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SPECIAL FOCUS

While CRIS has achieved significant digital progress, its fragmented architecture still hampers scalability, interoperability, and data reliability. The underlying architectural issues of CRIS as identified by Chandan Prasad & Bipin Kumar, IRAS Trainee officers of 2022(EOL) Batch and their roadmap for shift towards a centralized, integrated, and analytics-driven enterprise architecture which is essential to meet the future needs of Indian Railways, is the focus area of this month's issue.

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RAILWAY BUDGET AT GLANCE



Heard melodies are sweet, but those unheard are sweeter.

- By J. Keats

FROM DG'S DESK

Dear esteemed readers,



The month of August is marked by a unique blend of cultural, spiritual, and national significance in India - Two important Hindu festivals and Independence Day marking new beginnings, righteousness and signifying renewed patriotic fervour. The unfurling of tricolour followed by national anthem is a very special moment. *A moment of pride, a moment to pause and reflect.* In the same pensive mood, my thoughts kept dwelling on IR and the way it touches the lives of so many people.

IR is a vital life line of the nation, an influencer of sorts, a unifying force, one of the largest employers. In terms of allocation of budgetary resources, the ministry stands at fourth position with a 5% share. It can be a super spreader of good, not only as a growth engine of the Nation but a change agent in the overall consciousness of the country.

Rail is ubiquitous by its presence across the length and breadth of the country. It serves as a primary mode of transport for masses. **Passenger care** therefore becomes so very important. IR has been consciously striving to enhance the experience of rail traveller by making digital strides, streamlining ticket booking, strengthening grievance redressal, deploying on-board housekeeping, and focusing on public engagement.

However, the ground level experiences are not so comforting. Often, train travel (for any class) becomes a grind. The romance ending mostly in exasperation. Despite all the media buzz around new train services, many people (who can afford) opt for travel by road over rail for any distance up to 750 kms. This is partially on account of paucity of capacity ie; perennial waitlist but more significantly because the overall drill is not very exciting. Right from reaching the Railway station to waiting time at the platform, the travails which one experiences are many and myriad. Further train delays and subpar onboard experience add to the woes. The passenger pain points are many. My recent train journey between Kurnool to Hyderabad, a distance of 220 km, took 4.5 hrs on VB Express compared to 3-3.5 hours road trip. This was about our most premium short distance train. The overnight trains overshoot the scheduled arrivals as a matter of routine. Delay of twenty minutes to an hour is considered almost insignificant. While contemplating on the predicament of our long-distance passengers, I came across this interesting write up on train toils humorously penned by Anuvab Pal, to quote from his column in FE *'It still takes 21 hrs – yes, twenty-one hours - on the fastest train from Mumbai to Bangalore (while it takes 15 hours by road). These are two of India's most dynamic cities and yet its train connectivity takes about the same time as a British Viceroy would have taken to travel by a horseback in 1872."* Author wonders on the modernization drives and progress made in all these years by IR. He further weaves a vivid imagery of unkempt food vendors,caterers throwing left over food packets in pristine green western ghats and of unclean toilets. None of which is exaggeration. Sadly, our acceptance levels have got conditioned which raises questions on our readiness to catapult to '#ViksitBharat'.

Progress is a collective act and citizenry has an equal if not more responsibility. When new toilet fittings get stolen, unhygienic ways in which food is sold and apathy of travelling public, it makes us realize that the fastest growing economy doesn't guarantee efficient services. It is time for honest introspection especially for us in Railways. We must get our act together perhaps starting with a **'rail travel confidence survey'** across all passenger classes on various parameters.

Two-way strategy *in my opinion* would mean – confirmed accommodation on demand in every train and efficiency in service quality. I personally vouch for *incognito* travel by in-charge officials, wide publicity to Do's and Don'ts, naming and shaming the habitual offenders with drastic actions and most important training the frontline staff in behavioural skills and lean and nimble multi skilled staff (not multitude) at all passenger interface areas i.e. @ stations and in trains. **Financials will spell out better and so also the services.**

The article by Sanjeeva Rao IRSEE, a highly accomplished officer, dives deep in to the very same topic and attempts to list some workable solutions to develop passenger connect and enhance rail travel experience in true sense.

Training is at the core of every successful outcome. Need for an appropriate training framework with regulatory back-up is crucial to maximising the organizational productivity. The article by ULN Rao seeks to identify these gaps and suggests measures to address them.

A steady digital transformation has been undergoing in IR. Our **special focus** article is on decoding the IT applications of CRIS and review of its architectural framework by two of our probationary officers. Some of these applications have been *w.i.p.* for several years. A system of checks and balances always helps the system, so is there a need for an independent third-party audit to benchmark best practices, flag integration issues and ensure course correction where need be? Nonetheless, the acceptance to change despite challenges has been rather smooth. The new applications are meant to serve the organisation well. Training will again play an important role in optimising the functionalities.

As against the regular content on excel tools to up the IQ, in this edition our faculty shares some practical tips to enhance EQ. Emotional Intelligence is an essential yet undervalued skill that not only help us build better relationships but is a crucial requirement for personal and professional success. Master these and share your experience in forthcoming issues.

Warm regards,

Aparna Garg, IRAS
Director General,
Indian Railways Institute of Financial Management.

RAILWAY BUDGET AT A GLANCE

TRENDS OF INDIAN RAILWAYS PASSENGER BUSINESS

- BY SIRRA SANTHI RAJU, IRAS, ADG/IRIFM

Indian Railways, a vital part of India's transport network, carrying around 7 billion passengers annually and covering about 1,140 billion passenger kilometers – accounting for 15-20% of India's total passenger traffic by PKM.

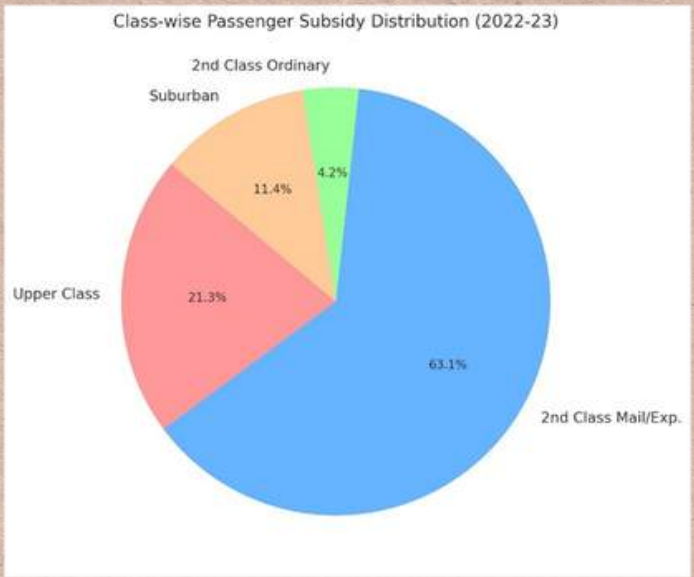
Here is an attempt to analyze the trends of Indian Railways Passenger Business:

