different objective amongst crew.

Generated solutions can also be compared against a 'minimum crew' solution for the same period to gauge how far the current crew establishment is from minimum required to cover that particular period. It provides an indication / measure of the impact of various operational constraints on the number of crew required to maintain those constraints.



## Effective management no matter what your requirements

Whether you are planning for a single equipment type from a single base, through to being a multiple base and equipment type operator, the flexibility designed into merlot.aero-RosterCreation, provides the capability to generate high quality roster solutions across this spectrum. This allows the airline to effectively define sets of configuration appropriate for solving each base / equipment grouping, both from a tactical and strategic perspective.

## Quantifiable benefits

Making use of merlot.aero-RosterCreation will result in your airlines' crew planning department realising the following readily identifiable tangible benefits:

- Having rosters created that explore multitudes of more potential combinations than manual planners ever could, resulting in overall better balanced higher quality crew rosters.
- Rather than being limited to Boolean 'true or false' constraints, being able to specify numerous soft 'grey' constraints and prioritise these, allows the generation of solutions that more accurately represent the human decision making trade off process, resulting in more realistic 'real-world' solutions.
- Generate multiple solutions for the same period with slightly different configurations, and then comparing the results to determine the best 'operational' solution taking into account the tradeoffs between the various crew planning objectives.
- Being able to generate a 'minimum crew' solution that allows comparison to quantify for a particular solution how far it is from the lowest crew establishment solution. This provides guidance on potential areas for configuration change to generate subsequent improved solutions, as well as the ability to quantify the 'cost' of those applying various operational constraints.
- Overall making use of these mechanisms to achieve increased crew utilisation, bounded as appropriate by constraints to make those rosters operationally robust and crew friendly.

## Smart airline solutions

merlot.aero is a complete operational management solution offering all aspects of airline resource planning and control to ensure the safety, efficiency and quality of your crew and operational environment. An ideal solution for low-cost, efficient day-of-operations management, merlot.aero enables you to forecast, organise, plan, predict, measure and report to optimise daily aircraft and crew utilisation. It assures control of core operational information that will enable you to effectively manage your business and easily achieve regulatory compliance while maximising your airline's operational efficiency. merlot.aero's modules can be used independently or together to provide a fully integrated airline operations management system for optimum airline performance. merlot.aero is a fully hosted, fully-outsourced solution, providing you the peace of mind with security whilst avoiding unnecessary expenditure on the purchase and support of your own computer hardware and environment.

Talk to us today to arrange an obligation-free trial.

### **Merlot Aero Limited - Head Office**

T: +64 9 361 2400  
F: +64 9 361 2401

### **Merlot Aero Inc - Americas**

T: +1 480 376 2196  
F: +1 480 696 2301

[www.merlot.aero](http://www.merlot.aero)

