CHAPTER- III

TECHNOLOGICAL NEW INVENTIONS

IN INDIAN RAILWAYS
The Indian Railways is one of the largest railway networks that are controlled by a single authority. It is the most convenient and effective mode of transport that has ever been created. It has evolved with time and experience and has increased its capacity to adapt to changes in technology, management, and structure. Called the “System Approach”, one can view the railways as a unified organisation with an inter-connected pattern of parts or divisions. The railways are a well-organised system within a system, a well-knit and planned organisation with a system and sub-systems of its own, brought together to form a composite whole. For this reason, even after being developed into a ‘huge’ organisation, its working is smooth and highly efficient, the hallmarks of a truly ‘great’ organisation.¹

This chapter deals with the Introduction of new Technological and new Inventions for improvement of Indian Railways.

The Golden *Quadrilateral* (metropolitan cities) is fully saturated as far as traffic load is concerned. To increase capacity, it needs to have additional parallel lines, modification of functions and reduction of speed differential between goods and passenger trains. There is no way out to store ‘transport output’; if it is not used in real time, it gets wasted. Likewise, in transport activities the ‘output capacity’ has to be utilised in time or else it will be destroyed. In order to have working efficiency, over and above this basic capacity required, some additional capacity is also necessary to clear the backlog created during emergencies, accidents,
blockades, or due to an increase in demand during festivals, holidays, and weekends.²

TECHNOLOGY UPDATE:

Updating Technology regularly is the key to successful operation of any Rail system. Better technology improves efficiency and reduces cost of operation. It is precisely for this reason that global manufacturers associated with the railway industry are spending huge funds on R & D to improve existing technologies and bring down costs. The exercise does not go in vain. In fact almost all the Railways across the world look for such technologies that help them perform better and cheaply. Several countries in the European Union and the Asian sub-continent are adopting these technologies.

Presently Indian Railways are amongst the top technology seekers. The utility has drawn a massive plan to completely overhaul its existing system but at least cost. Besides, it has devised policies that allow the technology providers to invest in the system as well. The key areas where Indian Railways (IR) is looking for state of the art technologies are Safety, Track, Coaching and capacity expansion. It is the most opportune time to invest in the Indian Railways as government has approved 100% FDI in high speed train systems, dedicated freight corridors are being implemented in Public Private Partnership (PPP) mode as well as for the system modernisation and expansion. However, the prospects are not limited to
the Railways only but urban rail transport suburban corridors including metro and monorail systems as well. \(^3\)

**TECHNOLOGY UPGRADATION:**

Every dynamic and thriving organization needs to innovate and re-invent its practices. In accordance with the vision of Hon’ble Prime Minister for Innovation, Technology Development and Manufacturing, we intend to set up an innovation council called “Kayakalp” for the purpose of business re-engineering and introducing a spirit of innovation in Railways.

The following was the speech of Suresh Prabhu Railway Minister while introducing Railway Budget for 2015-16 of February, 2015.

We need to invest in fundamental and applied research for seeking solutions to rail-specific issues. We intend to set up a technology portal to invite innovative technological solutions.

We have decided to strengthen the Research Design and Standards Organisation (RDSO) into an organisation of excellence for applied research. RDSO would collaborate with institutions of repute. We will set up in 2015-16 four Railway Research Centers in select universities for doing fundamental research. Government of India (GOI) has conferred Bharat Ratna on Pandit Mandan Mohan Malaviya, to mark the centenary celebration of Banaras Hindu University, we propose to set up ‘Malaviya
Chair’ for Railway Technology at IIT (BHU), Varanasi. This Chair will help in development of new materials to be used in all assets of Railways.

A consortium of Ministry of Railways, Ministry of Human Resource Development of Science and Technology and Industries on an Investment Sharing Model is being set up as part of Technology Mission for Indian Railways to take up identified Railway projects for research.²

OPERATIONAL AND TECHNOLOGICAL CHALLENGES:

The railway’s operations include better train services, high productivity of resources viz., locos, wagons and track etc., and maximising activities related to goods and passengers and transportation, as well as increasing line capacity, reduction in accidents, increasing speed and being punctual. All these are not easy tasks, but the aim is to accept the challenges of traffic movement. Combining all functions together is most challenging goal, and the Indian Railways is all set to be the best and most efficient performer.

A good system of train operations ensures safe and timely movement of passengers and goods. There are various kinds of measures adopted to ensure this: the railways keeps an eye within the ‘Station section’ as well as the block section i.e., on the station and within stations. There are various forms of observation such as absolute block system, automatic block system, following trains system, pilot guard system and one-train only system. There are categories of stations, goods and passenger trains.
There are different types of siding and line capacity of a section. The most important and challenging areas are to improve wagon availability and utilisation, the service of engine-on-load, and the terminal cash incentive scheme, adopted by the railways to increase operational efficiency.

The concept of ‘line capacity’ is a measure of the maximum number of trains handled on a section during a 24 hour period, also known as ‘section capacity’. If a yard is studied during the same period, it is known as ‘terminal capacity’. There is yet another concept known as ‘through-put’ of a section, which signifies the volume of traffic that can be moved across the section during a period of 24 hours. This is measured by the number of wagons on the gross tonne km or net tonne km. The line capacity and through-put of a section depends upon the average running time of trains and the loads handed. The less the running time, the greater the number of trains which can be handled on a section and the greater the loads, the higher is the number of trains which can be handled on a section; and the greater the loads the higher efficiency in operational design, efforts are made to reduce running time and increase in loads, use of improved wagons and higher powered locomotives, provision of technologically advanced systems of signalling and telecommunication etc.

