



CRITERIA:

Technical offer

- Technical skills - eMerge development
- Microsoft SQL Server
- Java and or .net development
- XML and XML Schemas
- Web services
- WSDL
- SOA concepts
- SOAP
- Exposure and experience in SDLC
- Has the supplier/resources developed any system using emerge?
- Time line

Commercial offer

- Pricing – tenders are to provide the total cost for the solution, implementation support
- Financial strength
- Compliance

BBBEE

Broad Based Economic Empowerment status of the company

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TRANSNET



SECTION 2

RFQ NO: HOAC-JHB-05831

A REQUEST FOR A PROPOSAL FOR THE PROVISION OF
SKILLED RESOURCES TO HELP WITH THE DEVELOPMENT OF CREW
MANAGEMENT SYSTEMS

SCOPE OF WORK AND GENERAL SPECIFICATION

Refer Document attached hereto: REQUIREMENTS SPECIFICATION DOCUMENT

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Train Crew Rostering and Management System: Skills Request

1. Request for Proposal

This document intends to provide suppliers/vendors with a high-level outline of Transnet Freight Rail's (TFR) requirements for skilled resources to help with the development of a Crew Management System(CMS). Transnet Freight Rail's is looking at developing a crew management system that is able to support its existing set of business processes which is geared to manage and roster Train crew in the most optimised and efficient manner thereby ensuring that the organisation is able to offer a predictable and effective service to its customer base.

2. Purpose

To provide potential vendors/suppliers with information regarding an integrated solution to support TFR in the management, planning and rostering of all its train drivers and train driver assistants.

The platform to be used for this specific development is eMerge which is a windows version of Sapiens, detailed requirements specifications will be provided by TFR..

3. Background Information

Transnet Freight Rail have embarked on a process to automate and improve the way it manages its train crew, more specifically its train drivers and their assistants. This strategy is in support of the 5 key focus areas of the organisation which are as follows:

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1. Customer service delivery
2. Scheduled freight railway
3. Creating capacity
4. Safety and
5. Leadership and Employee capability.

In order to support the key focus areas of the organisation it was decided to review the manner in which train crew are managed and rostered with the emphasis on re-engineering the existing set of processes thereby ensuring that crewing resources are managed and rostered in the most optimised and efficient manner.

TFR currently uses two sets of models to manage and roster its train personnel and these models can be described as follows:

- **Book-off working** – The principle of rostering train drivers and assistants to a specific siding/station on the rail network where after both driver and assistant officially signs-off the roster, stays overnight at a nearby location (lodge, hotel, TFR dwelling) and is rostered to return with another train the following day either as crew manning the train or as passengers on the train.
- **Link working** – The principle of rostering drivers and assistants to a specific siding/station on the rail network where after both driver and assistant will also be rostered to man a connecting train returning to their home depot or in close proximity to their home depot.

The newly acquired/developed crew management solution must be equipped to handle the above scenarios as well as being able to deal with all facets involving the management of train crew.

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4. Scope of Work

The required skilled resources should develop the Crew Management System using the provided eMerge platform and the requirements specification. The development should be done within 7 months after signing the contract (Application ready for User Acceptance Testing).

The new developed system should have the:

- Ability to support all the rostering methodologies currently being used in TFR, more specifically the book-off and link working methods as described in the Background section of this document.
- Ability to handle complex business rules relating to rostering including the integration of rules relating to the basic conditions of employment.
- A revision of all the existing business processes will be conducted as part of the scope of this initiative.
- Ability to provide functionality where critical crewing information can be captured and stored centrally including information such as crew medical records, crew locomotive knowledge, crew road knowledge etc.
- Ability to proactively manage the availability of crew staff that should be rostered against the integrated train plan.
- Ability to track the availability of crew staff in relation to upcoming crewing assignments.
- Ability to notify crew members in advance of their next assignments.
- Ability to integrate with TFR's planning, support and operational systems. These systems would typically include the central train plan, the human resources system – SAP HR and operational systems in use to monitor the running times of trains.
- Ability to simulate various crewing assignments relating to a future train plan allowing management to plan for various alternative rostering scenarios.
- Detailed training will also be a key requirement to ensure a successful deployment of the intended crew management application; train the trainer approach will be

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undertaken. The development of training material will therefore form part of the scope of this project. Training of the affected users will be conducted by the training department of TFR and will not be part of the scope of this initiative.

- All work relating to the development and implementation of the system must be fully documented and provided to TFR as part of the scope of this initiative.
- A comprehensive set of management reports must be developed relating to all crewing and management activities of train personnel. A detailed set of report requirements will be developed.
- Maintenance and support will be required once the system is deployed to the organisation and part of the statement of work for this initiative is to develop and implement a detailed maintenance contract after the solution has been successfully deployed.
- The successful vendor/supplier of this initiative will provide TFR with all the technical expertise required in order to ensure that the project is successfully implemented.
- TFR will allocate internal resources to work with the suppliers for skill transfer.

4.1. Project objectives

- To develop crew management system that is aimed at enabling effective rostering and assignment of the most suitable crew to the required train service, thus maximising operational efficiency and minimising crew costs.
- To develop a system that can effectively deal with all the rostering methodologies employed by TFR.
- Integrating the new system into the existing IT landscape allowing for the creation of insight critical to informing and enabling effective rostering and management of crew.
- Improve operational performance by providing various crew assignments scenarios for management to evaluate and make informed decisions.
- Monitoring of crew utilisation and productivity enabling management to take informed decisions regarding the management of train crew.

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- Development of detailed training material which is required to ensure that comprehensive training takes place as part of the deployment of this initiative.
- A comprehensive set of system documentation must be developed as part of the project and provided to TFR to ensure that the system can be maintained once it is implemented.

4.2. Risks

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BUSINESS RISK	DESCRIPTION	RISK RESPONSE	EXPECTATIONS
INTEGRATION TO OTHER SYSTEMS	EXTENSIVE INTEGRATION WOULD BE REQUIRED INTO EXISTING PLANNING, SUPPORT AND OPERATIONAL SYSTEMS	ENSURE THAT THE DEVELOPED SYSTEM IS ABLE TO SEAMLESSLY INTEGRATE INTO THE EXISTING IT LANDSCAPE WITHIN TFR	A KEY COMPONENT OF THE IT SOLUTION IS ITS ABILITY TO INTEGRATE INTO THE EXISTING TFR MANAGEMENT AND OPERATIONAL IT SYSTEMS. INTEGRATION IS REQUIRED WITH SAP HR, THE NATIONAL TRAIN PLAN, ON BOARD COMPUTING AND SEVERAL OTHER IT SYSTEMS..

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4.3. Process view

4.3.1 High level process view

The following diagram aims to describe the key components supporting the Crew Management processes. As described below there are several components required to do effective management and rostering of train crew personnel. Herewith is a list of some of these inputs going into the management and rostering of train crew staff.

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Inputs to management and rostering of train crew:

- Employee health and safety status
- Employee's leave records
- Employee's skills and experience records (route knowledge, brake knowledge, locomotive knowledge).
- Employee's work journal.
- Sign-on and Sign-off time's of the employee.
- A complete integrated train plan.
- Integration with the tracking of train movements on the network.

Outputs:

- Detailed MIS information which is required to manage train crew staff
- Detailed rostering schedules.
- Detailed work assignments allocated to train crew drivers and assistants.
- Full compliance with basic conditions of employment agreements (BCEA).
- Updating of the national train plan with the train crew assigned to man a train

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Controls:

- BCEA agreements
- Depot rules
- Business rules as defined by the business process governing the management and rostering of train crew.

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ICTM Project Name:	Train Crew Management (Module 2)
P M O Project Number	
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ICTM Relationship Manager:	Mark Snyders
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1. Project initiation documentation

1.1. PROJECT APPROACH

The aim of the Crew Management and Rostering project is to develop and deploy an integrated crew management system giving end-users the ability to manage all facets of train crew including, sign-on/off activities, rostering, employee availability etc.

The purpose of this document is to specify all the processes and business rules required in order to do effective crew management and rostering.

The complete user requirements document will be separated into 4 modules and they are listed below as follows:

- Module 1: Documenting and signing-off all pre-rostering processes and business rules
- Module 2: Documenting and signing-off all rostering process and business rules
- Module 3: Documenting and signing-off all post rostering process and business rules
- Module 4: Documenting and signing-off all Business Intelligence requirements

This approach allows for the crew management and rostering system to be developed in an iterative manner thereby ensuring that project deliverables can be realised in a shorter time frame with a quicker roll-out plan to the end-user community. This also ensures that the solution is scalable enough with regards to future enhancements in this business area.

1.2. Project SCOPE (Module 2)

THE INTENTION OF MODULE 2 OF THE CREW MANAGEMENT PROJECT IS TO DEFINE AND DOCUMENT THE CREW ROSTERING BUSINESS PROCESS AS WELL AS TO DESIGN, DEVELOP AND IMPLEMENT AN INFORMATION SYSTEM THAT WILL SUPPORT AN EFFICIENT AND EFFECTIVE CREW SCHEDULING PROCESS.

The rostering component of the crew management project will document the business processes for and specify the functional requirements of the following dimensions of Crew Rostering:

- **Crew Scheduling**
An unconstrained time-table that illustrates planned rest and work times of train crew for a specified period (month, quarter or year). The purpose of the duty schedule is to enable train crew to see in advance what their work schedules for an upcoming period will be, thus providing them with a measure of predictability regarding their future assignments.
- **Duty Rostering**

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Duty rostering covers the actual assignment of crew to the 7-day train plan. Crew will be assigned to trains according to their availability (as well qualifications, medical fitness and competence)

▪ **Roster Execution**

Roster Execution relates to real-time assigning crew to trains on the actual day of operations, having catered for deviations and actual conditions on the day of execution.

▪ **Countdown to rostering**

In the hours (12,9,6,3) leading up to roster execution time, roster compilers must continually check that things are still on track for the Train Crew to sign-on at the agreed planned time and communicate with train crew if there are any deviations i.e. trains running late, trains cancelled, etc.

▪ **Crew Monitoring**

- Crew Monitoring deals with tracking the crew while the trains are en-route, managing deviations en-route and reporting on the train trip after the event.