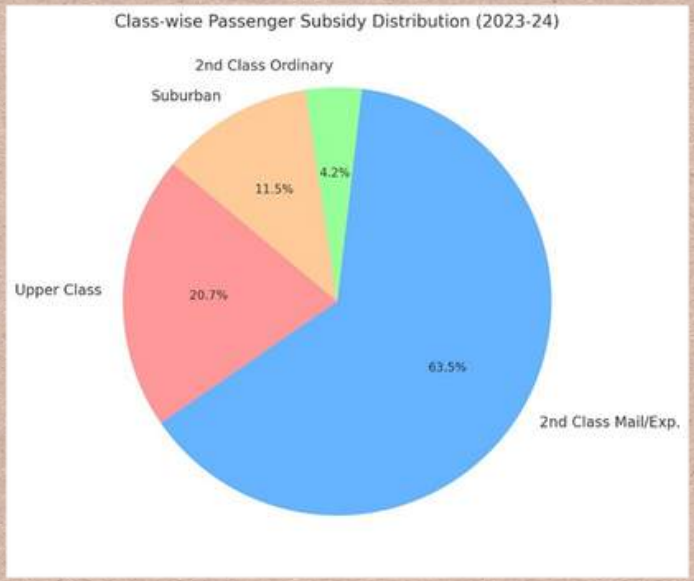
Class-wise Performance (FY 2022-23 to 2024-25*)

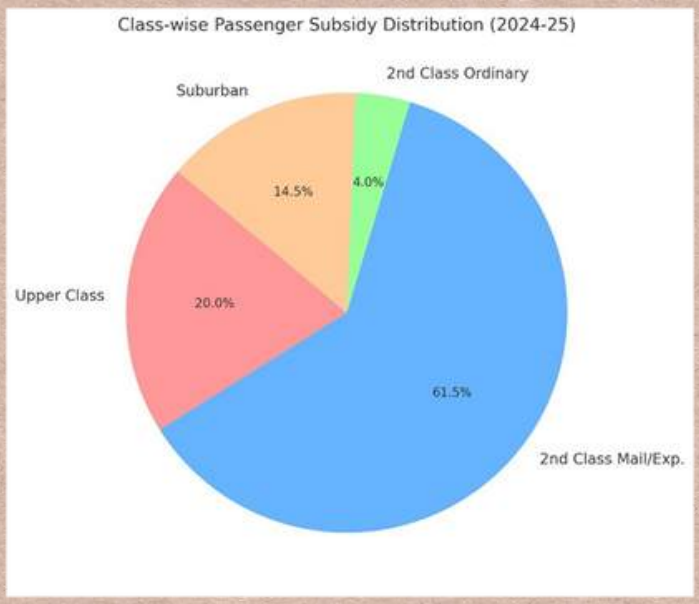
Class	Passengers (Mn)	Share %	PKM (Bn)	% Share of PKM	Avg Lead (Km)	Earnings (₹ Cr)	Share of Earnings %	Earnings/ PKM (Paise)
2022-23								
Upper Class	293	4.6	218.46	22.8	745.5	33,285	52.5	152.4
2nd Class Mail / Exp.	1,752	27.4	596.81	62.2	340.7	28,186	44.5	47.2
2nd Class Ordinary	651	10.2	98.93	4.1	59.8	817	1.3	21.0
Suburban	3,700	57.8	104.91	10.9	28.4	1,129	1.8	10.8
Total	**6,396**	**100**	**959.11**	**100**	**149.9**	**63,417**	**100**	**66.1**
2023-24								
Upper Class	319	4.6	236.77	22.2	742.2	36,678	51.9	154.9
2nd Class Mail / Exp.	1,871	27.1	665.84	62.5	355.9	30,333	42.9	45.6
2nd Class Ordinary	734	10.6	43.58	4.1	59.4	821	1.2	18.9
Suburban	3,981	57.7	118.51	11.1	29.8	2,862	4.0	24.2
Total	**6,905**	**100**	**1065.00**	**100**	**154.2**	**70,693**	**100**	**66.4**
2024-25 *								
Upper Class	326	4.6	245.88	21.5	754.5	38,250	50.7	155.5
2nd Class Mail / Exp.	1,874	26.3	693.72	60.6	370.0	33,524	44.4	48.3
2nd Class Ordinary	721	10.1	44.12	3.9	61.2	863	1.1	19.6
Suburban	4,200	59.0	160.28	14.0	38.2	2,820	3.7	17.6
Total	**7,121**	**100**	**1144.00**	**100**	**160.7**	**75,457**	**100**	**66.0**

*2024-25 provisional, based on March 2025 cumulative report from 6A Statement.

RAILWAY BUDGET AT A GLANCE







Insights & analysis:

- The gradual increase in average lead and PKM share for higher classes and long distance segments implies behavioural shift or expansion in service coverage and passenger mix.
- Earnings growth mostly driven by upper and Mail/Exp. Classes
- Overall growth in passenger volumes and PKM showing growth in both travel volume and distance.
- Average lead increasing marginally from 150 to 160 km.
- Upper Class maintained a steady ~4.6% passenger share but account for over 50% of earnings.
- Second Class Mail/Exp. carried ~26-27% of passengers and ~60-62% of PKM, contributing about 42-44% of earnings, highlighting its role as a mass long-distance travel segment.
- Second Class Ordinary has a 10% passenger share (average lead of ~60 km), but contribute only 1% of total earnings.
- Suburban travellers (with average lead of ~28-38 km) form 60% of passengers.

RAILWAY BUDGET AT A GLANCE

A Comprehensive Review (2019-20 to 2024-25)

Indian Railways witnessed a significant disruption during the COVID-19 pandemic, with passenger volumes dropping dramatically in 2020-21. However, a steady recovery trajectory is emerging.

This comprehensive review examines passenger traffic, revenue, and key segment performance in the last five years.

Year	Passengers (Million)	Revenue (₹ Crores)	Passenger Kms (Billion)	Earnings / PKM (Paise)
2019-20	8,086	50,669	1,051	48.22
2020-21	1,250	15,248	231	65.97
2021-22	3,519	39,214	590	66.44
2022-23	6,396	63,417	959	66.13
2023-24	6,905	70,693	1,065	66.40
2024-25 *	7,121	75,457	1,144	66.00

*2024-25 provisional, based on March 2025 cumulative report from 6A Statement.