The railways ‘operational efficiency is judged from the ratio of input and output of transport services which it produces and sells through locomotives, wagons, tracks etc. and the results thus produced is expressed
in terms of tonne km and the distance in km covered. Thus, the utilisation efficiency of engine/wagon utilisation is indicated by the use and availability of engine / wagon, the distance it runs and the load it hauls. Punctuality and speed are also related matters for determining the efficiency of the rolling stock.

Analysing statistically the operational efficiency of the Indian railways, the utilisation of all tractions has to be taken into account in respect of wagon locomotives and tracks.  

RAILTEL CORPORATION OF INDIA LIMITED:

RailTel was formed in September, 2000 with the objective of creating nationwide Broadband Telecom and Multimedia Network in all parts of the country, to facilitate Railways in ‘expeditious’ modernizing of their operation and safety systems and network by providing state of the art communication infrastructure; and to generate revenue through commercial exploitation of its telecom network. The Optical Fibre Cable (OFC) network presently reaches to over 4000 towns & cities of the country including several rural areas covering 70% of India’s population. RailTel with strong nationwide presence is committed to bring cutting edge technology and offer innovative services to the Indian Telecom & Multimedia Network in all parts of the country in addition to modernization of Train operations and administration network system.
Equipped with an ISO 9001:2010 & ISO 27001: 2005 certification, RailTel offers a wide gamut of managed telecom services to Indian Telecom market. The service includes managed lease lines, Tower collocation, Multi Protocol Level Switching (MPLS) based IP-VPN, Internet and Next Generation Network (NGN) based voice carriage services to Telecom Operators, Internet Service Providers, MSOs, Enterprises, Banks Govt. Institutions / Dept., Educational Institutions / Universities, etc. Keeping the ever changing market scenario in mind RailTel has also started off new services namely Rail Wire-Retail Broadband service, TPaaS-Tele presence as a service, Data Centre, etc.

Indian Railways track traverses over 63000 Route Km. connecting over 6000 locations using RoW Railel has created Optical Fibre Cable based network infrastructure covering 43000 RKM hereby creating major PoPs (Point of Presence) at over 200 locations and minor PoPs at 4100 locations. The network providers for small stations at every 8-10 kms and major stations at every 50-60 kms which are located in the central of commercial and residential hubs.

The network has been created in layered architecture with mesh/ring topology to support route redundancy. The aggregation layer is supported on multiple rings of STM-64/16 system and core network on high capacity DWDM system. The network provides bandwidth options of various granularities up n x 10G. In high bandwidth backbone segment, RailTel occupies a pride place with its unparalleled network. The network has the
ability to provide the mission critical customized connectivity platform for enhanced corporate efficiency and growth.

RailTel also has a Multi-Protocol Level Switching network along with Next Generation Network system to support various IP enabled service. In addition, RailTel has also created extensive Optical Fibre Cable based access network at important commercial hubs in all important cities of the country to support delivery of services up to the premises of Enterprises.

Railways have also established its Multi-Protocol Level Switching (MPLS) based Next Generation Network (NGN) for voice traffic. This Next Generation Network (NGN) has been used to interconnect more than 100 exchanges of Railways carrying the administrative voice traffic. Common User Group (CUG) mobile phones have also been hired to enable communication while on move to enhance safety, reliability and productivity. IR is also using 1.29 lakh VHF walkie-talkie sets to ensure safety and enhance reliability.

Internet has changed the way organizations work today. It is impacting almost all the activities of daily life today. Broadband and penetration are also taken as indicators of growth. Indian Railways has also embraced this technology and is using it effectively. It has recently
provided broadband in all its major colonies in zonal and divisional headquarters.

Broad Band Internet accesses to passengers have been provided using two way satellite hybrid with 2G/3G and Wi-Fi. The System consists of on-board satellite tracking antenna, multiband antenna and Wi-Fi broadcasting equipment for on-board last mile connectivity. The primary broad band link to back haul the internet traffic is established via satellite and in the event of non-availability of satellite the multi access router automatically switches from satellite to 2G/3G links to achieve 99% connectivity.  

Vision: is to become the preferred telecom solutions and services provider for knowledge economy.

Mission: To attain leadership in providing premier telecom infrastructure service by offering the cost-effective state of the art communication solutions.

Objectives of RailTel:

- To facilitate Railways in expeditious modernizing of their operation and safety systems and network providing by state of art communication infrastructure.

- To plan, build, develop, operate and maintain a nationwide broadband telecom and multimedia network to supplement national
telecom infrastructure to spur growth of telecom, broadband and IT enabled value added services in all parts of country specially rural, remote and backward areas.

➢ To generate revenue through commercial exploitation of its telecom network.

It is also venturing into areas such as providing cyber cafes at railway stations through franchisees on a revenue-sharing basis. One cyber cafe has been commissioned at New Delhi Railway Station as a pilot project. It is planned to provide cyber cafes at 51 stations in Phase-1.

