

IT Application in Freight Business on the Indian Railways

Vijoy K Singh

Professor (Commercial Management)
Railway Staff College, Vadodara, India

The Indian Railways

- Running since April 16, 1853
- 64,000 route Kms
- 2.72 million tonnes of freight daily
- 22 million passengers daily
- 1.4 million employees
- Target reaching 1000 million tonnes freight in 2011-12

Porter's Five Forces Model



Why IT applications

- Transactions – volume, repetitive
- Operations
- Payment
- Man power Planning
- Data capture
- Data Mining
- Administration and Management

Why IT applications

- Service Delivery
- Customer Satisfaction & Market Share
- Need of the hour
- Future Growth

Core Functions of Freight Operations

- Operating Functions

- acceptance of customer's orders
- supply of rakes/wagons
- movement and delivery at destination

- Commercial Functions

- Acceptance, booking and delivery of consignments
- collection of freight, RR generation and transmission
- Station Accounting

Applications in Freight Business

- Freight
 - Front end applications
 - TMS
 - E-Payment
 - Consignment Tracking
 - Claims Management System
 - Operational
 - RMS/FOIS
 - Crew Management System
 - Control Charting
- Parcel
 - Parcel Management System

FOIS

- Freight Operations Information System
 - Conceived in 1982
 - Led to formation and functioning of CRIS in 1987
 - RMS pilot implementation started in 1999 on NR
 - >500 locations covered under RMS
 - TMS implementation started in 2006
 - E-payment –pilot project 2007
 - Being extended to major customers in phases
 - FOIS terminals being extended to customers

FOIS

A Vital Component Of Freight Policy

- Enables freight customers instant access to information regarding the current status of their consignments in transit, for just in time inventory
- A system for management and control of freight movement that also assists managers to optimise asset utilisation.

Rake Management System (RMS)

RMS captures the following events in real time

- Customer indents
- Wagon supply - date and time
- Departure after loading
- Running particulars - arrival/departure at stations enroute with attachments/detachments if any
- Arrival at destination
- Handling and delivery at destination

RMS provides information on:

- Train Operations
- Interchange & Forecast
- Rake based consignment tracking
- Train in pipeline
- Wagon type wise stock holding
- Consist reporting on summary basis
- Terminal handling performance
- Loco holding, outage and power on line.

RMS

- Load – planning, pre-departure detention, terminating
- Train – arrival, run through, section, light engine, equipment failure, unusualls, speed restriction
- Loco – reporting, commissioning
- Interchange – forecast, shortfall/access
- Stock – demand register, piecemeal planning, release, empty haulage, sick/fit, transshipment, wagon cutting, diversion, etc
- Exceptional Task – new wagon, attribute change

RMS – Query Set

- Conference Set – Interchange, Forecast, Loads on Run, Stream-wise Pipeline, Traffic Flow, Terminal Position, etc.
- Managerial Set – Yesterday's Interchange, Load in Pipeline, Stock, Demand, Rake, etc.
- Operations Control – I/C, Stock, Rake, Loco, Trains, Demand, etc.
- Statistical Report – I/C Summary, Load, Stock
- Messages – Info. Sharing, instructions/feedback

Terminal Management System (TMS)

- Introduced as phase II of FOIS in 2006
 - enables management of activities at freight terminals
 - Commercial activities— RR preparations; e-payment
 - Document generation—wagon consist, labels
 - Data capture and report generation—DC,WC etc
 - Detention analysis
 - Commodity and customer details capture
 - Customer facilitation in tracking consignments for large customers

TMS provides information on:

- Customers – profile, concessions, etc
- Booking – arrival, demand register, haulage, RR, etc
- Rake handling
- Piecemeal
- Outward – F/Notes
- Inward – delivery, on hand, etc
- Charges – local, remittance, WC, DC, Bill
- Transshipment
- Query
- Message

E-Payment of Freight

- E-banking facility for payment of freight, Year 1997
- Tri-partite Agreement: Railways, Bank and Consignee
- Originating point intimates electronically (TMS) freight charges due (Paid) to Bank before printing RR/ORR (Invoice)
- RR generated after receipt of successful transaction message from the Bank
- Synchronous Transaction – reply within 150 sec

FOIS Architecture

- Intelligent terminals at field locations.
- Data capture from activity centers, like Control offices, Yards, Loco Sheds, C&W Depots., Goods Sheds etc.
- Terminals connected to application servers for transaction processing by reliable communication links through WAN.
- Railway owned digital microwave communication facilities, OFC complemented by VSATs hired from Bharat Sanchar Nigam Ltd established network

Control Charting Application

- Also called Control Office Application (COA)
- Started as pilot project independently at multiple places– S Rly, Year 1998
- Centralized software development by CRIS, started in Year 2001
- Roll out started 2005
- Capture originating points of data for all operations activities