▪ **Post-trip Reporting**

Post-trip reporting relates to all activities that take place after a shift has been completed, viz.:

- Updated Crew Qualifications (Qualification date last used updated)
- Details of the next shift that crew is scheduled for

1.3. Risks

1.3.1. Business Risks

	Description	Probability	Risk response	Impact
Business risk				
Ambiguity with regards to Business Processes and Business Rules	Inconsistency among stakeholders in terms of what the correct business processes and business rules are.	High	<ul style="list-style-type: none"> • All impacted business processes and business rules to be reviewed as part of providing a new solution to crew rostering • Where there are changes to the existing processes these changes will be communicated and signed off with the project sponsor and impacted parties • Change management to ensure adherence to new changes 	High
Non-alignment between all Crew Management stakeholders	Alignment with all the stakeholders involved on the project.	High	<ul style="list-style-type: none"> • Regular progress meetings and progress reports as well as steering committee meetings involving all stakeholders / role players 	Certain stakeholders may not accept system as it may not address their need
Lack of data integrity	Data in source systems not maintained and thus inaccurate	High	<ul style="list-style-type: none"> • Get commitment from Business that all required data on the source systems will be maintained and updated as and when required 	High

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1.3.2. Project Risks

Project risk	Description	Probability	Risk response	Impact
Lack of stakeholder support and buy-in	Stakeholder buy-in and participation in the project as well as lack of communication between role players across all functions. This could impact the project delivery timelines	High	Regular progress meetings and progress reports as well as steering committee meetings involving all stakeholders / role players throughout the project lifecycle	High
Timing of Crew Risk Profile assessment	The results of the crew substance abuse test must immediately be available for the Crew Risk profile application to pick up from SAP, otherwise Crew Risk Profile assessments will not be accurate at the time that the CMS checks Crew Risk Profile	High	Substance Abuse test results must be updated to SAP as soon as the test has been done, so that by the time the Crew Risk Profile viewer runs, the data that it extracts from SAP is a real-time indication.	
Project Resources	Project resources and technical skills required	Low	Resource the project with appropriate skills required	High
Integration to other Systems	Crew success is highly dependent on it integrating or interfacing to other system	High	Identify all systems that the crew solution needs to integrate or interface to Ensure that the selected application can integrate or interface to all Clearly define purpose and information required at different stages in order to map and ensure alignment	High
Instability of the ITP	The fact that the ITP changes so frequently might result in actual rosters deviating greatly from the planned	High	ITP stability is required in order for rosters not to deviate extensively on the day of execution.	High
Technology	Risk that the technology selected does not live up to the expectations or is not well suited for its intended use or the environment	Medium	Architecture to carefully evaluate functionality and capability of the available or potential technology against business requirement and select an application that best meet the requirements	High

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1.4. PROJECT ASSUMPTIONS

- Depots have access to critical information relating to the train driver personnel.
- There are dedicated resources available to manage and roster crew.
- Training will be provided to personnel affected by the new solution and responsible to roster and manage crew.
- Change management will be undertaken to sensitise depot personnel on any new solution and will ensure that changes to business processes and business rules are adhered to correctly and consistently
- All changes to labour agreements effected centrally will apply and be adopted by all depots.
- All key resources to provide information and testing of the new solution will be available and committed to the process.
- The information extracted from source systems is accurate.

1.5. Project problems and opportunities

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ID	PROBLEMS	OPPORTUNITIES
1	<p>THERE IS CURRENTLY NO SINGLE SYSTEM IN TFR DEALING WITH THE MANAGEMENT AND ROSTERING OF TRAIN CREW</p>	<p>THE AIM OF THE CREW MANAGEMENT AND ROSTERING PROJECT IS TO DEVELOP AND DEPLOY AN INTEGRATED CREW MANAGEMENT SYSTEM GIVING END-USERS THE ABILITY TO MANAGE ALL FACETS OF TRAIN CREW INCLUDING, SIGN-ON/OFF ACTIVITIES, ROSTERING, EMPLOYEE AVAILABILITY ETC.</p>
2	<p>NO STANDARD ROSTERING METHOD BEING USED ACROSS TFR.</p>	<p>DEPOTS MAY HAVE TO IMPLEMENT DIFFERENT ROSTERING METHODS BECAUSE OF THEIR DIFFERENT OPERATIONAL CAPABILITIES AND NEEDS, BUT THE CREW MANAGEMENT SYSTEM MAY ENABLE A SYSTEM THAT WILL BE ABLE TO SUPPORT THE DIFFERENT ROSTERING METHODS.</p>
3	<p>NO INTEGRATION BETWEEN CURRENT ROSTERING SYSTEMS AND THE ITP.</p>	<p>THE AIM OF THE CREW MANAGEMENT AND ROSTERING PROJECT IS TO DEVELOP AND DEPLOY AN INTEGRATED CREW MANAGEMENT SYSTEM THAT WILL INTERFACE WITH SAP, THE ITP AND SPRINT (FOR TRAINS NOT ON THE ITP)</p>
4	<p>NO INTEGRATION BETWEEN CURRENT ROSTERING SYSTEMS</p>	<p>THE AIM OF THE CREW MANAGEMENT AND ROSTERING PROJECT IS TO DEVELOP AND DEPLOY AN INTEGRATED</p>

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ID	PROBLEMS AND SAP.	OPPORTUNITIES
		CREW MANAGEMENT SYSTEM THAT WILL INTERFACE WITH SAP, THE ITP AND SPRINT (FOR TRAINS NOT ON THE ITP)

1.6. PROJECT STAKEHOLDERS

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NAME	TITLE	ROLE
HERBERT MSAGALA	EXECUTIVE SPONSOR	TO ENSURE THE PROJECT SCOPE IS CLEARLY DEFINED AND CORRECT AND TO ASSESS PROJECT PHASES.
MARK SNYDERS	RELATIONSHIP MANAGER	MANAGE RELATIONSHIPS BETWEEN TFR ICTM AND TFR BUSINESS.
NTEFO TLHOAELE, DESIRÉE MANUEL, LERATO MIYA	BUSINESS ANALYST	GATHER AND DOCUMENT REQUIREMENTS, IDENTIFY POSSIBLE SOLUTIONS, ASSIST WITH THE SELECTION OF THE SOLUTION AND ASSIST IN THE TESTING AND DEPLOYMENT OF THE SOLUTION.
NELLY BADIMO	PROJECT MANAGER	MANAGE ALL ASPECTS OF THE PROJECT.
ANTON MALAN	DATA STEWARD	ENSURE THAT DATA MANAGEMENT STANDARDS ARE BEING ADHERED TO IN THE CMS PROJECT
KHETIWE MOSEGEDI	SENIOR USER	REPRESENTS THE SPONSOR AT THE VARIOUS PROGRESS MEETINGS
HANNELIE HANEKOM	SENIOR USER	REPRESENTS THE SPONSOR AT THE VARIOUS PROGRESS MEETINGS

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CLIVE PADAYACHEE	SENIOR USER	REPRESENTS THE SPONSOR AT THE VARIOUS PROGRESS MEETINGS
THOZAMA MOKOENA	SENIOR USER	REPRESENTS THE SPONSOR AT THE VARIOUS PROGRESS MEETINGS
RUBEN CLOETE	SENIOR USER	REPRESENTS THE SPONSOR AT THE VARIOUS PROGRESS MEETINGS
NONHLANHLA NGWENYA	SENIOR USER	REPRESENTS THE SPONSOR AT THE VARIOUS PROGRESS MEETINGS
AZWINDINI LUVHENGU	SENIOR USER	REPRESENTS THE SPONSOR AT THE VARIOUS PROGRESS MEETINGS

1.7. ITEMS NOT IN SCOPE

The following items will not be included as part of this project:

- Management of training centres
- This phase will only focus on rostering mainline personnel; subsequent phases will focus on local rostering assignments.
- Recording and storing accommodations details
- Fleet management
- Organizational assignment of train crew.
- Lifestyle management process – existing ICAS process.
- Remuneration process of train crew.
- Documenting and signing-off all pre-rostering processes and business rules (Covered in module 1)
- Documenting and signing-off all post rostering process and business rules (Covered in Module 1)
- Documenting and signing-off all Business Intelligence requirements (to be covered in module 4)

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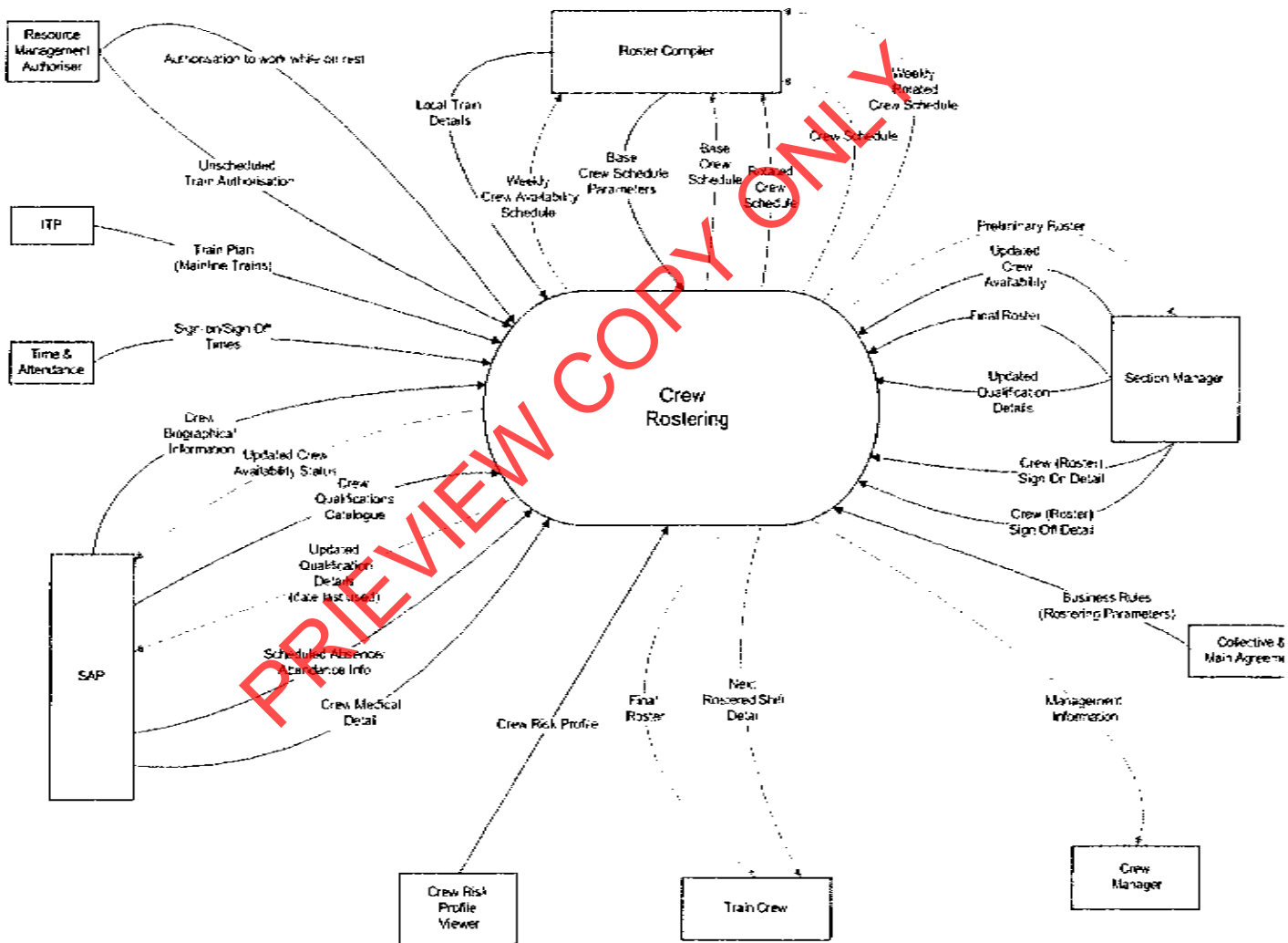
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1.8. PROJECT EXTERNAL INTERACTIONS