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PASSENGER-CENTRIC INDIAN RAILWAYS: WORKABLE SOLUTIONS TO DEVELOP PASSENGER CONNECT AND ENHANCE RAIL TRAVEL

- WRITTEN BY A. SANJEEVA RAO, IRSEE
CHIEF ELECTRICAL DISTRIBUTION ENGINEER, SCR



Indian Railways, one of the world's largest rail networks, plays a key role in India's economy and mobility. With rising passenger demand and limited infrastructure expansion, there is a growing gap between passenger expectations and service delivery. In this article, the author gives an achievable data-driven strategy for a truly passenger-centric Indian Railways including governance reforms, digital transformation, AI adoption, and private partnerships – all aimed at delivering a modern, efficient, and world-class rail experience.

Indian Railways (IR), as the largest railway network in Asia and the fourth-largest globally, serving as the primary public sector transport for millions. With an overall track length of 1,35,207 TKM and 68,584 RKM, Contributing ~1% to GDP with potential to hit 2% (Akinola et al., 2024). Indian Railways directly employs 6% of the total employment within the organized sector plus a 2.5% employment that gets generated through other entities dependent on it. The share of Indian Railways in per capita mobility could rise from 6,000 km in 2010 to 26,000 km by 2050 as India and its economy grow. Since independence, the network has increased its transport output for both Passengers and Freight six-fold with only a marginal increase in RKM and Rolling Stock (Bawa, 2023). This impressive capacity management, however, presents a continuous opportunity for enhancement. A consistently high demand for rail travel has led to a focus on capacity creation and service refinement (Invest India, 2024).

The challenge is to bridge the significant gap between passenger expectations and the reality of service delivery. The analysis identifies key areas for strategic action, including leveraging technology for seamless travel, modernizing physical infrastructure, and strengthening foundational governance. By building on its existing strengths and adopting global best practices, Indian Railways can not only meet the evolving expectations of present day traveller but also secure its position as a world-class, financially sustainable, and socially responsive organization. This article is grounded in a vision that recognizes the immense potential of the Railways to drive economic growth and fulfil the government's 'Viksit Bharat @2047' vision (PwC, 2024).

Elevating the Passenger Experience

It is a sector that is poised for significant growth, with a forecast of a 29% increase in passenger traffic from 9,457 million in 2021 to 12,213 million by 2031 (Invest India, 2024). In the financial year 2024-25, over 30 million people who had booked tickets were left without a confirmed seat, a significant increase from 16.5 million in FY 2021-22.

This growth highlights the public's trust and increasing preference for rail travel. A significant portion of the network, over 60%, already operates at 100% or more capacity, a clear indicator of this robust demand (PwC, 2024).(V.A. Parasuramanet al.,1985), identified ten requirements useful for Passengers" evaluation of the quality of services: reliability, responsiveness, tangibles, Information, Assurance, Empathy, Food plazas, timeliness, understanding the Passengers and service accessibility.

The Service Quality and Digital Initiatives

On-board and at-station service quality remains a critical area for enhancement, with recurring concerns in catering and cleanliness.

- **Passenger Complaints Trends (2021-2025)**



Government data shows food quality continues to generate significant passenger dissatisfaction–over 6,645 complaints were filed in 2024-25 and more than 19,000 in the last five years. Cleanliness and sanitation also need closer attention.

A CAG audit (2018-23) found over 40% of long-distance passengers dissatisfied with toilet conditions, with issues such as blockages, unclean washbasins, and water shortages (reported by 15%). Despite large-scale campaigns outcomes remain below expectations, reflecting weak monitoring rather than lack of effort. Transitioning from a grievance-based model to a proactive, technology-enabled system (e.g., IoT monitoring, predictive maintenance, real-time feedback) could ensure more consistent results.

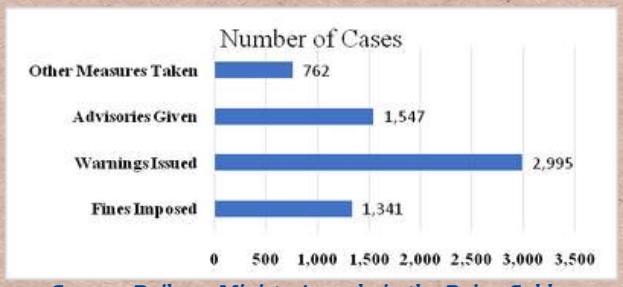
A framework that relies on passengers to register complaints, which are then addressed with advisories and warnings, is fundamentally flawed. To move from a grievance-based model to a proactive, quality-assured one, a new approach could evolve as means to increase the passenger satisfaction. The study by (Aakash B & Ms Akshaya Sudershana 2024) emphasizes the critical role of cleanliness, onboard amenities punctuality, customer service and safety in enhancing the overall experience for passengers. By reinforcing enforcement, linking vendor performance to outcomes, and leveraging technology for proactive quality control, Indian Railways can bridge the gap between policy and practice, improving passenger satisfaction significantly.

Leveraging Technology for a seamless journey

Indian Railways is committed to enhancing the quality of its on-board services. The existence of a robust feedback system is a testament to this commitment, as demonstrated by the over 6,645 complaints related to poor food quality reported in the financial year 2024-25 alone (NDTV, 2025).

Action Taken on Passenger Complaints for Food Quality (FY 2024-25)

In response to these complaints, the IRCTC has taken prompt action, imposing fines in 1,341 cases and issuing 2,995 warnings in the same period, signalling a clear intent to hold vendors accountable.



Source: Railway Minister's reply in the Rajya Sabha

On the cleanliness front, Indian Railways has launched large-scale initiatives like "Special Campaign 4.0," which conducted over 56,000 cleanliness drives (PIB, 2024). The adoption of a zero-discharge bio-toilet system across all mainline passenger coaches is a major step forward in improving cleanliness and hygiene on trains (Ministry of Railways, 2025).

Real time information and connectivity

A study by Patel and Rao (2018) highlights the importance of real-time information in improving passenger satisfaction.

Singapore's Mass Rapid Transit (MRT) provides a compelling model, with ubiquitous mobile phone service and real-time information displays at every station. The UK's Greater Anglia network has also seen an 11-point increase in passenger satisfaction with punctuality/reliability, which is linked to improvements in the usefulness of information provided during delays.

Real-time information is a non-negotiable component of a quality passenger experience. It builds traveller confidence, reduces anxiety, and enables more effective journey planning.A modern Passenger Information System (PIS) can provide dynamic updates on train arrivals, departures, delays, and platform changes through a variety of channels, including mobile phone applications, LED displays at stations, and automated public address systems. Deutsche Bahn Navigator app not only provides journey planning and real-time updates but also allows passengers to purchase tickets directly through the app, offering a one-stop solution for all travel-related needs which significantly improved passenger satisfaction, particularly during service disruptions.

