

# TPAC RailCrew

A Resource Management Solution for Rail Crew

# Workforce Management

Employee planning and management is a complex and critical process for modern railways. The business drivers requiring increased efficiency and competitiveness must be balanced with the need to obey employment agreements, safety requirements, qualifications and operational robustness.

- Create efficient shifts and rosters
- Ensure employment contracts are observed
- Observe and cater for lifestyle requirements of employees
- Monitor and manage fatigue and safety regulations
- React to day-to-day disruptions allowing for the continual need to improve service delivery
- Provide what-if modelling capabilities

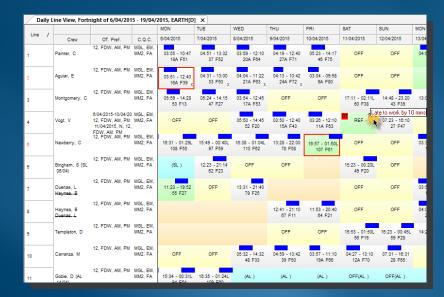
# **Employee Rostering**

RailCrew Rostering is an integrated rostering solution for a railway allowing an unlimited number of rosters across multiple business units. Rosters can be optimised and automated for "current operations" while "what-if" scenarios can be taken off-line for further analysis. Paired with the dynamic rules system for validity, legality and business metrics, Rostering provides.

- Master and individual rostering
- Optimisation of employees to planned activities
- Roster periods are flexible
- Leave and absence management
- Overtime management, employee preferences and decision support costs

• Automatic qualification generation from train schedules, qualification tracking, log books and validation

- Multi-driver capabilities
- Configurable alert levels
- Comprehensive suite of reports, and
- outputs to other 3rd party reporting packages.Optional integration for external employee
- information
- Change tracking and audit visibility



User Configurable Roster View

Line /					525960.00		^
Line 7	Crew	Off	Shifts	Work	Allow	Legal	
1	Painter, C	4	9	75:20	3240.00	Legal	
2	Aguiar, E	4	6	46:52	2160.00	Warning	
3	Montgomery, C	4	9	76:51	3240.00	Legal	
4	Vogt, V	6	8	70:22	2880.00	Legal	
5	Newberry, C	4	9	74:24	3240.00	Error	
6	Bingham, S (SL 06/04)	5	3	26:47	1080.00	Legal	
7	Duenas, L <del>Haynes, B</del>	5	4	34:12	1440.00	Legal	
		4	7	56:37	2520.00	Legal	

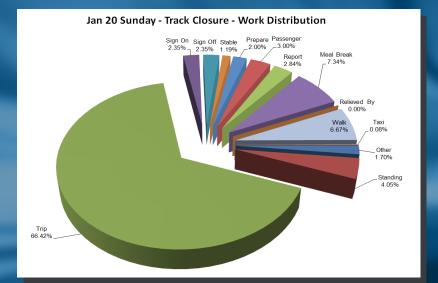
Live Employee Statistics and Rosters Summaries



Live Train Operations and Conflicts Shown Via Gantt Charts

hoos	e Date			Choose Line Type	21							Columns		Assign		
Satu	rday,11 April	2015		MAIN BELIEF		Assign Overtime										
Choos	e Shift			STANDBY						Crew Details Shift Details			Refuse Overtime			
05:53	26		-										Done			
Crew																
Rank	Crew Name	Line code	Team /	Projected Fatigue Score	#Overtimes in year	Work before	Work after	Paid before	Paid after	Days worked in period	Days worked in a row	Day Off Type	Overlaps work preference	Extra Shift		
1	Duenas, Lonnie	7	Earth Main	25	2	34:12	42:59	34:12	47:58	10	4	OFF	Г	Γ		
2	Sutton, Mervin	42	Earth Main	27	0	59:13	68:00	59:13	72:59	9	2	-				
3	Wild, Rashad	54	Earth Main	27	0	61:31	70:18	61:31	75:17	9	2	-				
4	Cortes, Maxwell	66	Earth Main	24	1	58:31	67:18	58:31	72:17	9	2	-				
5	Bynum, Tiffany	99	Earth Main	44	0	42:47	51:34	47:31	61:17	10	5	-				
6	Rojo, Lacy	105	Earth Main	45	0	42:32	51:19	46:40	60:26	10	5	-				
7	Dion, Terrance	126	Earth Main	28	0 >**	62:12	70:59	62:12	75:58	9	2	-				
8	Ruggiero, Jerrold	138	Earth Main	28	0 OFF	? # ? #		32.48	70.00	· ·	^		-	-		
9	Solis, Major	150	Earth Main	25					crew wi	l have a fat	igue sco	e of 91 whi	ich breaches	the fatigue limit		
10	Holiday, Sherry	159	Earth Main	39	0	44:00	52:47	48:59	62:45	10	5					
11	Nieto, Mohammed	162	Earth Main	14	0	43:59	52.46	43:59	57:45	9	2	-	Г			