1.8.1. CONTEXT LEVEL DATA FLOW DIAGRAM



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1.8.2. External Agents and Data Flows

EA #	EXTERNAL AGENT	DATA FLOWS FROM AGENT	DATA FLOWS TO AGENT
1.	SAP (HR)	<ul style="list-style-type: none"> - Crew Biographical Information - Crew qualifications catalogue - Scheduled attendance & absence details - Crew Medical Information 	<ul style="list-style-type: none"> - Updated Crew availability status - Updated qualifications details (date last used)
2.	Resource Management Authoriser	<ul style="list-style-type: none"> - Authorisation for unscheduled trains - Authorisation to work while on rest 	<ul style="list-style-type: none"> - Request for unscheduled train Confirmation of authorisation
3.	Train Crew	<ul style="list-style-type: none"> - Updated Journal (Paper-based) 	<ul style="list-style-type: none"> - planned trip journal - Final Roster - Vehicle - Book-off accommodation details - Next shift detail
4.	Section Manager	<ul style="list-style-type: none"> - Updated crew availability status - Final Roster - Crew Sign-on (to roster) Details - Crew Sign-off (from Roster) Details 	<ul style="list-style-type: none"> - 72 Hour Roster (72hr)
5.	Roster Compiler	<ul style="list-style-type: none"> - Base Crew Schedule parameters 	<ul style="list-style-type: none"> - Base Crew Schedule - Crew Schedule - Rotated Crew Schedule
6.	ITP	<ul style="list-style-type: none"> - Train Plan 	
7.	Time & Attendance	<ul style="list-style-type: none"> - Crew sign-on time - Crew sign-off time 	
8.	Crew Risk Profile Viewer	<ul style="list-style-type: none"> - Crew Risk Profile report 	
9.	Crew Manager	-	Management Information

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1.8.3. Data Flows

DATAFLOW NAME (NOUN OR NOUN PHRASE)	DESCRIPTION OF INFORMATION
BASE CREW SCHEDULE	<p>A BLANK SCHEDULE THAT THE CMS SYSTEM CREATES BASED ON THE SCHEDULE DURATION (NUMBER OF WEEKS) AND DRIVER CATEGORY DETAILS THAT THE USER SUPPLIES. THE SCHEDULE INCLUDES THE DAYS OF THE WEEK ON WHICH THE USER MUST INDICATE DAYS ALLOCATED FOR REST.</p>
BASE CREW SCHEDULE PARAMETERS	<p>THE PARAMETERS ON WHICH THE BASE CREW SCHEDULE WILL BE CREATED, VIZ.:</p> <ul style="list-style-type: none"> - DRIVER CATEGORY DETAILS - SCHEDULE DURATION - REST SCHEDULE - SHIFT DETAILS
CREW SCHEDULE	<p>A TIME-TABLE THAT GIVES A WEEK-BY-WEEK VIEW OF CREW'S PLANNED WORK AND REST SCHEDULES OVER A PRE-DEFINED PERIOD (MONTH/QUARTER/YEAR).</p> <p>A CREW SCHEDULE PER DRIVER CATEGORY SHOULD BE PRODUCED</p>

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**PRELIMINARY
ROSTER**

**THE DUTY ROSTER THAT CMS GENERATES BASED ON THE
72-HOUR ITP.**

**THE ROSTER IS DEFINED AS "PRELIMINARY" BECAUSE IT IS
SUBJECT TO CHANGE, AS THE ITP CHANGES**

FINAL ROSTER

**THE FINAL CONFIRMED ROSTER WHICH WILL BE EXECUTED
ON THE DAY OF OPERATION**

**UPDATED
QUALIFICATION
DETAILS**

**THE "DATE LAST USED" FIELD OF A QUALIFICATION IS
UPDATED EVERY TIME THAT PARTICULAR QUALIFICATION IS
USED.**

UPDATED TRAINING

**CREW TRAINING DETAILS UPDATED EVERY TIME PRACTICAL
TRAINING IS COMPLETED.**

**UPDATED
AVAILABILITY
STATUS**

**WHEN CREW AVAILABILITY STATUS ON THE DAY OF ROSTER
EXECUTION IS NOT AS WHAT WAS ORIGINALLY PLANNED,
THEN THE SECTION MANAGER CAN UPDATE THE
AVAILABILITY STATUS TO REFLECT THE CURRENT REALITY.**

**SCHEDULED TRAIN
DETAIL**

**DETAILS OF ALL MAINLINE TRAINS PLANNED FOR THE
PERIOD AS PER THE ITP**

**NON-MAINLINE
TRAIN DETAIL**

**DETAILS OF ALL NON-ITP TRAINS SCHEDULED FOR THE
PERIOD.**

**SCHEDULE
DURATION**

NUMBER OF WEEKS THAT THE SCHEDULE WILL SPAN

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DRIVER CATEGORY	DEFINES THE TYPE OF DRIVING ACTIVITIES THAT A DRIVER IS QUALIFIED TO PERFORM I.E. A = SHUNTING, B = HAULERS, C = MAINLINE DRIVING
REQUEST FOR UNSCHEDULED TRAIN	WHEN AN UNSCHEDULED TRAIN IS REQUIRED, AUTHORISATION TO RUN SUCH A TRAIN MUST BE OBTAINED BY REQUEST FROM HEAD OFFICE.
UNSCHEDULED TRAIN AUTHORISATION	APPROVAL RECEIVED FROM HEAD OFFICE TO RUN AN UNSCHEDULED TRAIN
AUTHORISATION TO WORK WHILE ON REST	IF OPERATIONAL REQUIREMENTS REQUIRE CREW TO BE CALLED OUT FOR WORK WHILE THEY ARE ON REST, THEN AUTHORISATION FOR THIS MUST BE OBTAINED FROM HEAD OFFICE.
CREW BIOGRAPHICAL INFORMATION	PERSONNEL NUMBER, NAMES, DOB, ETC RELATING TO A CREW MEMBER.
CREW QUALIFICATIONS CATALOGUE	THE LIST OF QUALIFICATIONS THAT A PERSON HAS WITH DETAILS OF DATES OBTAINED, PROFICIENCY LEVELS, ETC.
CREW RISK PROFILE	AN INDICATION OF A PERSON'S FITNESS FOR DUTY. THESE ARE THE RESULTS FROM THE CREW RISK PROFILE VIEWER'S FITNESS FOR DUTY ALGORITHMS
BOOK-OFF ACCOMMODATION	CONFIRMATION OF THE BOOK-OFF FACILITY THAT THE PERSON WILL BE STAYING AT.

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DETAILS

**MANAGEMENT
INFORMATION**

MANAGEMENT REPORTS ON:

- CREW DUE FOR TRAINING REFRESHERS
- CREW DUE FOR MEDICAL REFRESHERS
- CREW HAVING EXPIRED QUALIFICATIONS

**CREW MEDICAL
INFORMATION**

- LAST MEDICAL DATE
- MEDICAL STATUS (AT LAST EXAM)
- NEXT MEDICAL DATE

**CREW SIGN ON (TO
ROSTER) DETAILS**

- DATE & TIME THAT THE CREW SIGNS ON TO EXECUTE THE ROSTER

**CREW SIGN-OFF
(FROM ROSTER)
DETAILS**

- DATE & TIME THAT THE CREW SIGNS OFF AFTER HAVING EXECUTED THE ROSTER

**SIGNON/SIGN-OFF
TIME**

- THE TIME THAT A PERSON SIGNS TO THE TIME & ATTENDANCE SYSTEM

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1.9. GLOSSARY

Roster	Crew shift schedule resourcing the Train Plan.
Crew	A train driver and train assistant pair.
Next shift details	Details of the next shift that a person is scheduled to work
Work instructions	This consists of the Train Journal, the Vehicle list and the Works Order
User profile	A user profile defines the level and types of access for a user in the system.
User	Person with access to the system.
Fit for Duty	A term that defines that a crew member is healthy, alert and able to drive a train, i.e. not under the influence of any substance (drugs or alcohol), or not being emotionally unstable, light duty or pregnant.
Training	A course that crew attends to acquire new skills or to refresh existing skills. Example: Refresher training for a 6E loco.
Corridor	A geographical area consisting of an end-to-end value chain, with operating divisions working as one team to improve customer service and operational efficiency in order to grow volumes in the long run. TFR has 14 corridor definitions.
SAP Human Resources	A system that assigns and manages employee numbers. It also maintains the information about the employees' qualifications, biographical information, and attendance on duty, disciplinary and safety performance measures. Approved acronym is SAP HR.
SAP Environmental Health and Safety	System that maintains the medical information of the crew and substance testing results when crew sign-on and sign-off duty. Approved acronym EHS.
Accommodation	A lodge, hotel or TFR dwelling where crew sleep/overnights when working the book-offs.
Locomotive Type	A class type for locomotive. E.g. electrical, diesel and dual locomotives.
Road knowledge	The knowledge of the route the train has to travel.
Brake Types	Vacuum Vacuum shunts, Vacuum empty, Vacuum load, Vacuum heavy load Air Air brake shunts, Heavy Air brake, Air 50 truck, Air 75 truck, Air 100 truck loaded, Air 100 truck empty, Air 150 truck loaded, Air 150 truck empty, Air 200 truck loaded, Air 200 truck empty, Air Motorcar train, Blue train, Passenger train, Name train
BCEA (Basic Conditions of Employment Act)	The Legislative Act which regulates employment conditions viz.: terms of working hours, remuneration, shift lengths, etc.
Crew licences	Certificates that train drivers are issued with which verify their locomotive knowledge and road knowledge. Drivers are expected to 03/12/2009 09:02:47 produce these licenses whenever requested to do so (This is not fully implemented yet.)
Crew manager	A person who is responsible for the management of crew in a depot and corridor.
Crew monitor	A crew manager assigned to monitor the exact location of crew on

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	trains and ensures that the crew never exceed their rostered times.
Chief Shedman	He/she is in charge of the loco shed.
Section manager	He/she is in charge of one or more track section/s.
Train category (service category)	<p>Category A – Mega Rail Large consistent traffic volumes. Guaranteed capacity availability. Fixed train slots. Fixed entire trip plans for a quarter. Mostly ring fenced empty trains.</p> <p>Category B – Flexi Rail Inconsistent demand pattern. Maximum volumes agreed on weekly basis. No guarantee that requests will be satisfied. Demands allocated weekly to available trip plan space. Once capacity has been committed, the trip plan is guaranteed.</p> <p>Category C – Access Rail Small irregular consignments. (bus service analogy) Demands handled on first come, first served basis. A quarterly schedule is published to indicate the amount of space available. (based on historic demand) Once capacity has been committed the trip plan is guaranteed. Unused capacity allocated to Cat B</p>
Driver category	Drivers are classified into 3 categories (A, B & C), based on the type of driving activities that they do: A = SHUNTING and HAULING B = MAINLINE DRIVING and C = HEAVY HAUL and SPECIALISED DRIVING
Train Type	Shunt, Hauler, Mainline
Train type (general)	The train type for statistics, e.g. Book-Off Train, Hauler, Hospital Hauler, Hospital Train, Main Line Goods, Material Train, Metro Trains and Passenger.
Train type (specific)	The train type according to Sprint. There are ±50 types in 10 groups.
Roster compiler	The person who is responsible for resourcing the Train Plan with the right skilled crew and ensuring that a roster is published for crew to view their next shifts.
Depot	The depot refers to a TFR loco depot where crew sign-on for duty and sign off. Each loco depot has a number of crew that belong to it and this is then referred to as the crew's home depot.
Rest Period	A mandatory period during which a crew member must be on rest and not available for rostering. There are mandatory daily rest periods between shifts (between sign-off and next sign-on) and weekly rest periods
Risk Profile	The factors that influence Crew members' prospective of being rostered. E.g. Anyone who is classified as "high" risk in either Substance Abuse, Medical, Discipline, Qualifications etc. should not be rostered.
Crew Risk Profile Viewer	A system that stores the risk profiles of a crew. It keeps record of for example, times unfit for duty due to substance abuse, number of signals passed at danger, the number of disciplinary hearings, etc.
Journal	A record of the crew's duty and productive times, shift length, for remuneration purposes.
CRUD	An acronym for C reate, R ead, U ppdate, D elete. It refers to the affects of the processes on the data. I.e. a process must transform data in one or more of these ways: a process must Create, Read, Update or Delete data.

