



CARMEN SYSTEMS  
RESOURCES IN BALANCE



# Carmen Crew Tracking

## **Contents**

Alerting

Finding a solution

Communicating a solution

Trip trading

Post calculation and follow-up

*Crew tracking is the process of crewing flights at a minimum cost while tracking all crew assignments, from initial roster publication to the final follow-up.*

# Recover from disrupted crew rosters while maintaining minimal cost

## Alerting

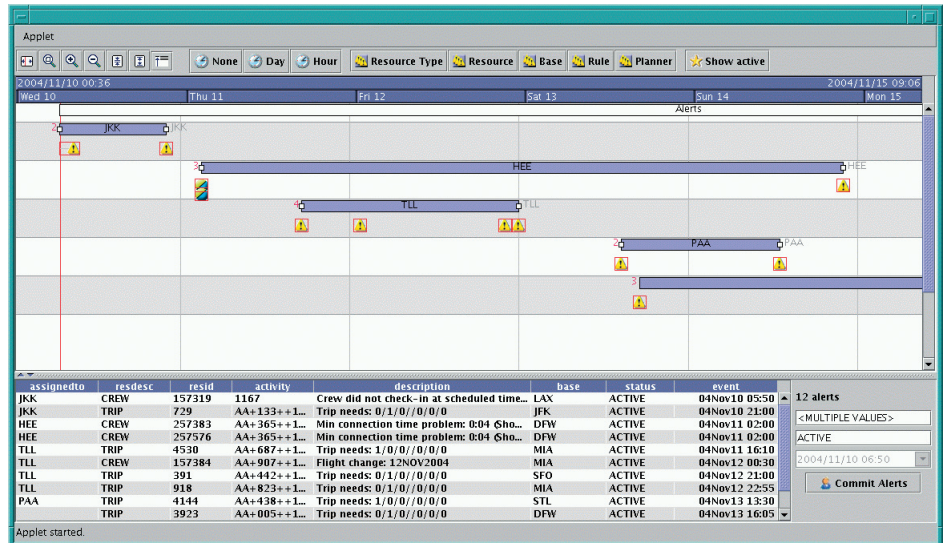
The alert view visualizes unassigned production, illegalities in crew rosters, crew composition problems, crew late for checkin and crew requiring notifications. One or many alerts can be selected to acquire more detailed information or to assign a responsible user. With a swift overview, the alerts can be grouped and filtered according to various criteria such as crew base, fleet type, crew category, problem type or assigned user. It is also possible to display only critical alerts.

## Finding a solution

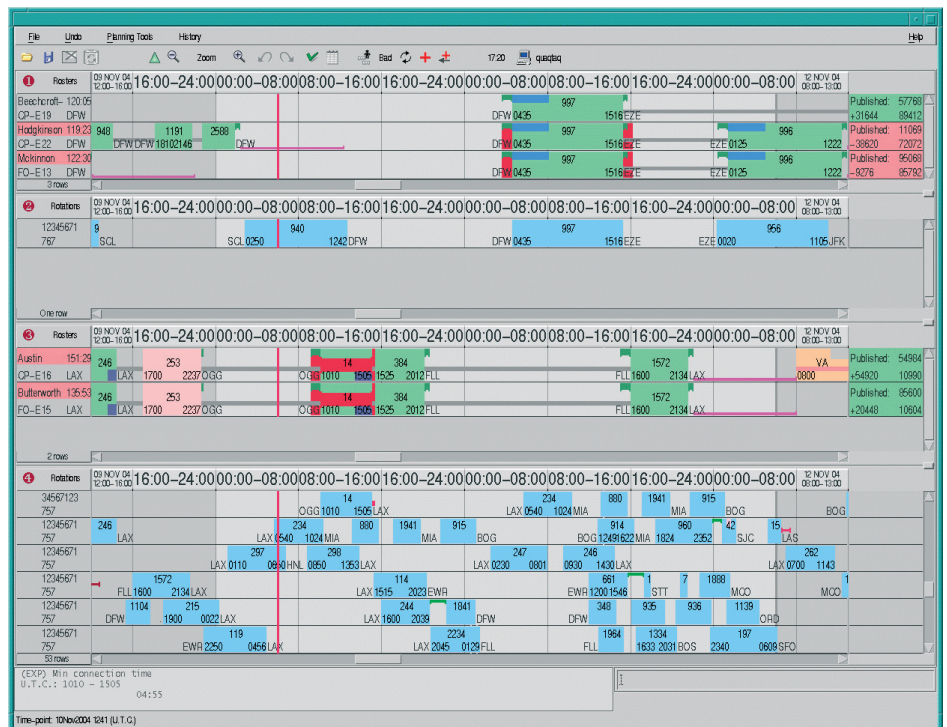
To go from the alert view to the relevant crew rosters: simply click an alert. The rosters corresponding to the selected alerts are automatically displayed in the pairing and rostering editor. The editor contains many functions for editing pairings assigned to many crew members and for repairing individual rosters. It also possesses basic functionality such as being able to move duties between crew members, activate a standby or display all crew on a specific flight. It also contains more advanced functionality that allows presentation of all crew candidates that can legally replace existing activities with open production, finding all legal deadhead candidates, finding legal swap candidates, etc. Full legality control is always provided via Carmen Rave. Relaxing quality and long-term rules to find feasible repair options in critical situations is easy.