RailTel has ambitious plans to enter national long distance (NLD) services. RailTel also aims to provide internet kiosks at railway stations, where minimum STM-1 band-width will be available. The STM equipment is equipped with Ethernet interfaces, whereby high speed internet bandwidth can be made available at each such station. Internet kiosks would be installed at these stations with high speed connectivity.

REFORMS AND UPGRADES IN INDIAN RAILWAYS

Outdated communication, safety and signalling equipment, which used to contribute to failures in the system, is being updated with the latest technology. A number of train accidents happened on account of a system of manual signals between stations, so automated signalling is getting a boost at considerable expense. It is felt that this would be required given the gradual increase in train speeds and lengths, that would tend to make
accidents more dangerous. In the latest instances of signalling control by means of interlinked stations, failure-detection circuits are provided for each track circuit and signal circuit with notification to the signal control centres in case of problems. Though currently available only in a small subset of the overall Indian Railway system, anti-collision devices are to be extended to the entire system. Aging colonial-era bridges and century-old tracks also require regular maintenance and upgrading.

The fastest trains of Indian Railways, Rajdhani Express and Shatabadi Express face competition from low-cost airlines since they run at a maximum speed of only 150 kilometres per hour (93 mph). At least six corridors are under consideration for the introduction of high speed trains to India with expert assistance from France and Japan.

Sanitation in trains and stations throughout the system is getting more attention with the introduction of eco-friendly, discharge-free, green (or bio-) toilets. Updated eco-friendly refrigerant is being used in AC systems while fire detection systems will be installed on trains in a phased manner. New rodent-control and cleanliness procedures are working their way into the many zones of Indian Railways. Central Railway's 'Operation Saturday' is gradually making progress, station by station, in the cleanup of its Mumbai division.

Augmentation of capacity has also been carried out in order to meet increasing demand. The number of coaches on each train has been
increased to 24, from 16, which increased costs by 28% but increased revenues by 78%. The railways were permitted to carry 68 tons per wagon, up from the earlier limit of 54 tons per wagon, thereby cutting costs. The turnaround time for freight wagons was reduced from 7 days to 5 by operating the goods shed 24X7, electrifying every feeder line (this reduced time spent switching the engine from diesel to electric or from electric to diesel). Reducing the turnaround time meant that the Railways could now load 800 trains daily, instead of 550 trains daily. The minimum tonnage requirements were reduced allowing companies to unload their cargo at multiple stops.

On 19 October 2011, The Real Time Train Information System (RTIS) project, GPS-based SIMRAN technology, was introduced by railway minister Dinesh Trivedi. RTIS will enable rail travellers to access train running information real-time on their laptops and mobile phones. It intends to provide passengers with latest information about train movement and other details. The RTIS project has been jointly developed by IIT Kanpur and Research Design and Standards Organization (RDSO), with support from the HRD ministry.

Initially, RTIS will provide information only on Rajdhani and Shatabdi trains, their speed, delays, approaching station, coach position and other details. Presently Indian Railways starts RTIS in five pair of Rajdhani Express (12301/02,12305/06,12313/13,12951/52 and 12953/54) and one
pair of Shatabdi Express (12303/04) on Pilot basis. Passengers can obtain train information by visiting http://www.simran.in, SMS by sending the train number to the mobile number 09415139139.

Railways had earlier decided to implement Real Time Train Information System (RTIS) to track all passenger and freight trains.

CENTRE FOR RAILWAY INFORMATION SYSTEMS (CRIS):

The Ministry of Railways set up Centre for Railway Information System (CRIS) as a Society in July, 1986. It is head quartered in New Delhi, with Regional offices in Delhi, Kolkata, Mumbai, Chennai and Secunderabad. Our current portfolio of projects covers the gamut of Indian Railways functions, such as passenger ticketing freight operations, train dispatching and control, crew management, e-procurement, management of Railway’s fixed and moving assets, and production of rolling stock. However despite Indian Railways patronage CRIS is an Autonomous Organisation under the Ministry of Railways. It develops and manages the Information Technology applications of the Indian Railways. CRIS also provides IT applications for non-Railway Government and Public Sector organisations.

CRIS collaborative model of working ensures the delivery of cost-effective, sustainable information systems. The society has been successful in using cutting edge technologies in practical ways to ensure workable. IT solutions for the Railways in many areas. It is currently developing
systems to cover emerging needs of the Railways including the protection of Railway assets, energy management, and management of the overhead electrification system, parcel management, employee’s health management, and a comprehensive financial management system.

Other projects under execution include development of ticketing on mobile phones, linking tickets to Aadhaar, tracking of trains in real time through GPS, tracking of rolling stock using radio frequency identification, setting up a geo-spatial database for the Indian Railways, and the setting up a state-of-the-art data centre to house the Railway’s IT system.

The Indian Railways carries nearly 900 million tonnes of freight in a year. This translates to about 5000 freight trains daily. Freight trains bring two thirds of the Indian Railway revenues and are referred to as the bread earners for the Railways. The major commodities carried by Indian Railways are Coal, Iron Ore, Food grains, Iron & Steel, Cement, Petroleum products, Fertilizer and Containerized Traffic. There are specialized wagons to handle the transportation needs of the different types of commodities. Unlike passenger carrying trains, freight trains do not run to a fixed schedule and thus making freight operations a highly information intensive activity. Based on this information managers make allocation decisions continually to dynamically optimize utilization of resources like wagons, locomotives, crew and paths on the network. Real time
information allows good decision making and thus ensures high levels of mobility within the system.¹⁰

**Passenger Reservation System (PRS):**

Reservation of accommodation in Indian Railways is done through the Passenger Reservation System (PRS) and the Unreserved Ticketing System (UTS).