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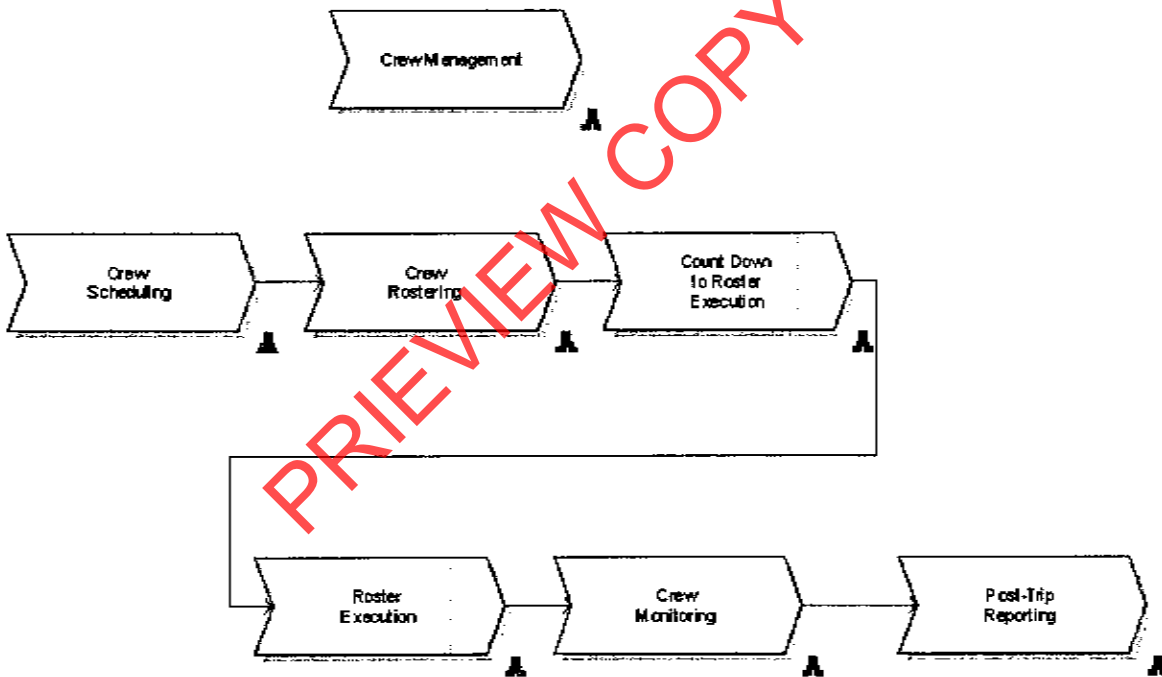


2. BUSINESS PROCESS Requirements

2.1. HIGH-LEVEL PROCESSES – Roster Crew

- Crew Scheduling
- Crew Rostering
- Countdown to Execution
- Roster Execution
- Crew Monitoring
- Post-Trip Reporting

Crew Management L2 VACD



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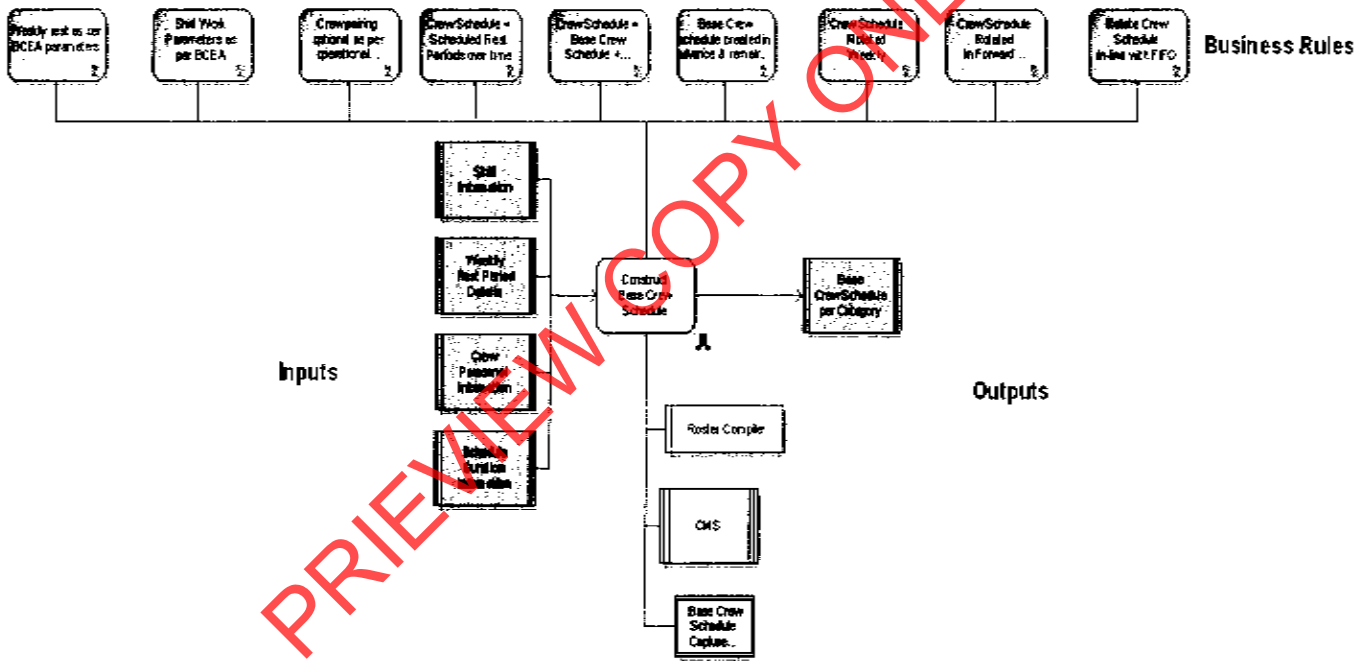
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2.2. Business Processes – Module 2

2.2.1. Crew scheduling

Construct Crew Schedule - L2 FAD



Controls/Mechanisms (People & Systems)

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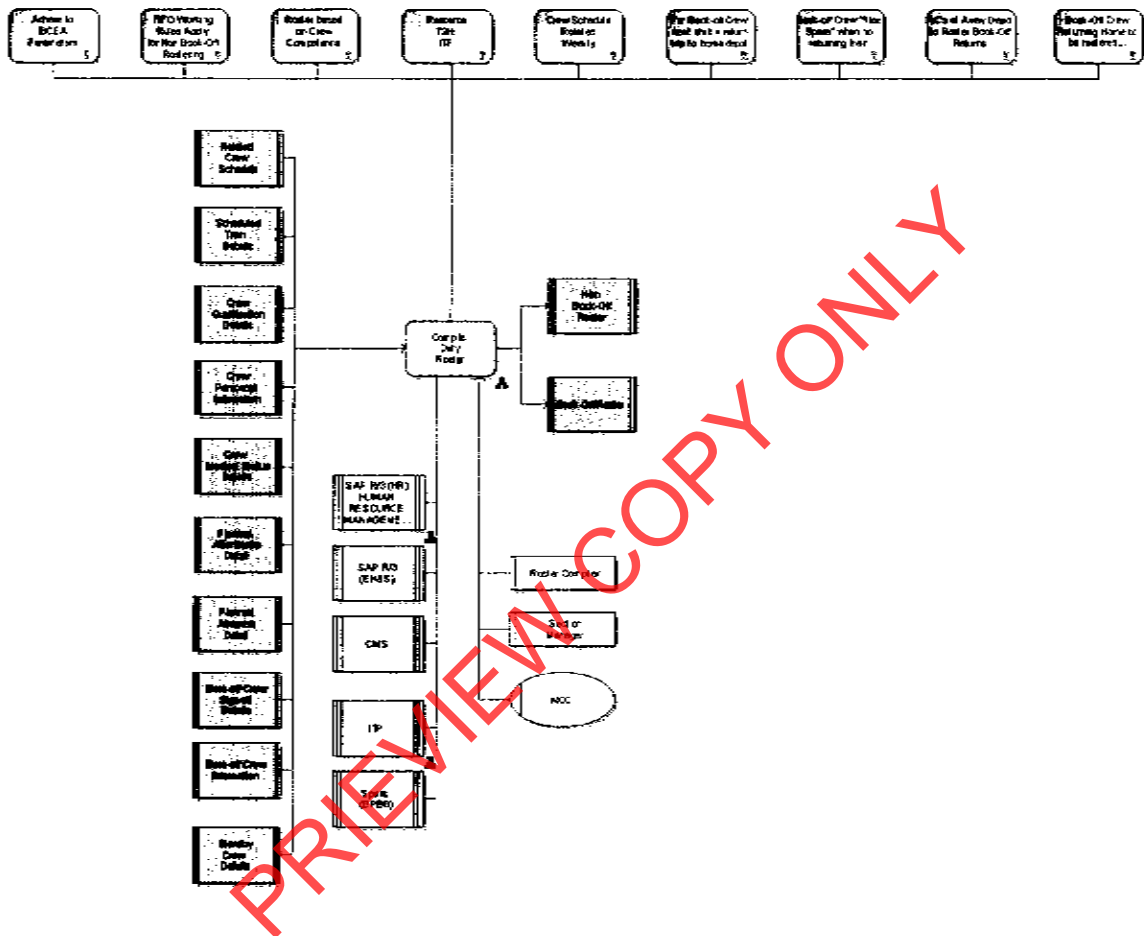
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2.2.2. duty rostering