Revitalizing the on-board and station experience

These services include onboard Wi-Fi, entertainment systems, digital payment options, and other amenities designed to enhance the in-transit experience. Onboard Wi-Fi allows passengers to stay connected, work, or access entertainment during their journey, making rail travel more attractive compared to other modes of transport. Research by Lee and Chang (2019) indicates that the presence of onboard Wi-Fi is a significant factor in passengers' choice of rail services, especially for business travellers who require constant connectivity. JR East's emphasis on customer engagement through social media and digital platforms highlights a more proactive approach to interacting with passengers, while Deutsche Bahn has focused more on streamlining operational efficiency. Infrastructure & station enhancements must include Smart station design (Digital signages, kiosks, live transit maps, etc), Integrated mobility hubs (first and last-mile convenience) and Accessibility & Comfort upgrades (clear ramps, rest areas, lounges).

Modernizing Rolling Stock and Safety Systems

The introduction of semi-high-speed Vande Bharat and non-AC Amrit Bharat services represents a significant stride towards modernizing the fleet of IR and providing a comfortable, safe travel experience for all segments of society. Vande Bharat services, equipped with the indigenous KAVACH safety system, automatic doors, and modern pantry facilities, have set a new standard for premium travel. Similarly, Amrit Bharat trains, designed to serve low and middle-income families, include enhanced safety features such as CCTV cameras and an EP-assisted braking system. This initiative enhances safety and ride quality, with more than 75 pairs of trains converted to LHB coaches between 2014 and November 2024 (PIB, 2024).

Transforming Stations into Multi-Modal Hubs

The Amrit Bharat Station scheme is a visionary initiative aimed at redeveloping stations to have a "multiplier effect" on the economy by creating jobs and driving economic growth (PIB, 2024). This approach aligns with global best practices, such as the "rail-plus-property" model successfully implemented by MTR in Hong Kong, which leverages land assets to generate non-fare revenue to fund core railway operations (Lau et al., 2016). This strategic use of Public-Private Partnerships (PPPs) is crucial for attracting private investment and accelerating modernization (FICCI-PwC, 2024).

New station conceptual designs are also incorporating dual-level structures with comprehensive amenities on the ground floor and elevated platforms on the upper level, ensuring seamless, all-weather operations (Varma, 2023).By adopting a "rail-plus-property" model, similar to that successfully implemented by MTR in Hong Kong, Indian Railways can monetize its vast land assets to generate non-fare revenue.

Leveraging Artificial Intelligence for Enhanced Operations

Indian Railways is actively embracing Artificial Intelligence (AI) to enhance operational efficiency and safety. The implementation of AI is a transformative step that moves the railway from a reactive to a predictive and proactive system (Egis Group, 2025).

Key AI applications include:

- **Predictive Maintenance:** AI uses advanced sensors and algorithms to monitor equipment and predict potential failures, thereby reducing downtime and maintenance costs while enhancing reliability and safety (Egis Group, 2025; Vlinkinfo, 2024).Research by Raghunathan et al. (2018) indicates that predictive maintenance has been highly effective in improving service reliability, which is a key factor in passenger satisfaction.
- **Operational Optimization:** AI algorithms can analyze real-time data to adjust train schedules and routes, which helps in reducing waiting times and improving punctuality (IndiaAI, 2025).
- **Enhanced Safety:** AI systems can detect anomalies on tracks, identify foreign objects, and even monitor driver fatigue, thereby preventing accidents and enhancing overall safety (Egis Group, 2025).

Enabling Sustainable Change

Public-Private Partnerships (PPPs) in Service Delivery

Public-Private Partnerships are a vital financial lever for accelerating the modernization of Indian Railways, with projects worth over ₹1.61 lakh crore already planned for implementation through this mode. PPPs offer a way to bring global expertise, technology, and private capital into the sector, which is critical given the railways' limited internal resources.



Capital Expenditure by Indian Railways (Lakh Core INR)
Source: Analysis (PwC, 2024)

However, the history of PPPs in the rail sector, both globally and domestically, shows that they carry significant risks. A key reason for the failure of many traffic-based concessions has been the over-estimation of traffic projections.

Furthermore, the lack of an independent regulatory body creates an unpredictable investment environment, with political and bureaucratic interference affecting pricing and operational policies. For PPPs to succeed in India, a clear, transparent, and de-politicized framework to be established. This involves creating a dedicated regulatory authority, as recommended by the Bibek Debroy Committee, to ensure fair competition and protect the interests of both private investors and the public.

Global Benchmarks

A review of leading railway systems globally provides valuable insights into successful strategies that can be adapted to the Indian context.

- **The Singapore Model (MRT): The Singapore Mass Rapid Transit (MRT)** network is a prime example of operational efficiency, cleanliness, and advanced station amenities. The network is fully elevated or underground, with every station equipped with amenities like restrooms, ATMs, and retail shops. The presence of full-height platform screen doors in all stations enhances safety and prevents accidents. This model demonstrates how a relentless focus on core service attributes–safety, cleanliness, and efficiency–can build a world-class passenger experience.

- **The German Model (Deutsche Bahn):** Deutsche Bahn's strength lies in its seamless digital integration and passenger-centric technology (Deutsche Bahn, 2025). The "Komfort Check-in" service allows passengers to travel without a physical ticket check after boarding, while the DB Navigator app enables real-time information access and even allows for booking tickets up to 10 minutes after departure (Deutsche Bahn, 2025). This model highlights the power of a unified digital ecosystem to simplify the travel experience.

- **The Japanese Model (JR):** Japan's Railway companies, such as JR-West and MTR in Hong Kong (a subsidiary of a Japanese company), have successfully implemented a "rail-plus-property" business model. This model leverages the railway's land assets for commercial development to generate non-fare revenue, which in turn subsidizes and funds core railway operations (Lau et al., 2016). This provides a direct financial strategy for a revenue-constrained entity like Indian Railways.
- **The Swiss Model (SBB):** Swiss Federal Railways (SBB) has achieved an impressive 93.2% punctuality rate, with passengers reaching their destination with less than a three-minute delay. Their success is a result of prioritizing the reliability and quality of their conventional network and implementing an integrated, cyclical timetable that minimizes transfer times.

Conclusion

Based on the analysis and a review of global best practices, a clear set of actionable recommendations can be synthesized to guide Indian Railways towards a transformative future:

1.. **Strengthen Accountability and Feedback Mechanisms:** Enhance the quality assurance framework for catering, cleanliness, and on-board amenities. Transition from a reactive, complaint-based model to a proactive, technology-driven one. Implement surprise inspections and tie vendor payments directly to real-time passenger feedback, thereby creating a strong link between performance and accountability.

2.. **Accelerate Digital Integration and Smart Ticketing:** Building on the success of e-ticketing, the focus should be on creating a comprehensive smart ticketing ecosystem. This involves leveraging GPS and Bluetooth technology for contactless validation, reducing queues and providing more accurate demand data. This will not only enhance convenience but also enable dynamic fare pricing and robust fraud detection.