## Communicating a solution

When a solution is committed to the database, the crew members concerned can be notified immediately or be marked for later notification. The crew member will automatically appear in the alert view when the notification deadline approaches. The ability to postpone notifications maintains the flexibility required to re-schedule the crew member. You can decide to immediately trigger the related updating on hotels, transport companies, catering and ticket reservations when the change is being committed or set a due time for when automatic updates shall take place.



The upper part of the screen shows alerts displayed in a Gantt chart, grouped by each assigned user. The lower part of the screen shows details of the selected alerts.



A view showing two selected alerts, with both crew and aircraft rotations displayed. The working window 1 and 2 show a delayed flight causing a rest-time problem for two out of three assigned crew members. Working window 3 and 4 show a short connection time for two crew members.

**CARMEN SYSTEMS**  
RESOURCES IN BALANCE

NEWS/EVENTS  
NOTIFICATIONS  
ROSTER  
OPEN TIME  
BIDS  
CALENDAR  
MESSAGES  
TRAINING  
SICKNESS  
LOGOUT

**Open Time Trips**

Id#	Date	C/I	Flight	From	Dep.	To	Arr.	C/O	Stop time
1	07OCT2004	00:09	PR0226	MNL	01:29	LAO	02:24	0:50	Bidding
			PR0227	LAO	03:14	MNL	04:04	2:20	
			PR0408	MNL	06:24	KIX	10:19	10:34	14:35
	07OCT2004	23:54	PR0407	KIX	00:54	MNL	04:59	05:14*	0:00
2	13OCT2004	12:59	PR0110	MNL	14:19	GUM	17:59	2:40	Pickup
			PR0111	GUM	20:39	MNL	00:24*	00:39*	0:00

**Trade Trips**

Id#	Date	C/I	Flight	From	Dep.	To	Arr.	C/O	Stop time
1	03OCT2004	03:39	PR0185	MNL	04:59	CGY	06:29	0:50	Bid
			PR0186	CGY	07:19	MNL	08:44	0:45	
			PR0135	MNL	09:29	BCD	10:39	0:50	
			PR0136	BCD	11:29	MNL	12:29	12:44	0:00
2	13OCT2004	20:09	PR0123	MNL	21:29	ZAM	22:59	0:50	Bidding
			PR0124	ZAM	23:49	MNL	01:19*	0:50	
			PR0187	MNL	02:09	CBO	03:44	0:50	
			PR0188	CBO	04:34	MNL	06:04	06:19*	0:00
3	18OCT2004	06:09	PR0143	MNL	07:29	ILO	08:34	0:50	Bid
			PR0144	ILO	09:24	MNL	10:24	1:05	
	19OCT2004	19:59	PR0842	CEB	20:59	MNL	22:09	1:20	
			PR0277	MNL	23:29	LGP	00:24*	0:40	
			PR0278	LGP	01:04	MNL	01:54	02:09*	0:00

javascript:pickup('4024','193989728','07OCT2004');

Crew members can inspect their rosters via the crew interface. The crew member selects the trips he or she wants to trade and a corresponding marker appears in the right hand column.

File Undo Planning Tools History

03:29 queue

Published: 72360  
Published: 73524  
Published: 27308  
Published: 11882  
Published: 10278  
Published: 10004  
Published: 73928  
Published: 45284  
Published: 49144  
Published: 59044  
Published: 59952  
Published: 86792  
Published: 63060