Compile Duty Roster - L2 FAD



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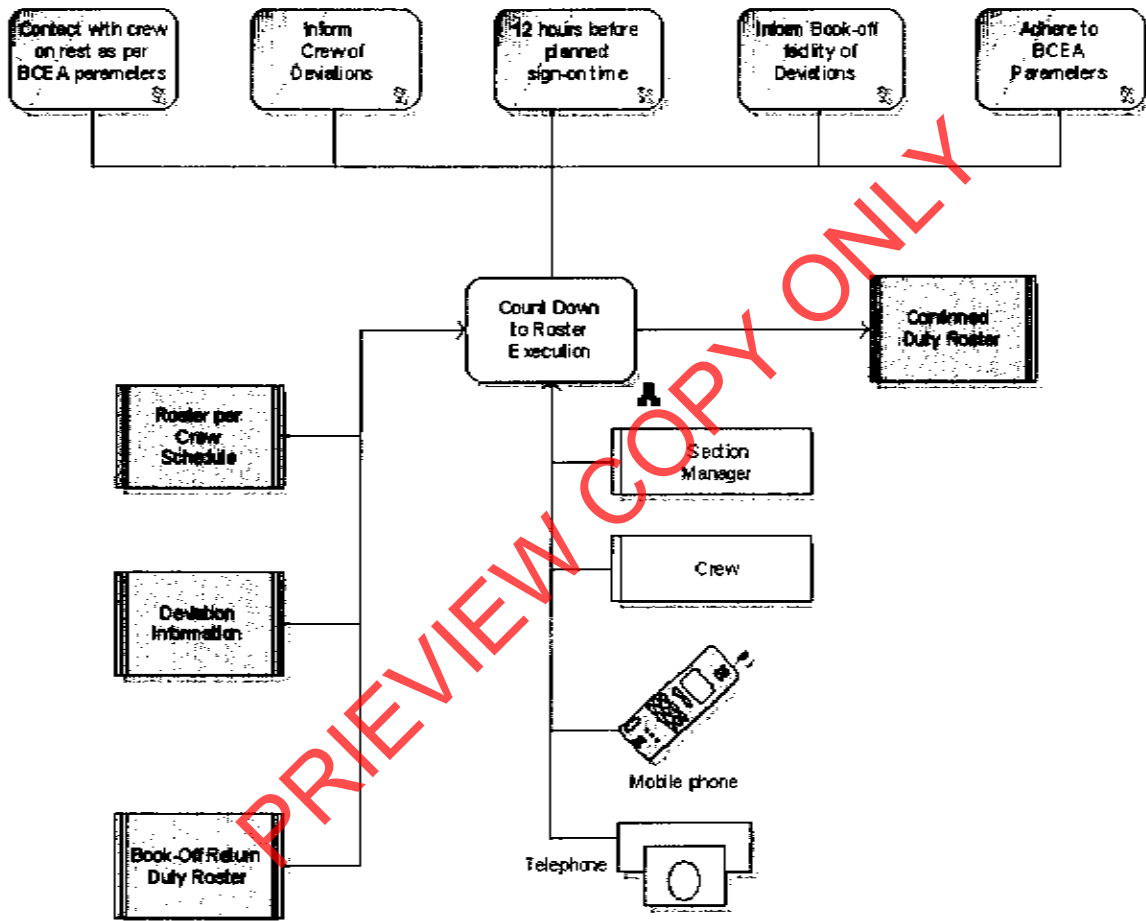
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2.2.3. Countdown to execution

Count Down to Roster Executio...



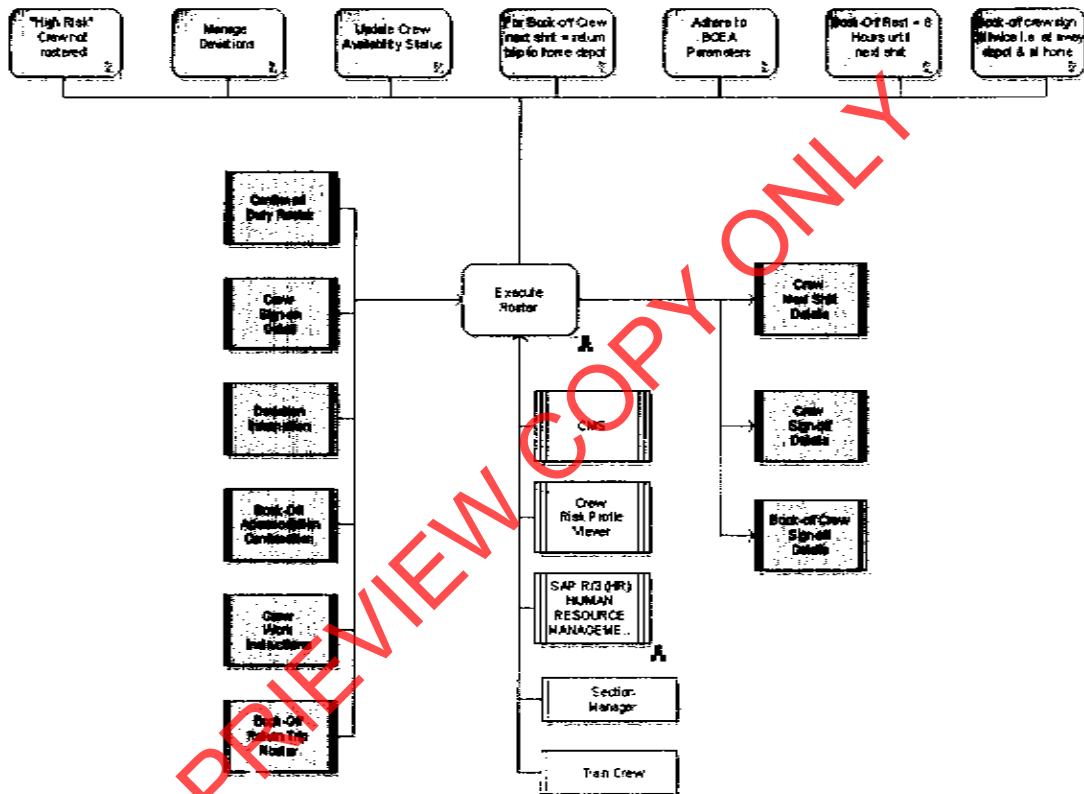
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2.2.4. Roster Execution

Execute Roster - L2 FAD



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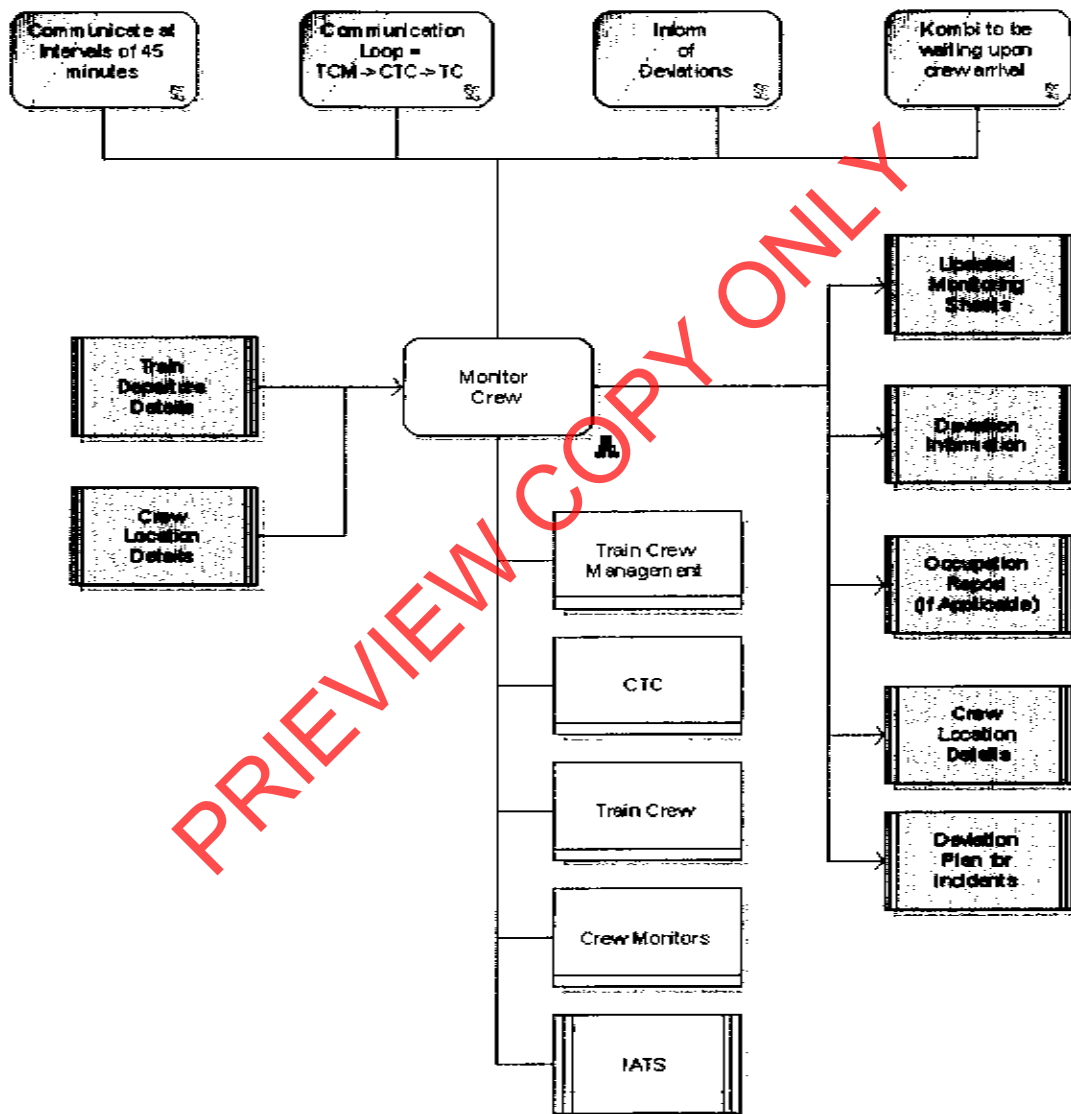
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2.2.5. crew monitoring