The PRS system provides reserved ticketing from any station to any station on Indian Railways and is a fully networked computerized system. The PRS was started as a pilot project in 1985 in New Delhi; currently, the PRS is available in 2800 PRS centers and approximately 8900 PRS-cum-UTS-counters. The Ministry have further stated that UTS is being provided at all stations except halt category station.

The Rail network is used by millions of people spread across the length and breadth of the country and as such, it is important that they have easy access to railway tickets. To this end, the Ministry have stated that they are taking several steps to proliferate the PRS and UTS centres. PRS and PRS-cum-UTS locations are being proliferated as per extant policy, the salient of which are enumerated as under:

1. At least one PRS in every district;
2. Important tourist or hill stations and pilgrimage centres;
3. Such Railway Stations, where there is no PRS within a vicinity of 50km.
4. Thickly populated Metro cities;
5. PRS centres for armed forces (Ministry of Defence) at remote locations;
6. Provision of combined UTS-cum-PRS at those stations, where manual reservation quota is available and UTS has been introduced.

The Committee were further informed that apart from the above, PRS facilities are being sanctioned at locations recommended by Hon’ble MPs under the budget announcement of one PRS location as per the choice of each MP (station, non-railhead and post office)

While PRS tickets are available at reservation counters manned by Railway staff, these are also made available at non Rail head locations manned by Postal Staff, District Administration staff and Defence Staff. Besides this, electronic tickets and internet tickets can be purchased by the user from his/her own place. Unreserved ticketing at Rail Head is made through railway staff and through Automatic Ticket Vending Machine ATVMs and at non-Rail head locations through Jansadharan Ticket Booking Sewak System Moreover, the Railways have introduced Automatic Ticket Vending Machine (ATVMs) at Mumbai, Delhi, Chennai, Kolkata and Secunderabad and their adjoining areas. So far, 626 ATVMs have been commissioned while a further 682 are under procurement/installation.
Ticketing Staff and Training:

Since the railway staff at ticket counters is the primary contact for a passenger availing of the services of the Railways, the Ministry was questioned about the training imparted to these frontline staff. The Committee were informed that all staff handling the counters for issue of tickets through UTS and PRS is imparted technical training. Professional training relating to commercial rules is also imparted to the staff at the time of induction. In addition, front line staffs are also imparted customer care training to deal with passengers in a courteous manner. This training is conducted at Customer Care Institute, Kishanganj, Delhi besides the Zonal Training Centres.

Moreover, additional reservation centres have been opened at Post Offices. At present, PRS counters are functional at 151 post offices across the country. Mobile ticketing vans (under the “Mushkil Asaan Scheme”) are functional at Howrah, New Delhi, Jaipur and Vapi. These vans sell reserved and unreserved tickets at various locations in the city. Passengers can also buy tickets through mobile phones by accessing the IRCTC website. The Ministry have also initiated the setting up of the PRS Disaster Recovery Centre at Secunderabad.  

Country wide Network of Computerized Enhanced Reservation and Ticketing (CONCERT), based on state-of-the-art client server technology, has been installed at all PRS nodes providing facility to the passengers to
book seats / berths on any train on IR from any location. Railway reservation enquiry and booking through ‘Internet’ has been provided through Railway’s own website http://www.indianrail.gov.in. Indian Railways Catering and Tourism Corporation Limited (IRCTC) have been given connectivity to the PRS system to make use of the Internet booking.

**NATIONAL TRAIN ENQUIRY SYSTEM (NTES):**

National Train Enquiry System (NTES) website, www.trainenquiry.com given information about the running status of any train, its expected arrival / departure at a station, information about passenger amenities, tourist information and scheduled platform berthing of trains at important stations.

**INTEGRATED TRAIN ENQUIRY SYSTEM (ITES):**

Integrated Train Enquiry System (ITES) has been set up at Patna and Bangalore improves Telephone Enquiry System. The system, consisting of both IVRS and Manual Enquiry provisions, provides details of accommodation availability, current status of tickets and train running status position on dialling number 139 as a local call from anywhere in India. Other parts of IR will soon be covered by the system.¹²

**INTERNET TICKETING:**

IRCTC launched its official website http://www.irctc.co.in. On 3rd August, 2002 for the purpose of railway ticket booking through Internet.
Internet ticketing has been one of the most successful products from IRCTC. They have sold almost 1.3 million tickets amounting to Rs. 106 crores, in August 2007 and are continuing to grow at a rapid pace. A record number of 75,000 tickets were sold on 18th September, 2007. They have a network of 7,000 agents all over the country and this is growing further. Total number of registered user with IRCTC is more than 40 lakhs. A number of new initiatives are underway on the IT front including MoUs with bank for ticketing through ATMs.13

Internet Ticketing has emerged as one of the largest e-commerce sites in the entire Asia Pacific region with an exponential growth. On an average, more than 3 lakh tickets are sold through IRCTC’s website in a day with a peak load of 5.84 lakh tickets in a day. During the year 2013-14, this segment registered an income of Rs. 228.49 crore from E-ticket Service charge as against Rs. 187.94 crore achieved during year 2012-13 thereby registering an increase of 21.58% over previous year.14