3. Invest in Real-Time Passenger Information: Implement a robust Passenger Information System (PIS) that provides dynamic, real-time updates on train schedules, delays, and platform changes via mobile apps and station displays. Providing seamless and reliable on-board Wi-Fi is also a crucial step to meet modern passenger expectations and enhance the in-transit experience.

4. Harness Artificial Intelligence for Operational Excellence: Expand the deployment of AI-driven solutions for predictive maintenance, a strategy that enhances safety, reduces costs, and improves asset lifespan. Use AI for real-time traffic optimization and demand forecasting to improve punctuality and manage passenger flow, thereby addressing the issue of overcrowding and ensuring a smoother journey for all.

5. Expedite Station Redevelopment through Strategic Partnerships: Continue to drive the Amrit Bharat Station scheme by prioritizing its implementation through transparent and predictable PPP frameworks. This will attract private investment, offload non-core activities, and unlock the commercial potential of railway land, generating the necessary non-fare revenue to fund core operational improvements.

6. Complete the Unfulfilled Governance Reforms: Building on the progress already made, complete the implementation of the unfulfilled recommendations of the Bibek Debroy Committee. Granting greater autonomy and decentralized decision-making power to zonal and divisional railway managers will enable them to respond more effectively to local market conditions and foster a culture of innovation and customer service.

The journey towards a truly passenger-centric Indian Railways is a multi-faceted one, but it is achievable through a clear, data-driven strategy. By building on its remarkable strengths and embracing a forward-looking, market-oriented approach, Indian Railways can not only enhance the travel experience for millions but also secure its position as a modern, efficient, and sustainable engine of national growth.

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Disclaimer: Views expressed are personal and do not reflect the official policy/ position of the Institute.

SPECIAL FOCUS

THE ARCHITECTURAL FRAMEWORK OF CRIS AND FUTURE ROADMAP

- BY CHANDAN PRASAD & BIPIN KUMAR
TO'S OF IRMS (ACCOUNTS) 2022 BATCH
MENTORED BY K. SITHARAMARAJU, DEAN/IRIFM



The Centre for Railway Information Systems (CRIS) develops, manages and supports various computerized applications of IR viz. related to ticketing, freight, accounting, HR, healthcare, infrastructure and analytics. This article brings out the issues with the current architectural framework of CRIS which hampers expansion, interoperability and data reliability. It also envisages a future roadmap to transition into a holistic, integrated and scalable enterprise architecture which can overcome legacy challenges and strengthen the digital transformation of Indian Railways.

The Centre for Railway Information Systems (CRIS) is an autonomous organization under the Ministry of Railways, Government of India. It is functioning since 1986. As mentioned on its website, it is responsible for development, implementation, and maintenance of software/information technology (IT) systems for different departments of the Railways as per their requirements.

It also envisions to provide next generation state of art cutting edge technology.

Before embarking on analysing this framework, let us have an overview of the IT applications on IR :-

Application	Objective	Significance
IPAS	Pay roll Accounting, Bill passing, Compilation of budget and its control.	Strengthens financial operations and audit preparedness.
HRMS	Employee data mgmt, leave workflows, e-SR mgmt, Pension & Settlement, issue e-Pass/ PTO, Transfers & Promotions.	Streamlines administration of & for human resources.
TAMS	Internal check of Station balance sheets, Accountal of Revenue through Traffic Book, Online reconciliation and error sheets	Consolidates data flows from FOIS, UTS, PRS and PMS to integrate and automate the accounting of Railway traffic earnings and apportionment.
FOIS	Computerize freight operations & movement. Delivery & tracking of consignment, physical verification workflows, Incentive schemes, online billing of ancillary charges.	To facilitate freight customers and to generate awareness about prevailing incentive schemes.
UTS	Enables unreserved ticket booking across India via counters and online	Done away with manual ticket booking and helps in handling massive volume of bookings daily
E-Recon	Integration with other Units & Zonal Rlys to facilitate Intra-Rly adjustments, reconciliation automation utilities & other reports.	Enhances financial integrity and monitoring of inter and intra zone transactions with seamless data flow.
IR-WCMS	Implementation of Works Contract Mgmt System (IR-WCMS) on all zones of IR.	It helps to streamline contract mgmt from the inception to closure including variations, subsidiary agreements etc.

Application	Objective	Significance
IREPS	Enables e-tendering, e-auction, and material sales for procurement of goods, works, and services, as well as the sale of materials and leasing of assets through online processes.	Brings transparency, efficiency, and fairness to the bidding process.
MERS	A Miscellaneous E-Receipts System portal developed to receive miscellaneous earnings digitally from customers.	Integration with various applications ensures, seamless accountal of receipts
RBCS	Rail Bhoomi Crossing Seva to streamline the inter departmental coordination for Leasing of land and Right of Way proposals.	Single window which involve crossing the railway land especially tracks.
HMIS	Hospital Management Information System. It is an integrated clinical information system.	It is designed to improve hospital administration & patient care within the rly healthcare system.
WAMS	Workshop Accounts Management System designed to streamline financial and accounting processes within railway workshops	Aims to improve the efficiency and transparency by digitizing and automating various accounting tasks in a workshop/PU.
UDM	User Depot Module. It is a digital platform developed to manage material procurement and inventory at user depots, integrating with the existing iMMS and IREPS systems.	It helps in digitizing the entire supply chain, optimizing material management, and improving efficiency & transparency in arriving at Indents and inventory management
TMS	Track Mgmt System to digitize track data, inspections & maintenance records, improving efficiency & data-driven decision-making.	TMS helps in proactive maintenance planning, optimize resource allocation & improved psgr safety by ensuring track health & safety.
TDMS	Designed to manage & maintain the traction assets, including overhead equipment (OHE), power supply systems & related infrastructure.	It aims to improve data accuracy, asset availability, reliability, and overall efficiency of traction maintenance.
ICMS	Integrated Coaching Management System. It's a project aimed at digitally managing and monitoring various aspects of coaching operations, including train punctuality, coach movement, and maintenance.	It helps to enhance operational efficiency, real time monitoring and improve passenger services, and optimize resource utilization within the Indian Railways.
PMS	Parcel Management System. It is a system designed to automate and streamline the process of booking, tracking, and managing parcels and luggage transported by the railways	It aims to enhance efficiency, improve customer service, and modernize the parcel operations of the Indian Railways.
RTIS	Real-Time Train Information System. Developed in collaboration with ISRO to provide real-time tracking and updates on train movements.	It helps in improving operational efficiency, enhancing passenger convenience, and ensuring better safety on the Indian Railways network.
PRS	On line passenger reservation and ticketing	It helps in handling a massive volume of bookings daily and facilitating various ticketing operations.