Monitor Crew - L2 FAD



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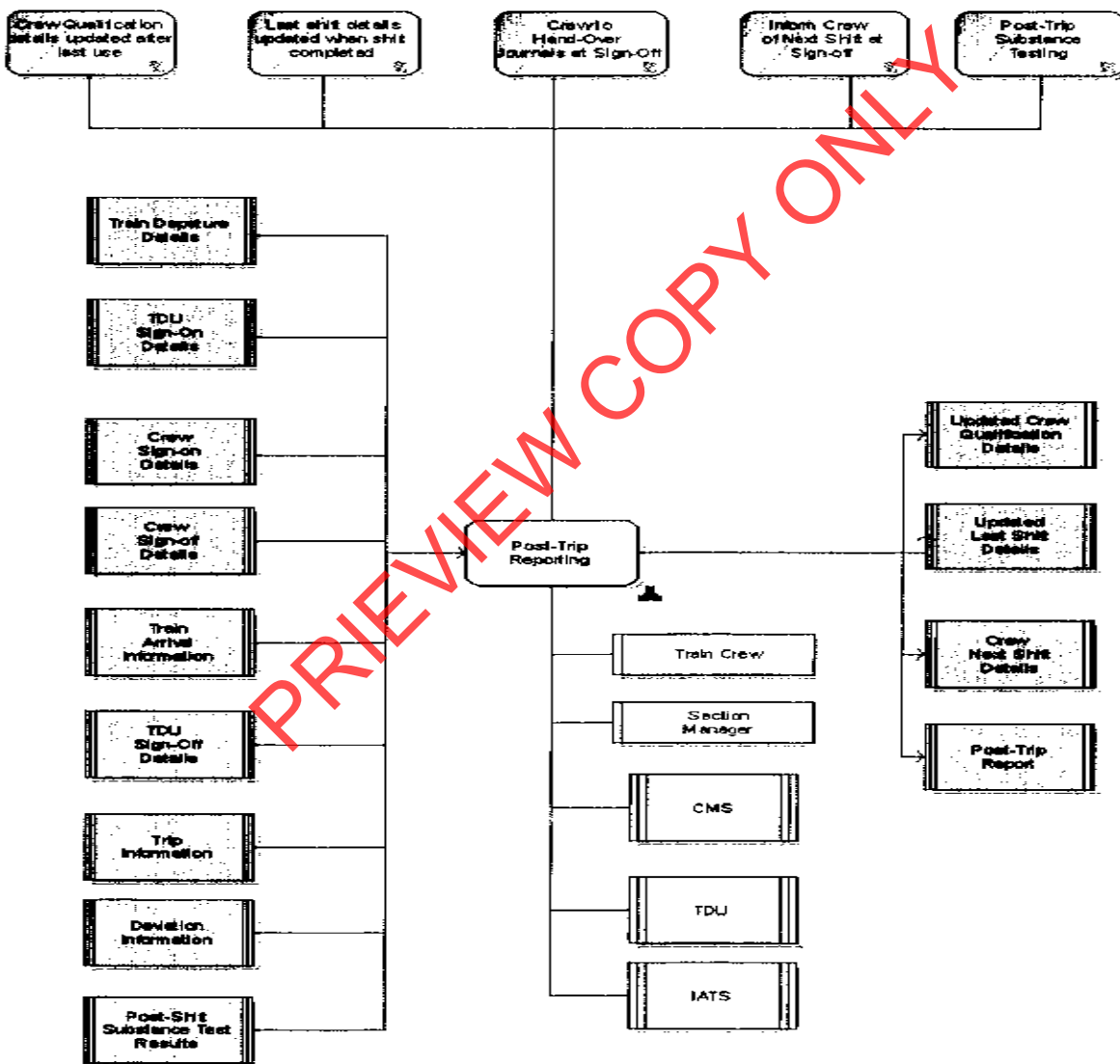
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2.2.6. Post Trip Reporting

Report Train Trip Detail F2 FAD



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2.4. ESSENTIAL PROCESSES

The following essential processes outline Crew Rostering from Pre-Rostering, Rostering, Crew Monitoring and Service Execution to Post-Trip reporting:

- Crew Scheduling
 - CMS01_Create Base Weekly Schedule
 - CMS02_Link Crew to Schedule

- Duty Rostering
 - Pre-Rostering
 - CMS03_Rotate Crew Schedule
 - CMS04_Determine Crew Availability (Planned Absences/attendance)
 - CMS05_Record Crew Availability
 - CMS06_Compile weekly crew availability schedule
 - CMS07_Determine Standby Requirements
 - CMS08_Compile and Publish weekly shift schedule
 -

 - Resource Train Plan
 - CMS09_Obtain Book-off train plan
 - CMS10_Obtain Non Book-off Train Plan
 - CMS11_Create Train
 - CMS12_Determine Crew Availability
 - CMS13_Confirm crew risk profile
 - CMS14_Obtain Crew Qualifications
 - CMS15_Match crew skills to train requirements
 - CMS16_Compile Book-Off Roster
 - CMS17_Compile Non Book-Off Roster

- Roster Execution
 - Count Down to Execution
 - Confirm train plan execution
 - Inform crew of deviations
 - Inform Book-Off Facility of Deviations
 - CMS18_Adjust Roster

 - Train Plan/Service Execution
 - CMS19_Sign on Crew
 - Test crew for substance abuse
 - CMS20_Adjust roster as required (see CMS18 – Adjust Roster)
 - Confirm book-off accommodation

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- Roster Execution Monitoring
 - Sign on TDU
 - Depart Train
 - Monitor Crew en-route

- Post Shift
 - CMS21_Sign Crew Off
 - Test Crew for Substance Abuse
 - Verify Crew Journal
 - CMS22_Update Crew Qualifications
 - CMS23_Update last shift
 - CMS24_Roster Book-Off Returns
 - CMS25_Adjust Roster to accommodate book-off (see CMS18_Adjust Roster)
 - CMS26_Update Availability status (e.g. Suspended, if substance abuse test is positive)
 - CMS27_Inform Crew of Next Shift

2.4.1. ESSENTIAL PROCESSES DETAIL

Process ID:	CMS01
Process Name:	Create Base Crew Schedule
Detailed Description:	This process creates the base crew schedule that will show the allocation of rest days over the schedule duration.
External Agents Involved:	Roster Compiler
What causes the process to occur?	The weekly rest schedules for a coming period in the future must be planned.
What happens after the process is complete?	A base crew schedule depicting the occurrences of rest, work and shift rotations for a period is created.
Business rules:	
<ul style="list-style-type: none"> • The base crew schedule has no names of crew attached to it and shows only: <ul style="list-style-type: none"> ○ Week numbers from Week 1 to Week Max (week max = number of drivers which will be allocated to the crew schedule) ○ Driver Category ○ Rest periods per week • Rotate shifts in a forward direction , i.e. morning → afternoon → night • Weekly rest periods are mandatory and should be allocated as follows: <ul style="list-style-type: none"> ○ 36 hours, including a Sunday Or ○ 48 consecutive hours during the week, with every 3rd rest period including a Sunday which will be granted on a back-to-back basis, combining the weekly rest periods of weeks 3 & 4. • Crew schedules are created per driver category. • The base crew schedule will be created as follows: <ul style="list-style-type: none"> ○ User specifies Depot, Driver Category & Schedule Duration details (no of weeks to be created) ○ The CMS system creates a schedule with the specified number of weeks, indicating the days of the week 	

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- The user indicates the days designated for rest for each week
- The system validates whether enough rest has been scheduled for a designated week.
- The user specifies the shift pattern and the system validates the correctness thereof against the predetermined business rule (see bullet 2)
- Where rest is not indicated the crew schedule will automatically reflect that work activities can take place.
- The crew schedule will therefore reflect rest and work indicators as well as the proposed shift schedule.
- Crew Schedules will be produced quarterly, per depot, per driver category
- Crew scheduling does not assign crew to trains i.e. no consideration of the ITP when compiling a crew schedule.
- Crew scheduling enables long-term planning of rest periods, thus providing train crew with a measure of predictability of future assignments
- The confirmed crew schedule must be published at the depot before the quarter (month, Year) starts.

Data (attributes):	Entity	CRUD	Source
Driver Category	DRIVER_CATEGORY	R	
Depot Code	DEPOT	R	
Schedule Duration	BASE_CREW_SCHEDULE	CRUD	
Shift Type	SHIFT_TYPE	R	
Shift Start Time	SHIFT_TYPE	R	
Shift End Time	SHIFT_TYPE	R	
Week Number	WEEK	R	
Day Number	WEEK_DAY	R	
Rostered Activity	WEEKLY_SCHEDULE	CRUD	

Additional notes:

Information source: • Roster Compiler

Functional Requirement – AS IS

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List the group(s) that currently perform this process.	Chief Shedman, Roster compilers, Section Managers
How is the process currently performed?	<ul style="list-style-type: none"> • A base crew schedule showing rest is not currently being created. • Crew are scheduled based on an annual diagram which includes rest, standby and train details.
Who uses the output?	Roster compilers

Process ID:	CMS02			
Process Name:	Link Crew to Schedule			
Detailed Description:	Through this automated process, CMS links crew to the Base schedule i.e. a person's name will now appear next to the corresponding week on the crew schedule			
External Agents Involved:				
What causes the process to occur?	The base crew schedule has been created, crew names must be attached to the scheduled rest/work periods, in order to give Crew a view of when they will be scheduled for rest and work.			
What happens after the process is complete?	The schedule will be rotated weekly so that each crew member's name appears on a different slot every week. i.e. Driver 1 moves down to week 2 driver 2 to week 3, driver 4 to week 5 and Driver n to week 1			
Business rules:	<ul style="list-style-type: none"> • Crew will be linked to the base schedule once, to produce the weekly crew schedule (rest/work slots with names attached to each), after which only the crew schedule will be rotated weekly to produce a new schedule each week for every crew member. 			
	Data (attributes):	Entity	CRUD	Source
	Personnel Number	EMPLOYEE	R	
	Last Name	EMPLOYEE	R	
	First Name	EMPLOYEE	R	
	Driver Category	DRIVER CATEGORY	R	
	Shift Type	SHIFT_TYPE	R	
	Shift Start Time	SHIFT_TYPE	R	
	Shift End Time	SHIFT_TYPE	R	

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	Week Number	WEEK	R	
	Day Number	WEEK_DAY	R	
	Rostered Activity	WEEKLY_SCHEDULE	CRUD	
Additional notes:				
Information source:		<ul style="list-style-type: none"> SAP HR, Roster Compiler 		
Functional Requirement – AS IS				
List the group(s) that currently perform this process.				
How is the process currently performed?		Roster Compilers compile weekly diagrams		

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Process ID:	CMS03
Process Name:	Rotate Crew Schedule
Detailed Description:	Every week the CMS system will rotate the crew schedule so that each crew member's name is moved down one position on the crew schedule. I.e. the rest/work scheduled for the new week will be applicable to the person whose name now appears next to it.
External Agents Involved:	
What causes the process to occur?	A new week is about to begin
What happens after the process is complete?	The new week's crew schedule can be used as a basis for rostering
Business rules:	
<ul style="list-style-type: none"> Scheduling Duration = Week Max (i.e. If schedule duration = 12, then Week Max = 12) Increment week number by 1 until week max, and then start back at 1. (I.e. the person at week 1 on the original schedule should appear back at week one once Week Max is reached. 	

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- The rotation process moves each crew member down one place on the crew schedule.
- Weekly schedule rotation implements the FIFO principal.
- Crew schedule must be rotated every 7 days to create a new schedule for the next 7 days.
- Crew rotations will take place every Thursday afternoon as an automated process before the 7 day ITP is published.
- Move crew one place down on the crew schedule every week

Data (attributes):	Entity	CRUD	Source
Personnel Number	EMPLOYEE	R	
Last Name	EMPLOYEE	R	
First Name	EMPLOYEE	R	
Driver Category	DRIVER CATEGORY	R	
Shift Type	SHIFT_TYPE	R	
Shift Start Time	SHIFT_TYPE	R	
Shift End Time	SHIFT_TYPE	R	
Week Number	WEEK	R	
Day Number	WEEK_DAY	R	
Rostered Activity	WEEKLY_SCHEDULE	CRUD	

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Additional notes:	
Information source:	• Roster Compiler

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Functional Requirement – AS IS	
List the group(s) that currently perform this process.	
How is the process currently performed?	Roster Compilers compile weekly diagrams

Process ID	CMS04
Process Name:	Determine Crew availability (planned absences)
Detailed Description:	This process checks for any absences (leave) or attendances (training, medical exams, symposiums, etc) that every crew member has planned for the coming week.
External Agents Involved:	SAP
What causes the process to occur?	It occurs before the start of each new week.
What happens after the process is complete?	A schedule can be compiled to show the Crew's availability for the coming week.
Business rules:	
<ul style="list-style-type: none"> o Crew availability status must be "Available" in order for them to be considered for rostering. 	