E-TICKETING:

E-Ticketing is a service provided by Indian Railway through IRCTC, which dispenses the need for system ticket to be carried for a rail journey. The user can take a print out of the Electronic Reservation Slip (ERS) and perform the journey with an original personal photo identification without requiring to carry the regular railway ticket. Passengers can now book tickets on their GPRS enabled Mobile (M. ticket). On booking a
ticket, a SMS containing ticket details will be sent to the user. This SMS will be called “Mobile Reservation Message (MRM)”. Such passengers need not carry a print out of the ERS and instead need to only display the SMS (MRM) along with the proof of identity in original. Similarly, a screen shot of the Electronic Reservation Slip (ERS) displayed through Laptop (Virtual Reservation Message (VRM) will also considered as an ‘e’ ticket along with the proof of Identity in original. Such passengers need not carry printout of the Electronic Reservation Slip.  

During the journey even if one passenger booked on an e-ticket presents any of the ten Identity Cards mentioned below in original, the same is accepted as proof of identity (For tatkal ticket same identity card is to be presented during journey which was mentioned at the time of booking of tickets).

i. Voter Identity Card issued by Election Commission of India.

ii. Passport.

iii. PAN Card, issued by Income Tax Department of India.

iv. Driving License issued by RTO.

v. Photo Identity Card issued by Central / State Governments.

vi. Student Identity Card with photograph issued by recognized school / college for their students.


viii. Credit Card issued by Bank with laminated photograph as a proof of identity and

x. Photo identity cards having serial number issued by public Sector Undertakings of State / Central Government, District Administrations, Municipal bodies and Panchayat Administrations.

**Payment for booking E-tickets:**

- Payment can be made by using all Master / Visa / Amex cards.
- Account holders of major bank viz., State Bank of India, PNB, Indian Bank, ICICI, HDFC, etc., can also use Net Banking / Debit Cards facility for making payments for tickets booked through internet.
- Customers can also use various Cash Cards for making payments.
- Payment can also be made through IMPS (Immediate Payment Service) provided by National Payments Corporation of India.

In E-ticketing scheme, passengers get their reservation booked through internet while sitting at home and occupy their reserved seat on the basis of Electronic Reservation Slip (ERS) taken out from their own computer or SMS sent by IRCTC / Railways along with the original Identity Card.\(^6\)

**MOBILE PHONE TICKETING:**

With an aim to further facilitate the passengers, Indian Railways Catering and Tourism Corporation (IRCTC), a Public Sector Undertaking of the Ministry of Railways, will be launching a pilot project of ticketing
through non-internet based mobile phones with effect from 1st July, 2013. This will enable people using non-internet based mobile phones to easily access Railway ticketing services through SMS/IVRS/USSD. The scheme is user-friendly, secure and also eco-friendly, as no print out is required.  

Millions of rail travellers can now use mobile phones to book tickets in a simple, convenient and secured manner. The services can be availed by IRCTC registered users only.

**Advantages of booking IRCTC tickets via mobile:**

- No need to stand in long queues or log on to the internet.
- Simple, reliable and secured.
- Accessible to any mobile user.
- Very little charges for accessing the service.
- Works on all handsets.
- Simple user guided menu-book tickets, search for stations, trains, availability.

**TATKAL TICKET:**

To meet the urgent travel requirements of the passengers, who plan their journey at short notice, Tatkal reservation facility is provided in all Mail / Express trains including Rajdhani, Shatabdi, Duronto, Jan Shatabdi trains.

The reservation under this scheme is available only for full fare tickets and not for concessional tickets including Senior Citizen concession tickets. Maximum of four passengers per application will be allowed.
Tatkal booking opens at 10.00 hours on the previous day of journey excluding the date of journey from the train originating station. For example, for a train leaving on 2nd the Tatkal Booking shall commence on 1st.

A self attested copy of any one of the ten identity proofs of one or more passengers is required at the time of booking. During the journey, anyone of the tatkal passengers should carry the original proof of identity indicated on the ticket and charged accordingly. The following ten identity proofs are prescribed for submission at the time of booking of tatkal ticket.

a. Voter Identity Card
b. Passport
c. PAN card
d. Photo identity card issued by Central / State government which are having serial number (viz, pension pay orders, Ration Card of the passenger whose photograph is available on the Ration Card is travelling, Senior Citizen Cards, Below Poverty Line Card, ESI Cards (with photograph) issued for taking treatment in ESI Dispensaries, CGHS Cards (with photograph) issued to individual family members of Central Government Employees).
e. Student identity card with photograph issued by recognized school/college for their students.
f. Nationalised Bank Pass Book with their photograph.
g. Credit cards issued by Banks with laminated photograph.

h. Unique Identification card “AAdhaar”

i. Photo identity cards having serial number issued by Public Sector Undertakings of State / Central Govt. District Administrations, Municipal Bodies and Panchayat Administrations.

Refund on Tatkal Tickets:

- No refund shall be granted on cancellation of confirmed tatkal ticket except in exceptional cases like disruption of Railway services etc.

- No refund will be given for duplicate tatkal even if the original ticket is found.

- In case of cancellation of partially confirmed tatkal ticket, refund will be given only for waitlisted tatkal ticket.