Mon	Tue	Wed	Thu	Fr1	Sat	Sun	Mon	Tue	Wed	Thu	Fr1	Sat	Sun	Mon	Tue	Wed	Thu	Fr1	Sat	Sun	Mon	Tue		
07:55	07:00	11:38	07:37		19:40	18:30	11:35	17:05	10:00	07:00				22:40	19:35									
17:19	18:15	15:15	11:55		09:07	11:24	00:09	17:42	05:12	05:54				07:53	05:32									
ORD	---	---	STT		EZE	LAX	---	---	GRU	JFK				SCL	---									
5	6h04	7h20	0h00	2h48		8h57	13h48	4h51	3h12	8h25				3h23	8h27									
17:55	17:00	17:55	14:35		17:25	14:35	06:18	12:22	18:57	23:48				22:40	19:01									
JFK	---	---	JFK		JFK	BGI	---	---	HNL	---				---	---									
---	---	---	---		10h20	4h37	9h27		3h42	3h13	3h20	3h58		13h34										
TIN	TIN	TIN	TIN		---	---	---	---	TIN	TIN	TIN	TIN		F	TIN	TIN								
09:00	09:00	09:00	09:00		09:33	12:05	09:00	09:00	09:00	09:00	09:00	09:00		09:00	09:00									
17:00	17:00	17:00	17:00		14:58	17:53	17:00	---	17:00	17:00	17:00	17:00		17:00	17:00									
8h00	8h00	8h00	8h00		---	---	---	---	8h00	8h00	8h00	8h00		8h00	8h00									

Required rest after trip  
MIA: 2000 - 0600  
Local: 1700 - 0300 10:00 at airport LAX

Time point: 07Nov2004 14:25 (MIA)

A report showing crew productivity.

## Trip trading

Via Carmen InterBids crew can place trip-trade bids. To support manual editing, requested trip trades and other bids are always visible in the pairing and roster editor. All trips marked for trade are processed in optimization batch jobs where the system finds matching trips and bids. Trips are only traded if the trade meets crew members' bids in a legal and cost-effective way. This can then be automated without staff intervention.

## Post calculation and follow-up

The database contains complete revision history of all updates with information about who did what and when. You can backtrack to see how a plan has evolved from the first manpower estimates through to day of operation. Systematic problems that cause operational instability or that increase costs can now be identified. The database also contains all the information required to produce the correct input to payroll. Information may be updated in the database retroactively in order to produce the correct pay information. For example, if a gate problem has forced the crew to extend its stay on board after arrival, the authorized user may enter this information manually in order to update the report.

## Technical information

Alert view

Roster and pairing editor

Carmen Rave

Carmen Rave Publisher

Carmen automation framework

Options:

Carmen InterBids

for entering and viewing bids, trips and roster information via internet

Crew recovery optimizer

Platform:

Unix server

Unix/windows clients

Windows NT/XP

# Questions & Answers

## How can large crew groups be managed efficiently?

The alert view provides an efficient overview. Alerts are grouped, sorted by time and displayed in a Gantt chart. Only the alerts a crew tracker subscribes to are shown. The subscription is mapped to the crew tracker's area of responsibility. By clicking an alert, the details of the problem are displayed. The pairing and rostering editor contains many tools, providing a good overview of repair options.

To complement the manual tools for managing problems, a crew recovery optimization module is available. The crew recovery optimizer can solve many problems at the same time. It can even suggest flight delays and cancellations that are efficient from a crew perspective.

## What possibilities are there to automate assignment of open time?

The process for assigning open time can be totally automated. The system contains all relevant information regarding seniority, bids and accounts available. The automation framework is used to link each individual process into a complete sequence of activities. The combination of crew positions, bases and the time limit of the open time assignment is either defined each time by user interaction or pre-defined and started automatically at a given time of day. The automation framework will then load the correct rule set, flights, pairings, and crew members and perform the assignment.

## What information does the audit trail contain?

The database contains the complete history of data changes. For each update, a time stamp, a user name and an optional comment are attached. Tracing who did what and when is now available. Further, a complete history also facilitates the tracing of key performance indicator development through the planning process, and allows replay of critical events for evaluation. The database provides the airline with the information required to improve long-term performance.

## To what extent is scenario management available?

Any number of scenarios can be managed. Operational changes may be evaluated such as the effect of a proposed ground delay program or switching a flight from one fleet to another. Longer term scenario evaluation is also available, for example the introduction of a new fleet, major schedule changes or new industrial agreements. All changes can be easily introduced, either by simple parameter settings or by introducing or changing rules in the Rave cost and legality system.

## How is the Crew Tracking system related to the integrated day-of-operation system?

Carmen's integrated day-of-operation tool for fleet, passenger and crew can be seamlessly integrated with Carmen Crew Tracking. The optional crew recovery optimizer is the same optimizer as in the integrated day-of-operation system. Data is completely shared between the two systems and can be updated from the Carmen Crew Tracking system or from the integrated day-of-operation system.

## To what level is pay protection managed?

The combination of Carmen Rave and recorded database history allows for complete pay protection. Carmen Rave can take into account different states of the published roster, seniority, reason codes and other characteristics that determine the correct pay. This includes all types of per diem, allowances, overtime etc. All items affecting total pay can be displayed in reports for the individual crew members.

*If you have any questions about Carmen Crew Tracking, please contact us at [carmen@carmensystems.com](mailto:carmen@carmensystems.com)*



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