Data (attributes):	Entity	CRUD	Source
Personnel Number	EMPLOYEE	R	
Last Name	EMPLOYEE	R	
First Name	EMPLOYEE	R	
Driver Category	DRIVER CATEGORY	R	
Attendance/Absence Type	PLANNED_EVENTS	R	SAP
Unavailable Date From	UNAVAILABLE_DAY	CRUD	SAP
Unavailable Date To	UNAVAILABLE_DAY	CRUD	SAP

Additional notes:	
Information source:	

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Functional Requirement – AS IS	
List the group(s) that currently perform this process.	
How is the process currently performed?	Personnel availability is recorded manually on paper
Who uses the output?	CMS system uses the information to compile a weekly Crew Availability Schedule

Process ID	CMS05
Process Name:	Record Crew availability
Detailed Description:	This process records any events that Crew will be involved in during the coming week that have not been recorded in and thus cannot be retrieved from SAP. Details of, for example, Symposiums, Meetings, Union Activities, etc that Crew will attend in the coming week, are manually recorded here.
External Agents Involved:	Chief Shedman
What causes the process to occur?	It occurs before the start of each new week.
What happens after the process is complete?	A schedule can be compiled to show the Crew's availability for the coming week.
Business rules: <ul style="list-style-type: none"> o Crew availability status must be "Available" in order for them to be considered for rostering. o Absences/attendances that are not obtainable from SAP must manually be captured on CMS. o Record only where availability status <> Available. 	

Data (attributes):	Entity	CRUD	Source
Personnel Number	EMPLOYEE	R	
Last Name	EMPLOYEE	R	
First Name	EMPLOYEE	R	
Driver Category	DRIVER CATEGORY	R	
Availability Status	AVAILABILITY_STATUS	CRU	
Unavailable Date From	UNAVAILABLE_DAY	CRUD	

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	Unavailable Date To	UNAVAILABLE_DAY	CRUD	
Additional notes:				
Information source:				
Functional Requirement – AS IS				
List the group(s) that currently perform this process.				
How is the process currently performed?		Personnel availability details are written down in books at the depots		
Who uses the output?		CMS system uses the information to compile a weekly Crew Availability Schedule		

Process ID:	CMS06			
Process Name:	Compile weekly crew availability schedule			
Detailed Description:	This automated process will generate a schedule weekly that will show the days that each Crew member will not be available for rostering.			
External Agents Involved:				
What causes the process to occur?	Crew schedules for a new week must be planned			
What happens after the process is complete?	<ul style="list-style-type: none"> - The weekly availability schedule will be published. - The roster compiler and section manager will have a view of who of their crew will be available in the coming week and will better be able to plan for roster execution 			
	<ul style="list-style-type: none"> • Crew can only be rostered, if their availability status is "Available" • The availability schedule is the weekly shift schedule + any planned absences & attendances for the week. 			
	Data (attributes)	Entity	CRUD	Source
	Personnel Number	EMPLOYEE	R	
	Last Name	EMPLOYEE	R	

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First Name	EMPLOYEE	R	
Driver Category	DRIVER CATEGORY	R	
Week number	CREW_SCHEDULE	R	
Day Number	CREW_SCHEDULE	R	
Rostered Activity	WEEKLY SCHEDULE	R	
Attendance Absence Type	PLANNED_EVENTS	R	
Availability Status	AVAILABILITY_STATUS	R	
Additional notes:			
Information source:	<ul style="list-style-type: none"> • Roster Compiler • SAP HR 		
Functional Requirement – AS IS			
List the group(s) that currently perform this process.			
How is the process currently performed?			

Process ID:	CMS07
Process Name:	Determine Standby Requirements
Detailed Description:	Through this manual process, the depots determine and record their standby requirements for the coming week.
External Agents Involved:	Roster Compiler
What causes the process to occur?	Weekly standby must be planned
What happens after the process is complete?	The shift schedule indicating planned rest & standby for the week is published
Business rules:	
<ul style="list-style-type: none"> • Standby rosters must be compiled on a week-on, week-off basis according to operational requirements. • An employee shall not be placed on standby duty for more than 2 consecutive weeks, except by agreement for not more than 4 consecutive weeks. • Each depot will determine its own standby requirements, based on operational needs. 	

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- The amount of crew required to be on standby will vary daily, depending on the level of activity of each day
- Each depot will manually allocate crew for standby on the CMS

Data (attributes):	Entity	CRUD	Source
Personnel Number	EMPLOYEE	R	
Last Name	EMPLOYEE	R	
First Name	EMPLOYEE	R	
Category	CATEGORY	R	
Shift Type	SHIFT TYPE	CRU	
Week Number	WEEK	R	
Day Number	WEEK_DAY	CRU	
Rostered Activity	WEEKLY_SCHEDULE	CRU	

Additional notes:
Information source: • Roster Compiler

Functional Requirement – AS IS

List the group(s) that currently perform this process.	Chief Shedman, Roster compilers, Section Managers
How is the process currently performed?	<ul style="list-style-type: none"> • A base crew schedule showing rest & standby is not currently being created. • Crew are scheduled based on an annual diagram
Who uses the output?	Roster compilers

Process ID:	CMS08
Process Name:	Compile weekly shift schedule
Detailed Description:	This process compiles a schedule per week which shows the rest, work and standby periods planned for every crew member for that week.
External Agents Involved:	

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What causes the process to occur?	A schedule must be produced that will show how rest, work and standby will be allocated to each crew member for the coming week.
What happens after the process is complete?	<ul style="list-style-type: none"> - The weekly shift schedule will be used as input for producing the weekly roster. - The weekly shift schedule must be published

Business rules:

- A new shift schedule must be compiled every week.
- Weekly shift schedule is compiled after the (base) Crew Schedule has been rotated
- Shift Schedule to indicate, per crew member:
 - Shifts
 - Rest days
 - Standby Days
 - Work days
- Schedules to be published on a weekly basis for easy access to all workers in a understandable format

Data (attributes):	Entity	CRUD	Source
Personnel Number	EMPLOYEE	R	
Last Name	EMPLOYEE	R	
First Name	EMOLOYEE	R	
Category	CATEGORY	R	
Shift Type	SHIFT TYPE	R	
Week Number	WEEK	R	
Day Number	WEEK_DAY	R	
Rostered Activity	WEEKLY_SCHEDULE	R	

Additional notes:	
Information source:	<ul style="list-style-type: none"> • SAP HR

Functional Requirement – AS IS

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List the group(s) that currently perform this process.	Roster compilers, Crew managers, Section Managers
How is the process currently performed?	
Who uses the output?	Chief Shedman, Roster compilers, Section managers, Crew management

Process ID:	CMS09
Process Name:	Obtain Book-Off Train Plan
Detailed Description:	This automated process obtains details of all "Book-Off " Trains scheduled on the ITP for the next 72 Hours
External Agents Involved:	ITP
What causes the process to occur?	The previous 72 hours' train plan is in execution and the next 72 hours' plan must be resourced.
What happens after the process is complete?	The CMS generates book-off rosters to execute the next 72 Hour Train Plan
Business rules: <ul style="list-style-type: none"> • Data must be extracted from the ITP per Depot • When extracting train details from the ITP, distinction must be made between Book-Off and Non Book-off trains. • A new Train Plan will be uploaded to CMS every 72 hours. • Crew Rostering will be based on the 72 Hour Train plan. • Train Plans subsequent to the 72 Hour Train Plan (within the same 72 Hour period) will result in an adjusted roster. • Route details will be derived from the Origin-Destination pair 	

Data (attributes):	Entity	CRUD	Source
ITP number	TRAIN_PLAN	R	
Train number	TRAIN_PLAN	R	
Train date	TRAIN_PLAN	R	
Origin	TRAIN_PLAN	R	
Destination	TRAIN_PLAN	R	
Estimated Time of Departure	TRAIN_PLAN	R	

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	Train schedule	TRAIN_PLAN	R	
	Brake type	TRAIN_PLAN	R	
	Load type	TRAIN_PLAN	R	
	Loco Type	TRAIN_PLAN	R	
	Book Off Train Indicator	TRAIN_PLAN	R	
	Train Type	TRAIN_PLAN	R	
Additional notes:	A change request must be submitted for a new field (Book Off Indicator) to be added to the ITP. Book-Off indicator field must be mandatory on the ITP. Train Plan details will be extracted from the ITP based on the Book-Off Indicator			
Information source:	ITP			
Functional Requirement – AS IS				
List the group(s) that currently perform this process.	Planners			
How is the process currently performed?	Currently this is a manual process, where the ITP is accessed from the portal and printed out to generate rosters.			
Who uses the output?	The system uses the output as part of the rostering process			

Process ID:	CMS10
Process Name:	Obtain Non Book-Off Train Plan
Detailed Description:	This automated process obtains details of all "Non Book-Off" Trains scheduled on the ITP for the next 72 Hours
External Agents Involved:	ITP
What causes the process to occur?	The previous 72hr train plan is in execution and the Train Plan for the next 72 Hour's must be resourced.
What happens after the process is complete?	The CMS generates non book-off rosters to execute the next 72 Hour Train Plan
Business rules:	
<ul style="list-style-type: none"> • Data must be extracted from the ITP per Depot • When extracting train details from the ITP, distinction must be made between Book-Off and Non Book-off trains. • Non Book Off crew will simultaneously be rostered to complete the forward & Return Legs of an ITP trip • The train plan will be uploaded to CMS every 72 hours. • Crew Rostering will be based on the 72 Hour Train plan. • Train Plans subsequent to the 72 Hour Train Plan (within the same 72 Hour period) will result in an adjusted roster. • Route details will be derived from the Origin-Destination pair • 	

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Data (attributes):	Entity	CRUD	Source
ITP number	TRAIN_PLAN	R	
Train number	TRAIN_PLAN	R	
Train date	TRAIN_PLAN	R	
Origin	TRAIN_PLAN	R	
Destination	TRAIN_PLAN	R	
Estimated Time of Departure	TRAIN_PLAN	R	
Train schedule	TRAIN_PLAN	R	
Loco Type	TRAIN_PLAN	R	
Brake type	TRAIN_PLAN	R	
Load type	TRAIN_PLAN	R	
Book Off Train Indicator	TRAIN_PLAN	R	
Train Type	TRAIN_PLAN	R	
Trip Leg	TRIP_LEG	R	
Additional notes:	A change request must be submitted for a new field (Book Off Indicator) to be added to the ITP. Book-Off indicator field must be mandatory on the ITP. Train Plan details will be extracted from the ITP based on the Book-Off Indicator		
Information source:	ITP		
Functional Requirement	AS IS		
List the group(s) that currently perform this process.	Planners		
How is the process currently performed?	Currently this is a manual process, where the ITP is accessed from the portal and printed out to generate rosters.		
Who uses the output?	The system uses the output as part of the rostering process		