- Waitlisted Tatkal tickets shall also be issued and the cancellations done in general booking shall confirm General and Tatkal waiting lists alternatively.¹⁹

DIGITAL RAIL:

❖ Next Generation e-ticketing (NGet) which can book 7200 online tickets instead of 2000 tickets per minute and now to attend 2,00,000
enquiries instead of 50000 per minute, is now being developed in Hindi.

- ‘SMS Gateway’ enabling passengers to get SMS alerts on the status of reserved tickets. SMS alerts to passengers in case of status change in the PRS tickets, as compared to the Initial booking status, once a day 5 days prior to departure.

- Online reserved tickets booking for concessions like physical disability has been launched.

- E-Registration of Wagon demand was launched in August and E-transmission of RR has been launched on 31st January, 2015.

- Sound Alerts for travellers during night to intimate train arrival at destination station through Dial 139.

- Mobile Application for women security over Mumbai suburban area, developed by Western Railway inaugurated on 9th January, 2015.

- **Online booking of Retiring Rooms:** Retiring Rooms can be booked at 434 stations on website www.irctctouris.com. 15000 rooms were booked online during December 2014 with earnings of Rs. 68 lakhs.

- Wake up Call Alert to passengers enroute journey through SMS 139.
E-ticketing website is Visually Challenged friendly with effect from 13-01-2015 CAPTCHA is now sent on mobile as One Time Password.

Biometric Attendance System has been implemented at Rail Bhawan with effect from 01-01-2015.  

CATERING IN STATIONS AND ON BOARD TRAINS:

The Catering Policy 2010 has been introduced with effect from 21.07.2010 and has laid emphasis on ensuring quality of food served on Railways. The earlier policy of 2005 sought to treat catering as an independent profit centre, the 2010 policy seeks to acknowledge catering as a passenger service. The policy has sought to bring improvements in catering by shifting the task of monitoring quality of service from IRCTC to the Zonal Railways and attempts to leverage Zonal Railways vast and elaborate all India network in order to effect a thorough supervision and control over catering activities.

When the Ministry was questioned on the major changes being effected by this policy, they informed that the main emphasis has been placed to ensure the availability of quality food for the not-so-affluent classes of passengers by providing Janta food and low cost regional cuisine (economy combo-meals) by means of Jan Ahaar outlets, Refreshment Rooms, stand alone outlets and vending stalls. Given the vast variety of
cuisines and culinary preference all over the country, regional cuisine is being encouraged and the Zonal Railways have been given the authority to design the menu, recipes and fix the tariff of the a-la-carte items within their jurisdiction as per the local taste and purchasing power. The Standing Committee on Railways 2012-13 were also informed that a list of 63 a-la-carte items with their respective prices prepared by a Committee of CCMs has been circulated to all Zonal Railways for its early introduction in their Zones.

As regards the mechanism of providing catering facilities at stations and in trains, the Committee have been informed that facilities are provided in the form of various catering units, viz. refreshment rooms/Jan Ahaar, Catering Stalls/trolleys, milk bottles, fruits and juice stalls, automatic vending machines (AVM), food plaza/food courts and fast food units at the Railway stations. On board trains, catering is provided through pantry cars/train side vending in Rajdhani/Shatabdi Express, Duronto Express and other Mail/Express trains.

The priority for allotment of pantry cars to trains are considered based on various factors such as priority of the trains, (First priority to Duronto and Rajdhani Express trains, Second priority to long distance premier, superfast trains, Third priority to Mail and Express trains with more than 24 hour journey time either way and Fourth priority to the remaining trains, preference to those trains where vestibules are provided),
its commercial justification, availability of pantry cars and load limitations, etc.  

**RAIL NEER – PUREST PACKAGED DRINKING WATER:**

In line with the objectives of constantly upgrading services and meeting the vision of IRCTC, a number of measures have been taken ever since the inception of the organisation. One such measure was the setting up of State of the Art packaged drinking water bottling plants under the brand name, “Rail Neer”. At present there are two such plants in India i.e., 

**Rail Neer Plant, Nangloi, and Rail Neer Plant, Danapur.** Rail Neer Plant Nangloi, Delhi was inaugurated on 6th May, 2003 and Rail Neer Plant, Danapur was inaugurated on 27th February, 2004, Rail Neer is not only confirming to BIS standards but also regarding pesticide residue, it conforms to the European Union norm which the issue of centre for Science and Environment (CES), published on 15th April, 2004 has noted and it is a benchmark for packaged drinking water manufacturers for which private sector companies are still struggling to achieve. The plants are completely automatic and there is no manual handling of product water at any state. The plants are based on State of the Art technology for water purification and packing.  

A new Rail Neer plant of IRCTC, a PSU under the Ministry of Railways at Ambernath (Mumbai) was inaugurated, raising the total
production (of the four plants) to 6.1 lakh litres of packaged drinking water daily.\textsuperscript{23}

**PASSENGER AMENITIES:**

A new and innovative technology called BluFi has been launched in Bangalore services at the City Railway station on 2\textsuperscript{nd} March, 2012. It is a unique combination of Bluetooth application and Wi-Fi connectivity which will allow passengers to receive a host of information, like videos, downloadable games, wallpapers etc and also Railway information so on by just switching on Bluetooth on their mobile phones. The initiative has been taken by Bangalore Division in collaboration with RailTel and Telibrahma.