Application	Objective	Significance
RSHC	A CRM (Customer Relationship Management) tool for handling distressed passengers calls and to ensure their early resolution.	An Automatic Call Distribution (ACD) supported and integrated system to redress in journey grievances.
CMS	Provides real-time railway crew information, including location, status, train assignment, time off.	Enhances Safety monitoring
COA	Control Office Application enables traffic controllers to manage trains in their section,	Interfaces with other applications to provide train related information to managers
Integrated Dashboards	Use of analytics, KPI tracking, MIS generation	Improves decision-making with real-time insights

This article reviews the current architectural framework, challenges in data management, integration and improvement opportunities.

Current Architectural Framework

CRIS currently uses a hybrid enterprise architecture model that combines legacy systems with modern components. Many of the older and critical applications like PRS (Passenger Reservation System) and FOIS (Freight Operations Information System) are still based on a monolithic design. In a monolithic design, the entire application is built as a single large unit where all functions (like booking, billing, reporting, etc.) are tightly integrated in a 3-Tier Server and Client Architecture.

In contrast, CRIS is now moving towards a modular, service-oriented architecture, as seen in newer systems like HRMS (Human Resource Management System) and MDMS (Master Data Management System), which are hosted on RailCloud. In a modular design, the application is broken down into smaller, independent components / services, each responsible for a specific function.

Though each application is optimized for a specific domain – but has been designed in isolation. This has created data silos, redundant functionalities and integration bottlenecks.

Some of the key issues with the current architecture are highlighted below:

1.. Lack of an Enterprise-Wide Architecture

- Historically, each CRIS project was developed independently. There was no unified IR-wide architecture, so services are not inherently interoperable. Data exchange is predominantly ad hoc. Each application uses its own services and infrastructure, creating inconsistencies.
- The lack of a formal Enterprise-Wide Architecture means duplicated infrastructure (e.g. separate databases for similar data), uneven security/policies across systems, and extra maintenance overhead. It also complicates governance: each app may follow different data standards or update cycles.

2.. Master Data Across Applications

- Each application (FOIS, PRS, COA, IPAS, etc.) maintains its own master tables for common entities (e.g. station codes, coach types, rates). Audit reviews have noted errors and missing validation in these master records, hurting data reliability. For instance, a CAG report found FOIS masters had numerous errors due to lacking validation. Poor master data also undermines cross-system reporting (e.g. FOIS vs COA train counts) and hinders a unified view of assets.
- Data islands also hinders the ability to apply Data Analytics tools in a holistic way.

3. Functional Overlap and Reporting Gaps

- Some CRIS applications cover similar domains. For example, train movement and load reports appear in both FOIS and Control Office Application (COA): COA generates train arrival/departure updates (for all trains) and FOIS receives and uses COA's freight train data. Overlaps can cause not only redundancy, but also can generate inconsistent figures if masters differ.

Architectural Improvements and Recommendations

- **Enterprise Architecture (EA) Roadmap:** An IR-wide EA (aligned with IndEA) should be formalized to guide future development. This should adopt architectural principles (e.g. "single source of truth" for master data, Security by design) and leverage Enterprise Service Bus/API infrastructure. For example, new modules (like TAMS) should plug into this EA rather than create isolated services. The currently existing API Gateway called Pravah can be used for this purpose.
- **Centralized Master Data (MDM):** The MDMS portal should be completed and extended to all applications so that all master data can be accessed from a centralized location. This will ensure easy availability of data, as well as data integrity). The CRIS architecture should define a common data dictionary and use standardized message formats.
- **Consolidated Reporting (Remove Overlap):** Functions should be rationalized. Cross-functional data marts should be encouraged rather than separate reports in each app. For example, an unified traffic volume dashboard can be created.
- Data Lake and Analytics Platform: A central analytics platform (data warehouse or lake) could be developed on the CRIS cloud. This platform can power cross-cutting dashboards (e.g. market share analysis by commodity) and machine learning (e.g. demand forecasting).

Conclusion

The CRIS has come a long way to digitize the processes and systems of Indian Railways. However, the historical issues of lack of system-wise integration, data silos and data duplicity, manual intervention, parallel overlapping applications, strictly departmental outlook remain key issues in the current architectural framework. With a fast-changing digital landscape, CRIS needs to adopt a holistic Enterprise-level Architecture, aligned with IndEA (India Enterprise Architecture) framework, which supports usability, interoperability and scalability in order to cater to changing needs of time.

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EVENTS AT IRIFM

IRIFM celebrated 79th Independence Day.





Group 'A' Induction Course for IRHS Probationary doctors along with DG/RHS.



Refresher Course for Accounts Supervisory Staff was conducted at Campus-II from 18th to 22nd August 2025.

EVENTS AT IRIFM

IRIFM Webinars:

- **"Basic First Aid (Part-I & II)"** on 6th & 7th August 2025
  by Sr.Prof.(Health Management) Dr. Arunangshu Sarkar.
- **"Understanding Emotional Intelligence and Stress Management"** on 11th August
  by Prof. (Relations Management), Shri Neeraj Anand.
- **"Understanding D&A Rules with case studies"** on 12th August
  by Shri A V S Nehru, Retd. Dy. CPO/Bilaspur/SECR.

Congratulations !!

on being selected in the panel of AFA



Tilak Raj Bassan, SSO/IRIFM



B. Surekha, SSO/IRIFM

New Faculty joins at IRIFM



Rajani Jha (IRAS/2015), Prof. Accounts Mgmt.



K Damodara Prasad, Sr.AFA (Retd)/SCR
Consulting Faculty

UNDERSTANDING EMOTIONAL INTELLIGENCE: YOUR KEY TO PERSONAL AND PROFESSIONAL SUCCESS

- BY NEERAJ ANAND IRPS, PROF. RELATIONS MGMT.
M.SC., LLB AND MBA(FM)



Emotional intelligence is not a talent, but a skill you can build. It makes a person - A better leader, A better team member and A better human being. In a world run by machines, emotional intelligence is your human superpower. This article delves into the 5 building blocks of EI, why EI matters and on how to build EI. Author further emphasizes that - "as automation grows, emotional skills like resilience, adaptability, and empathy will be key differentiators as they are essential for building strong relationships, handling stress, and succeeding both professionally and personally.

What is Emotional Intelligence and Why Should You Care?

Imagine you're at work during a particularly stressful day. Your colleague approaches you with urgent demands, your phone is buzzing with messages, and you feel your frustration rising. Do you snap at your colleague, or do you take a breath, acknowledge your feelings, and respond thoughtfully? This ability to recognize and manage your emotions while understanding others' feelings is what we call emotional intelligence (EI).