Process ID:	CMS11
Process Name:	Create Train
Detailed Description:	This process allows crew management to create and resource trains that are not scheduled on the ITP.
External Agents Involved:	Resource Management Authoriser
What causes the process to occur?	There is a train that needs to run, but it is not on the ITP and so has to be created so that it can be resourced

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What happens after the process is complete?	The created train is resourced according to the appropriate rostering process			
Business rules:				
<ul style="list-style-type: none"> • Crew management may create trains when necessary. • An authorisation to create trains that do not appear on the ITP must be obtained from an Authoriser from Resource Management. • 				
	Data (attributes):	Entity	CRUD	Source
	Train number	UNSCHEDULED_TRAIN	CRU	
	Train date	UNSCHEDULED_TRAIN	CRU	
	Origin	UNSCHEDULED_TRAIN	CRU	
	Destination	UNSCHEDULED_TRAIN	CRU	
	Estimated Time of Departure	UNSCHEDULED_TRAIN	CRU	
	Train schedule	UNSCHEDULED_TRAIN	CRU	
	Brake type	UNSCHEDULED_TRAIN	CRU	
	Load type	UNSCHEDULED_TRAIN	CRU	
	Book Off Train Indicator	UNSCHEDULED_TRAIN	CRU	
	Authoriser Name	UNSCHEDULED_TRAIN	CRU	
Additional notes:				
Information source:				
Functional Requirement – AS IS				
List the group(s) that currently perform this process.	Planners			
How is the process currently performed?	Unscheduled Trains are created manually and switched on by Train Planners in collaboration with Customer Care			
Who uses the output?	The system uses the output as part of the rostering process			

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Process ID:	CMS12
Process Name:	Determine crew availability
Detailed Description:	This automated process occurs after the ITP for the next 72 hours has been retrieved. It determines the availability of crew for the next 72 hours.
External Agents Involved:	Crew Availability Schedule, Roster Compiler
What causes the process to occur?	The Train Plan for the next 72 Hours has been obtained and Roster Compilers have to start planning to resource it. .

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What happens after the process is complete?	Available crew can be allocated to trains			
Business rules:	<ul style="list-style-type: none"> • Leave, training, shift rosters as well as rest period to be planned well in advance. • Only Crew with Availability Status = "Available" can be rostered for duty. • The weekly Crew Availability schedule will serve as an input for determining crew availability. • Manual intervention will be required if 72Hour Crew Availability <> Weekly Crew Availability (i.e. the weekly availability schedule shows that someone will be available on a particular day and at the 72-hour check, they are not.) 			
	Data (attributes):	Entity	CRUD	Source
	Personnel number	EMPLOYEE	R	
	Availability Check Period	AVAILABILITY_CHECK	R	
	Attendance Absence type	PLANNED_EVENTS	R	
	Availability Status	AVAILABILITY_STATUS	R	
	Unavailable Date From	UNAVAILABLE_DAY	R	
	Unavailable Date To	UNAVAILABLE_DAY	R	
Additional notes:				
Information source:	Roster Compiler, Record Book at the depots			
Functional Requirement – AS IS				
List the group(s) that currently perform this process.	Section Manager, Roster Compiler			
How is the process currently performed?	Crew availability status is recorded in a book at the depots.			
Who uses the output?	The system uses the output as part of the rostering process			

Process ID:	CMS13
Process Name:	Confirm crew risk profile
Detailed Description:	This automated process confirms that crew personnel are fit to perform duty.

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External Agents Involved:	Risk Profile Viewer
What causes the process to occur?	Automated process to check crew risk profile before roster allocation can take place
What happens after the process is complete?	<ul style="list-style-type: none"> - If crew is fit for duty they will be rostered. - If crew is not fit for duty they will be rostered for other duties or not rostered at all.

Business rules:

- This process will check the following:
 - Whether a crew member has undergone a medical examination in the last 12 months.
 - Whether a crew member is medically fit for duty or not
 - If an employee is on EAP suspension, pregnant, on light duties
 - If an employee's qualifications are valid.
- A person's risk profile (High, Moderate or Low) will determine whether or not they are rostered, a High Risk person will not be eligible for rostering at all, and Moderate Risk may be rostered for other duties.
- High risk profile employees will automatically be made not available for rostering.
- CMS will interface with the crew risk profile application to obtain the Crew's Risk Profile
- The Crew Risk Profile system has logic built-in to it that determines a person's risk profile based on:
 - Rest period
 - Substance Abuse
 - Qualifications
 - Availability Condition Status (Pregnant, EAP, Light Duties, etc)
 - Incident (SPADs etc) Record
- Medical Status must = "Fit for Duty" in order for Crew to be considered for a roster.
- Only a status of "Fit for Duty" is acceptable when rostering crew (see other medical status values under Valid Values List)

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Data (attributes):	Entity	CRUD	Source
Personnel Number	CREW_RISK_PROFILE	R	
Risk assessment date	CREW_RISK_PROFILE	R	
Assessment type	CREW_RISK_PROFILE	R	
Risk Profile	CREW_RISK_PROFILE	R	
Medical status	MEDICAL RECORD	R	

Additional notes:

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Information source:	Record Books at the depots, SAP EHS, Crew Risk Profile Viewer (Where it is currently being deployed)
Functional Requirement – AS IS	
List the group(s) that currently perform this process.	Section Manager
How is the process currently performed?	An incident report is created when an employee has tested positive for substance abuse, SPAD etc
Who uses the output?	The system uses the output as part of the rostering process

Process ID:	CMS14
Process Name:	Obtain crew qualifications
Detailed Description:	This automated process obtains the crew qualifications which will determine if the person is eligible to man the required train
External Agents Involved:	SAP HR
What causes the process to occur?	When the 72 hour train plan is obtained and crew with relevant qualification need to be allocated a trains.
What happens after the process is complete?	Crew will be assigned to a train that they are qualified to drive.

Business rules:

- Crew can only be rostered for trains that they are qualified for.
- Crew cannot be rostered if the qualification has expired.
- A qualification is valid from the date that a crew member is certified
- **Date Last Used** field (QUALIFICATION) table will be automatically updated with the current date of completing duty using the applicable qualification.
- The renewal date of a qualification will be the date the qualification expires.
- If crew qualifies to drive a specific train but is not fit for duty (e.g. pregnant) they will be rostered for other duties.

Data (attributes):	Entity	CRUD	Source
Personnel number	EMPLOYEE	R	
Qualification type	QUALIFICATION	R	
Qualification group	QUALIFICATION	R	
Qualification description	QUALIFICATION	R	

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	Proficiency	QUALIFICATION	R	
	Date last used	QUALIFICATION	R	
Additional notes:				
Information source:		Record Books at the depots, crew journal, qualification certificates		
Functional Requirement – AS IS				
List the group(s) that currently perform this process.		Roster Compilers, Section Manager		
How is the process currently performed?		Depots have log books and spreadsheets where crew qualification information is recorded in		
Who uses the output?		Roster compilers, Crew Manager		

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Process Name:	Match crew skills to train requirements			
Detailed Description:	This automated process assigns suitably qualified Crew to the ITP trains by matching the train requirements to each crew member's qualifications.			
External Agents Involved:				
What causes the process to occur?	The 72-Hour Train Plans have been received and must be rostered			
What happens after the process is complete?	A roster will be compiled, showing details of trains that will run, along with information about the crew that will man them			
Business rules:				
<ul style="list-style-type: none"> • Crew should be matched to a train (Loco type, brake type, train type, route knowledge) that they have qualifications for. • CMS will automatically match crew to trains, based on Train Requirements and Crew Qualifications • A driver should only be rostered to drive a train that he has the necessary qualifications for. • A driver can be rostered to drive a train of a lower category (i.e. C can drive A or B), but not a higher category (i.e. A cannot drive B or C). • A driver-assistant pair must be matched to a train. • A designated train driver may be assigned as a train assistant, if no suitably qualified assistant is found. 				
	Data (attributes):	Entity	CRUD	Source
	Personnel number	EMPLOYEE	R	
	Qualification type	QUALIFICATION	R	
	Role on job	72 HOUR DUTY ROSTER	CRUD	
	Train number	TRAIN_PLAN	R	
	Origin	TRAIN_PLAN	R	
	Destination	TRAIN_PLAN	R	
	Brake type	TRAIN_PLAN	R	
	Loco Type	TRAIN_PLAN	R	
	Train Type	TRAIN_PLAN	R	
	Train schedule	TRAIN_PLAN	R	
	Load type	TRAIN_PLAN	R	
Additional notes:	A change request will have to be logged to request that an additional field TRAIN TYPE be added to the ITP. Valid values for Train Type to be: <ul style="list-style-type: none"> - A = Shunts - B = Haulers - C = Mainline 			
Information source:	ITP, Record Book at the depots			
Functional Requirement – AS IS				
List the group(s) that currently perform this process.	Roster Compilers			
How the process is currently performed?	Crew is rostered according to the yearly diagram			
Who uses the output?	The system uses the output as part of the rostering process			

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Process ID:	CMS16
Process Name:	Compile book-off roster
Detailed Description:	This process rosters crew for trains having book-off indicator = "Book-Off"
External Agents Involved:	Roster compilers
What causes the process to occur?	Book-Off trains have been scheduled on the ITP and they have to be resourced.
What happens after the process is complete?	Book-Off crew will sign on to the roster and execute the train plan

Business rules:

- Book-Off rostering to be done as follows:
 - Home Depot to Away - Home depot rosters.
 - Away depot to Home – Away depot rosters
- The book-off roster [of the forwarding depot] will show only one (the forward) trip leg.
- Book-off crew will sign on at their Home depot and sign off at an Away Depot; they will again sign-on at the Away depot within the same 24-hour period.
- Home Depot must inform Book-off crew about the book-off facility that they will be staying at.
- Route details will be derived from the Origin-Destination pair
- Planned Sign-on Time is computed as (ETD – Crew Prep Time [e.g. 30 minutes])
- Crew Prep Time will be defined by each depot as part of their Depot (local) rostering parameters.
-

Data (attributes):	Entity	CRUD	Source
Personnel number	EMPLOYEE	CRUD	
Home depot	EMPLOYEE	R	
Roster date	DAILY_ROSTER	R	
Train number	TRAIN_PLAN	R	
Train Plan date	TRAIN_PLAN	R	
Book Off Indicator	TRAIN_PLAN	R	
Trip Leg	TRIP_LEG	R	
Origin	TRAIN_PLAN	R	
Destination	TRAIN_PLAN	R	
ETD	TRAIN_PLAN	R	

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	Planned Sign On Time	DAILY_ROSTER	R	
	Planned Sign Off Time	DAILY_ROSTER	R	
	Brake type	TRAIN_PLAN	R	
	Loco Type	TRAIN_PLAN	R	
	Role on job	TRAIN_PLAN	R	
	Crew Prep Time	DEPOT_PARAMETER	R	
Additional notes:				
Information source:		<ul style="list-style-type: none"> Roster Compiler (Away Depot) 		
Functional Requirement – AS IS				
List the group(s) that currently perform this process.				
How is the process currently performed?		Roster Compilers compile weekly diagrams		

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