There is also free Wi-Fi connectivity which has been provided by RailTel as a part of their RailWire retail broadband initiative. To use the connection passengers can send the request for internet access by sending their mobile number to which the password will be sent on SMS.\textsuperscript{24}

Indian Railway Station Development Corporation to redevelop 100 stations in the next five years. Indian Railways however have more than 8000 stations and it is necessary that efforts towards improved availability of amenities like waiting halls, benches, adequate lighting, drinking waters, toilets, proper platform services etc. are made in a concerted manner.

- To set up AC Executive lounges at important stations to provide value added services at a charge, offering faculties such as wifi
internet, buffet services, wash and change, concierge services for pre-departure and post-arrival assistance to passengers;

• Setting up of new Rail Neer Plants at Palur in Tamilnadu and Ambernath in Maharashtra to facilitate smooth supply of water at stations;

• Expansion of housekeeping schemes for trains such as Clean Train Station, On Board Housekeeping Services for cleaning en route and mechanized cleaning at originating/terminating stations;

• Introduction of ‘Rail Bandhu’ on-board magazine on Rajdhani, Shatabdis and Duronto Trains.

• Introduction of coin/currency operated ticket vending machines as a pilot project;

• Expansion of housekeeping schemes for trains such as Clean Train Station, On Board Housekeeping Services for cleaning en route and mechanized cleaning at originating/terminating stations.

• Introduction of Alternate Train Accommodation System (ATAS) as a pilot project to accommodate waitlisted passenger on alternate trains;
GREEN INITIATIVES:

It is well known that railways are extremely environment friendly and are committed to protect environment.

- Setting up of 72 MW capacity windmill plants in the wind rich areas of Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and West Bengal;

- Setting up of 200 remote railway stations as “Green Energy Stations” powered entirely by solar energy;

- Providing solar lighting system at 1000 manned level crossing gates in non-electrified territory to improve illumination and enhance safety of road users.

- Introduction of mobile emission test car to measure pollution level of diesel locomotives;

- Introduction of a ‘Green Train’ (with low emissions diesel locomotive and coaching stock with bio-toilets) to run through the pristine forests of north Bengal.  

- Identification of 104 stations, serving a population of more than one million or those serving places of religious/tourist importance for immediate attention to all aspects related to cleanliness.
• Refrigerated vans are also available in many areas. The "Green Van" is a special type used to transport fresh food and vegetables. Recently Indian Railways introduced the special 'Container Rajdhani' or CONRAJ, for high priority freight. The highest speed notched up for a freight train is 120 kilometres per hour (75 mph) for a 5,500 metric tonne load.\textsuperscript{28}

**RAILWAYS TO INTRODUCED BIO-TOILETS:**

In a major initiative to clean up the Indian Railways, Railway Minister declared that 2012 will see the introduction of bio-toilets in 2,500 coaches. The Minister highlighted that both the (Anil) Kakodkar and the (Sam) Pitroda committees had stressed the need “to replace the convention open-discharge toilets with ‘green toilets’ which will help provide a cleaner more hygienic and safer railway ecosystem”. The railways have been experimenting with zero-discharge toilets based on models developed by the DRDO. Field trials of these toilets are in final stage. “Trials with retention-evacuation type toilets such as vacuum toilets are also being planned on a few premium trains.\textsuperscript{29}

**NATIONAL CAPITAL REGION (NCR) STATIONS:**

It is recognize need for special attention to stations in National Capital Region. Development of directional terminals began some years back with opening of Anand Vihar station. Studies for terminal at Bijwasan will be taken up during the year. Further, to augment infrastructure and
revamp the facilities at Delhi, New Delhi and Hazrat Nizamuddin, works costing Rs 100 crore have been taken up.

ANUBHUTI:

With increasing popularity of Shatabdi and Rajdhani trains, there is also a demand for higher travel comfort. Responding to this need, to begin with, IR will introduce one such coach in select trains which will provide an excellent ambience and latest modern facilities and services. Such coaches will be named ‘Anubhuti’ with commensurate fare structure.

AMENITIES FOR DIFFERENTLY-ABLED PASSENGERS:

India is a signatory to the UN Convention on the rights of the disabled. We are conscious of our responsibility under the Millennium Development Goals (MDGs). To facilitate the boarding of trains and exit from the stations for the differently-abled and the elderly, the steps proposed include provision of 179 escalators and 400 lifts at A-1 and other major stations, affixing Braille stickers indicating the layout of coaches including toilets, provision of wheel chairs and battery operated vehicles at more stations and making coaches wheel-chair friendly.

SPEEDIER JOURNEYS:

Indian Railways is running premium special trains on 21 popular routes. Seven more routs are to be added. These trains which have been operated under dynamic face system have earned approximately 40 per cent
additional revenue as compared to trains operated on normal fares. They ensure assured seats and at times faster service.

A successful trial of semi high speed trains with 160 kmp has been conducted between New Delhi-Agra. The other identified sectors for 160 kmph are: Delhi-Agra, Delhi-Chandigarh, Delhi-Kanpur, Nagpur-Bilaspur, Mysore-Bengaluru-Chennai, Mumbai-Goa, Mumbai-Ahmedabad, Chennai-Hyderabad and Nagpur-Secunderabad. These routes are also under various stages of study.