Emotional intelligence is simply the ability to understand your own emotions, manage them effectively, and work well with others by recognizing their feelings too. Think of it as having good emotional skills alongside your technical abilities.

Why does this matter? Research shows that while your IQ might get you hired, EI can get you fired. In fact, studies reveal that 90% of top-performing leaders have high emotional intelligence. It's not just about being "nice" – it's about being "effective".

The Five Building Blocks of Emotional Intelligence

Daniel Goleman, the researcher who made EI famous, identified five key areas that make up EI. Think of these as **skills** you can develop:

Self-Awareness: Knowing Yourself

This means understanding your emotions as they happen. When you feel angry during a meeting, you notice it. When stress builds up, you recognize the signs early. People with good self-awareness can step back and think: "I'm feeling frustrated right now, and here's why".

- Simple way to build this: Keep a brief daily note of your strongest emotion and what triggered it. After a week, you'll start seeing patterns.

2. Self-Control: Managing Your Reactions

This is about pausing before you react. Instead of sending that angry email/response immediately, you wait, calm down, and then respond more thoughtfully. Research shows that simple breathing techniques can reduce stress hormones by 20% in just five minutes.

- Try the STOP method: When you feel overwhelmed, stop what you're doing, take a deep breath, observe what you're feeling, then Proceed with a clearer mind.

3. Motivation: Your Inner Drive

This isn't about external rewards like salary or praise. It's about finding meaning in what you do and staying committed even when things get tough. People with strong emotional motivation bounce back from setbacks faster and maintain their enthusiasm for their work.

4. Empathy: Understanding Others

Empathy means recognizing when your teammate is stressed, understanding why a customer is frustrated, or noticing when someone needs support. It's not about agreeing with everyone – it's about understanding their perspective.

Research has shown that when we truly empathize with someone, our brains actually mirror their emotional state, helping us respond more appropriately.

5. Social Skills: Building Relationships

This brings everything together – using your emotional awareness to build trust, resolve conflicts, and work effectively with others. Leaders with strong social **skills** create environments where teams perform 30% better.

The Real Impact: What Research Tells Us

The benefits of emotional intelligence aren't just theoretical. Here's what studies have found:

In the workplace, research involving 150 employees across different industries found a strong connection between emotional intelligence and job performance. People who managed stress well and maintained good relationships were significantly more productive.

In leadership roles, Harvard Business Review's research confirms that 9 out of 10 top performers have high emotional intelligence. They're better at inspiring teams, making decisions under pressure, and creating positive work environments.

For stress management, studies show that people with higher emotional intelligence experience 25% less burnout and report higher job satisfaction. This is particularly important in high-pressure jobs.

In Indian organizations, research from the Indian Institute of Management found that EI training improved employee engagement by 28% and reduced workplace conflicts by 15%. The National Institute of Mental Health and Neurosciences discovered that EI programs reduced stress-related sick days by 20%.

Simple Ways to Develop Your Emotional Intelligence

Start with Mindfulness

Spend 10-15 minutes daily paying attention to your thoughts and feelings without judging them. This isn't complicated meditation – it's simply noticing what's happening in your mind. Apps like Headspace or Calm can guide you, and many now offer content in Indian languages.

Ancient practices like Vipassana meditation offer a structured approach: start by noticing physical sensations in your body, then observe your breathing, and finally watch your thoughts come and go. This builds the foundation for all other emotional **skills**.

Practice the Basics Daily

- Name your emotions: When you feel something strongly, simply label it: "I'm frustrated" or "I'm excited."
- Use the 4-7-8 breathing technique: Breathe in for 4 counts, hold for 7, breathe out for 8. This quickly calms your nervous system.

Build Better Relationships

- Listen without planning your response – truly focus on what the other person is saying.
- Celebrate others' successes genuinely – this builds team bonds and trust.

Learn from Real Situations

Consider Sunita, a railway ticketing officer who faced an angry passenger demanding a refund.
Instead of getting defensive, she:

- Noticed her own rising frustration (self-awareness).
- Stayed calm and didn't react impulsively (self-control).
- Listened to the passenger's concerns and acknowledged their trouble in Hindi (empathy).
- Clearly explained the process and got help managing the crowd (social skills).

The result? The passenger calmed down, and Sunita received praise for her handling of the situation.

The Future Advantage

As technology handles more routine tasks, emotional intelligence becomes our uniquely human advantage. Machines can process data, but they can't truly understand human emotions or build genuine relationships.

The World Economic Forum identifies emotional **skills** like "resilience, agility, flexibility, and motivation" as top requirements for future jobs. In other words, developing your EI isn't just helpful now – it's essential for your future career.

Getting Started: Your Next Steps

Emotional intelligence isn't a talent you're born with – it's a set of **skills** to develop.

Start small:

1. This week: Pay attention to one strong emotion you feel each day and what caused it.
2. This month: Practice the STOP technique when you feel stressed or frustrated.
3. This quarter: Ask for feedback from a trusted colleague about how you handle emotions at work.

The key is consistency, not perfection.

Why This Matters Now

We live in challenging times. Global studies show that emotional intelligence scores have been declining for past few years, indicating we're in an "emotional recession". But this also means that developing your EI gives you a real advantage.

Organizations that invest in emotional intelligence report better productivity, less employee turnover, happier customers, and more innovation. For individuals, the benefits include better relationships, less stress, improved performance, and greater life satisfaction.

Your Emotional Intelligence Journey

Understanding emotional intelligence isn't about becoming a different person – it's about becoming a better version of yourself. It's about ***responding*** rather than reacting, understanding rather than judging, and connecting rather than just communicating.

Whether you're managing a team, serving customers, or simply trying to have better relationships with colleagues and family, emotional intelligence gives you the tools to succeed. The research is clear: people with higher emotional intelligence are more successful, less stressed, and happier in their lives.

Start today. Notice your emotions. Understand others' feelings. Respond thoughtfully. Your future self – and everyone around you – will thank you for it.

In a world where technical skills can be automated, your ability to understand and manage emotions remains uniquely, powerfully human.

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Disclaimer: Views expressed are personal and do not reflect the official policy/ position of the Institute.

OPTIMISING TRAINING FRAMEWORK FOR CAPACITY BUILDING IN IR

- BY U.L.N.RAO, RTD. DY FA & CAO,
CONSULTING PROFESSOR IN IRIFM



To transform Indian Railways into a modern, efficient, and future-ready organization, training must evolve into a strategic tool for capacity building, not just a routine activity. A holistic, and performance-linked training framework is essential. In the article author puts forth suggestions to elevate Indian Railways' project delivery, cost control, and operational excellence by making training as a mandatory, digitally-driven, and performance-integrated process. He also emphasizes that strong governance, tech-enabled systems, and clear accountability will embed training into the organizational culture.