#### Intelligent Decision Support



Work Distribution

	40	50	4	10	20	30	40	50	5	10	20	30	40
2804 6EMS	PREPAR	EARTH(ETF)			2804			LETO		LETO LETO			_
2602 6IMU	PREF	PAR MARS	2602 PHOBOS		PHOBOS PHOBOS						110	5	
1702 6IMU	PR		H(ETF) H(ETF)			1702		-		ENUS		VENUS	
1604 6IMU		PREPAR	UPITER		Ì				1604				
G02 6EMU		PREP	AR AGO		RCURY				TP05				DOMES DOMES
1E01 6IMU		PRE			1E01		MOON		MOON				
2806 6IMU		PR			i	2806			LETO		LETO		
AL01 6EMU		P			A	L01		URANUS		URANUS URANUS			
4A01 6EMU			PREPAR	ARTH(ETS) ARTH(ETS)	AA01		ERIS			ERIS			
JS02 6EMS			PREPAR	EARTH(ETF)	JS02 ALPHA C	ENTAURI		CENTAURI	JE05		MOON		
2604 6IMU			PREP		2604 PHOE PHOE			IOBOS IOBOS					
2E03 6IMU			PRE				DRACO DRACO	1E03		MOON		MOON	
2E01 6IMU			PRE		H[ETS] H[ETS]	2E01	MO				MOON MOON		
1W01 6IMU			ſ	PREPAR	EARTH[ETS] EARTH[ETS]	1W01	PEGASUS PEGASUS			PEGASU			1H02
<sup>1</sup> G02 6EMU				PREPAR	EARTH(ETF)	í.			TG02				
2802 6IMU				PRE	PAR 2802		LETO				1	A05	
JE09 6EMS				PRE			T		JE	09			
				DO			DOA TOPUSY	-	1525	1-0-1-1-1-1	AI		

## Live Management & Operations

RailCrew Rostering is also a live management and operations tool. As the cost of operating a modern transport network increases and accountability is demanded from all operational stakeholders, railways must have a comprehensive management solution.

- Provides visibility and decision support in real-time during the changing operational environment
- Real-time changes, delays and cancellations received from train systems for immediate employee rule validation
- Estimation engine to show likely future crew-events based on current-time train events
- Manual and automatic modes of operation
- Publish changes quickly and efficiently
- Tracking of planned vs actual to feed back into future rostering events
- Accurately produce payroll information

# **Employee Shift Optimisation**

RailCrew Shifts allows users to optimise employee schedules from various input sources such as timetable, maintenance schedules, extra work and ad-hoc tasks.

Optimisation techniques provide improved efficiencies for operators in the area of crew planning and operations, and it provides user with the ability to easily and flexibly assess the effects of rule and operational procedure changes.

- Flexible and simple rule editing
- Column-generation and heuristic optimisation techniques
- Manual and automatic shift construction
- Intelligent rule validation and user-feedback
- Reporting and system output

### Train Schedule Visibility

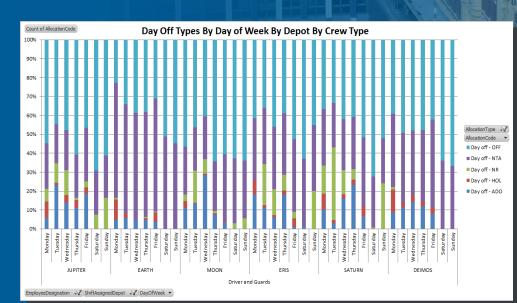
RailCrew Timetables allows users to view the existing train schedule, and to track it through all layers of planning, scheduled, estimated and actual.

- Manual train schedule updates can be fed directly into the crew schedule estimation engine
- Scheduled, Estimated and Actual time tracking
- Train transpose functionality
- Train graphs and timed gantt charts
- Validation reporting

Train Gantt

# **TPAC** RailCrew

- Improved operational decision reducing crew related disruptions, standby and relief crew requirements
- Improved management of period changes, minimising overtime usage and ensuring train coverage
- Controlled and automated generation of crew pay requirements reducing errors, disputes and administration costs
- Proven for passenger railways from intercity to long distance metro
- Proven for freight/cargo railways
- A flexible rules model to ensure a close custom fit with your operation
- Standardised interfaces enable easy integration into your IT environment
- External data warehouse capability
- Easy-to-use, multi-user interface
- A rail specific solution means faster deployment and better results
- Increased crew efficiency
- Reduced crew planning effort
- Equitable crew plans



#### Day off types by day of week by depot



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