Parcel Management System

- Pilot Project on Delhi - Howrah corridor
- Project architecture – RDBMS-based software on three-tiered network
- Modules
 - Booking and Delivery Modules
 - Loading and Unloading modules
 - Demurrage and Wharfage calculation
 - VP and lease Booking
 - Printing of Bar Code Labels on packages and scanning
 - On Line Status and tracking
 - Over-carriage and Undercarriage position

Crew Management System (CMS)

- System to enable
 - Management of Crew activities
 - Booking
 - Monitoring including performance evaluation
 - Information updation
 - MIS report generation
 - DSS for planning
 - Rolled out in 2007
 - Majority of lobbies covered
 - Biometrics, abnormality reporting to be covered

SOFTWARE FUNCTIONALITY

Planning & Control

Crew Scheduling.
Scheduling PME.
Training, L.R.
Loco Handling

Safety

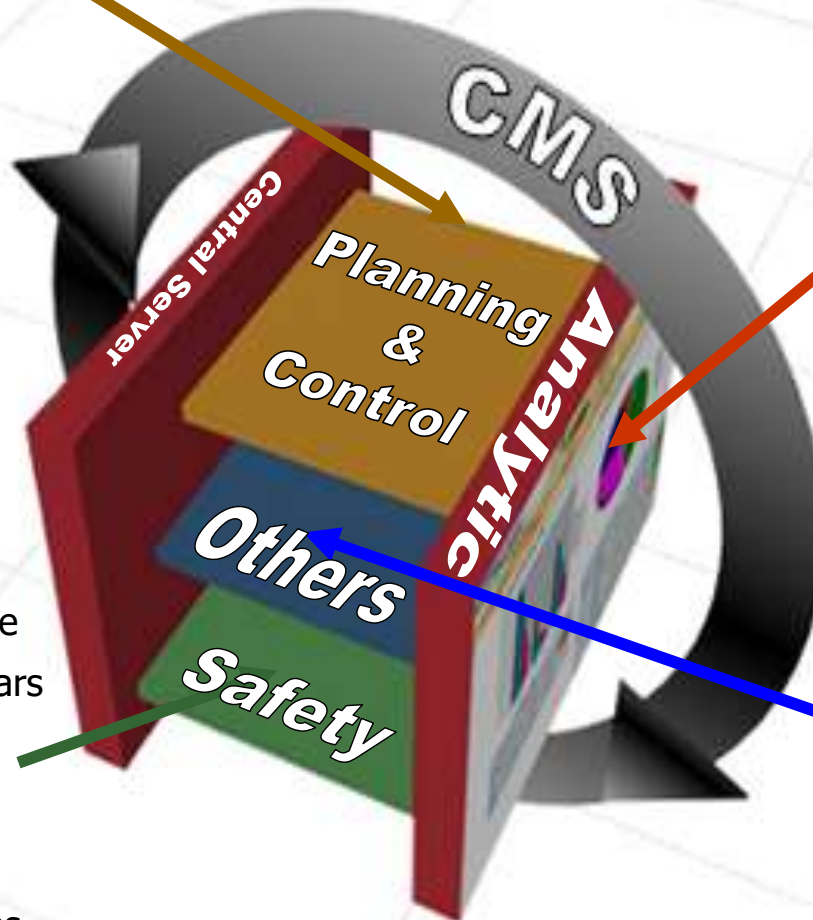
Scheduling Crew Rest
10 Hrs working compliance
Exposure to current circulars
Crew Quiz - QUICK
Grading of Drivers
LI monitoring
Group SMS for breakdowns
Global availability of Driver
bio-data in case of
accidents

Analytics

Crew Utilization
Overtime / Mileage
Pre Dept Detention
Outstation Rest
Crew Balancing
Availability On Railnet

Others

Call Serve by SMS
Bio Metric sign on
Touch Screen Sign On
Inter Server Messaging
Bi-lingual
Coaching,
Shunter
Employee Self Service
Reduced / Paper work



Bio – Metrics Sign ON / OFF

- Easier to handle.
- Increased Security and authentication.
- Legally binding.
- Quickly adaptable for crew booking points.



Claims Management System

- Phase I - Computerization of Claims office
 - Web-enabled system covering
 - Claims - <http://www.claims.indianrail.gov.in>
 - Court cases
 - Accident information management system
 - Information updation
 - Customer tracking of claim cases
- Phase II - Computerization of
 - RCTs
 - Goods refunds
 - Subsidiary Claims offices
- Phase III – divisional offices (under designing)

Areas ahead...

- Accounting Data and Apportionment
- Costing Data - linkage to Pricing (Dynamic ?)
- Customer Preferences
- Customer Satisfaction
- Aggregate Industrial Economic Data for DSS on Business Decision Making
- Competitive Modes Data

Thank You