Training and capacity building are two distinct yet deeply interconnected concepts that are crucial for the growth and modernization of Indian Railways. **Training** is a focused process of imparting specific skills and knowledge to employees to improve their performance in their current roles. In contrast, **capacity building** is a broader, long-term process of developing the overall ability of an organization and its employees to adapt to change, innovate, and achieve its strategic goals. **Training is a key component of capacity building**.

For Indian Railways, an optimized training framework aligns learning modules with capacity-building goals to foster a solution-oriented mindset and high-impact service delivery.

This article dwells on the training gaps, measures to be taken to improve skill development and also to achieve Project delivery, Cost Control and Operational excellence in Indian Railways.

Gaps in Training and Skill Development in Indian Railways

Indian Railways' human resource management system still relies on legacy technology, leading to outdated training content and an unwieldy performance appraisal process that fails to reinforce learning outcomes.

Due to **limited exposure to modern data-driven tools** the training curricula often lags in emerging operational needs.

Optimizing the training framework for capacity building in Indian Railways is essential to elevate operational efficiency, reduce costs, and accelerate project execution.

Some instances of shortcomings on IR due to delays in project delivery and lack of operational excellence are listed here under:

- Mahabubnagar-Munirabad Rail Line was completed in 28 years due to land acquisition issues, financing gaps and bureaucratic inertia.
- Belapur-Seawood-Uran Rail Line is still not completed even after more than 30 years since its approval in 1996.
- CAG in its Report pointed out a loss of Rs.573 Cr on IR due to lapses in Revenue recovery and idle infrastructure.
- Despite strict penalties under OBHS contracts, poor hygiene persisted due to weak monitoring and inter-Zonal coordination.

World over, the attributes of timely completion of works and operational excellence serve as the key pillars of successful project execution.

Key training and skill gaps

- Inadequate training infrastructure
- Limited digital literacy
- Lack of hands-on simulation, drills, and on-the-job coaching
- Weak linkage between training outcomes and performance appraisals
- Shortage of soft skills, leadership and role-play modules
- Insufficient focus on project planning in procurement, and contract management.

Measures to address gaps

1.. ***Modernize training infrastructure:***

- Deploy a centralized learning-management system (LMS) to host digital modules, track progress, and deliver assessments.
- Integrate VR/AR simulations for safety drills, signaling scenarios, and equipment handling.

2.Conduct continuous 'Needs Analysis' and curriculum updates:

- Establish a quarterly Training Needs Analysis (TNA) process to realign modules with evolving operational priorities.
- Engage frontline staff and subject-matter experts in curriculum review panels.

3. Adopt blended learning models

- Combine instructor-led sessions with self-paced e-learning, webinars, and micro-learning videos.
- Use mobile-first content to reach staff in remote locations.

Strengthen practical and on-the-job coaching

- Expand simulation labs and conduct ride-along assessments for signal operators and station managers.
- Pair trainees with experienced mentors for real-time feedback and knowledge transfer.

Integrate training with performance management

- Link completion of competency-based modules to individual KPIs and appraisal outcomes.
- Visualize skill-gap closure on dashboards that managers review during performance cycles.

Collaborate with NRTI and industry partners

- Leverage National Rail & Transportation Institute (NRTI) expertise for specialized courses in infrastructure planning and contract management.
- Facilitate faculty exchanges, guest lectures, and joint certification programmes with leading transport universities.

By systematically addressing these gaps through digital enablement, curriculum agility, and stronger industry linkages, Indian Railways can elevate both individual capabilities and institution-wide performance.

Making training mandatory in Indian Railways

To embed training as a compulsory element of every rail employee's career, Indian Railways must leverage **regulatory mandates**, **service rules**, **digital enforcement** and **performance linkages**. Below is a structured approach.

I. Establish regulatory and Service Rule mandates

1.. Issue an overriding circular

- Publish a directive signifying that completion of specified training modules as a precondition for station postings, grade confirmation, and promotions.
- Consolidate existing non-gazetted and gazetted training orders into one Master Circular, akin to "Master Circular No.44: In-service Training to Non-Gazetted Railway Staff".

2.. Amend Recruitment and Promotion Rules

- Embed training completion requirements into Recruitment Rules (RR) and Promotion Policy (e.g., making mandatory refresher courses every 2–3 years for some critical cadres).
- Make passing in prescribed examinations at the end of refresher courses mandatory for career progression, as outlined in existing refresher-course guidelines. Do away with 'best among failed' criteria.
- Do away with 'best among failed' criteria.

II. Integrate with performance management

- Link Training to Annual Confidential Reports (ACRs)
  - Include "Training Completion" and "Post-training Application" as key result areas in ACRs.
  - Require ACRs to certify that an officer has attended mandatory modules before recommending grade increments.
- Tie to Key Performance Indicators (KPIs)
- Define divisional KPIs such as "% Staff Trained in Digital Signalling" or "Refresher Course Pass Rate."
- Make departmental budget releases contingent on meeting minimum training-completion thresholds.

III. Deploy a Centralized Digital LMS and Dashboard

1. Roll Out an LMS

- Host all mandatory modules–initial, refresher, and specialized–on a common platform referenced in the IR Training Manual.
- Automate enrolment based on job profile and flag overdue courses.

2. Enforce through Access Controls

- Integrate the LMS with HR and rostering systems so that only "Training-Certified" employees appear in eligibility lists for transfers, postings, and promotions.

3. Monitor via Dashboards

- Create real-time dashboards showing training-status heatmaps by zone, department, and category.
- Escalate non-compliance to divisional heads on a monthly basis.

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4. **Provide Protected Time and Incentives**

- Institutionalize "Training Leave" - Guarantee paid leave days specifically earmarked for mandatory courses, as per the Training Manual's guidelines on training period allowances.
- Offer Training Allowance and Recognition
  - Furnish financial or non-monetary rewards (e.g., certificates, badges) for timely completion and exemplary performance in mandatory modules.
- Embed Peer Learning and Mentorship
- Pair new inductees with certified mentors whose own certification status is reviewed during performance appraisals.

5. Enforce Compliance and Accountability

- Quarterly Compliance Audits
  - Task zonal Training Managers to audit course-completion records quarterly and submit findings to the Railway Board's Training Directorate.
  - Non-Compliance Penalties
- Link refusal or failure to attend mandatory courses with withholding of annual increments, denial of leave encashment, or temporary ineligibility for promotions.
- Feedback and Iteration
- Incorporate participant feedback into module updates.
- Adjust mandatory curricula periodically through joint panels of CTIs, NRTI, and frontline experts.

Conclusion:

By combining a clear regulatory framework, digital enforcement, performance linkages, and structured accountability, Indian Railways can transform "training" from an optional add-on into an indispensable, career-defining milestone.

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Change is made of choices and choices are made of character and habits

- By Amanda Gorman

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