High Speed trains on the lines of bullet trains are set to become a reality in the country. Mumbai-Ahmedabad corridor has been identified as the first corridor. It is the part of the Ministry’s ambitious plan to have Diamond Quadrilateral network of High Speed Rail connecting major metros and growth centres of the country. The intent was also showcased in the Railway tableau in the Republic Day Parade, 2015.31

In the Railway Minister Budget speech for the year 2014-15. He said, “There are 29 projects running in Andhra Pradesh and Telangana at an estimated cost of Rs. 20,680 crore. I intend to hold coordination meetings with the officials of the newly created States and consider their requirements so as to give necessary economic boost. On the issues concerning Railways in the twin states of Andhra Pradesh and Telangana, a committee has already been set up of the Railways and State Government
officials. Further action will be taken after receipt of the Report of the Committee”.

HELP-LINE:

In the Railway Minister Budget speech for the year 2015-16. He said, “Every responsive organization should have a system to address grievances from its valued customers. An all - India 24X7 helpline number, 138, will become functional to attend to the problems of passengers on a real time basis. Passengers will be able to call up for complaints while on trains. A mobile application to redress Railway-related complaints is also being developed. We intend to start this facility on a pilot project basis on Northern Railway from 1st March 2015. Based on the experienced gained and the feedback received from passengers, this will be extended to all Railways soon thereafter. Further, keeping in mind the criticality of security related issues, we have dedicated a toll-free number 182 for receiving security related complaints. Railways would utilise resources from the Nirbhaya Fund for augmenting security of our women passengers.”

Better Services to Customers:

The Ministry of Railways started trail of e-catering service in trains through its PSCU, IRCTC. This has started on trail basis on a few trains on Delhi-Amritsar since 25th September, 2014. A new scheme called the Yatri Ticket Sewa Kendra (YTSK) Scheme has been launched in August, 2014. Under this scheme, agents of Indian Railways can operate ticketing
terminals at various locations in the cities and towns for issuing reserved tickets and unreserved tickets. The scheme is aimed at expanding the reach of the ticketing systems of Indian Railways and evokes the principles of PPP and provides for revenue sharing between the private operators and Indian Railways. In order to provide value to passengers in the different regions, popular items from the North, South, East and Western parts of the country will be introduced in the Rajadhani, Shatabdi and Duronto trains.34

**SMS Alerts on Delays:**

The introduction of an SMS alert service to inform passengers of updated arrival and departure times of trains at starting or destination stations. Similarly, SMS alerts will be sent 15-30 minutes in advance of arrival of trains at the destination.

**Better and Faster Ticketing:**

One can now book his/her ticket four month in advance, as against a period of two months currently as the window for reserved ticket booking will be raised to 120 days versus the current 60 days. Even unreserved ticket purchase has been made simpler with smart phones and debit cards. Railway Minister introduced ‘Operation Five Minutes’ to ensure that a passenger travelling unreserved can purchase a ticket within five minutes rather than fret over his unreserved seat. “Provision of modified ‘hot buttons’, coin vending machines and ‘single destination teller’ windows will drastically reduce the transaction time”, Railway Minister announced.
Also, Hand-held terminals will now be provided to Travelling Ticket Examiners (TTEs), which can be used for verification of passengers and downloading charts.

**Better Stations with Wifi and Online Booking for Retiring Rooms:**

The good news is that Wi-Fi which till now was only being provided at all A1 and A category stations is now being expanded to include B category stations too. So far, 1052 stations have been identified for upgradation of Passenger Amenities at station under Adarsh station scheme. 200 more stations will be brought under this scheme. Online booking of retiring rooms has already been initiated. The facility of self-operated lockers would also gradually be made available at stations. Concierge services through the IRCTC at major stations for the assistance of passengers for their pick up and drop will soon become a reality. Railways have also proposed the creation of a new department for keeping stations and trains clean. Integrated cleaning will be taken up as a specialized activity, which will include engaging professional agencies and also training staff in the latest cleaning practices i.e., this job will be outsourced.

**Research Design and standards Organisation (RDSO)** has also been tasked with making available airplane like vacuum toilets. Moreover, online booking of disposable bedrolls at select stations is being extended to all passengers through the IRCTC portal on a payment basis. Railway Minister also proposed expanding water vending machines to most railway
stations to ensure availability of clean drinking water at very low cost to people.

**Goodies for the Elderly and Differently-Abled:**

While the budget is vague about ensuring women’s safety given that, Railway Minister only announced measures for increasing the number of surveillance cameras in coaches and women compartments, it does benefit the differently-abled and the elderly:

- Differently-abled travellers can purchase concessional E-tickets after one-time registration.
- All new coaches will be Braille-enabled to make travelling easier for the visually challenged.
- Railway Minister has increased the quota for lower berths for the elderly while middle bay of coaches will now be reserved for senior citizens and women.
- Wheel chairs for the old, disabled and pregnant women can be booked online.
- More lifts and escalators at major stations and concierge service at select stations were also proposed. 36
SWACHH RAIL, SWACHH BHARAT:

The Railway Minister has also issued directions for formulation of Integrated Policy on Cleanliness at the station, platforms and coaches. This policy will ensure better and effective coordination among number of departments involved for providing cleanliness. This integrated policy on Cleanliness would clearly lay down the parameters and benchmarks for cleanliness. The policy would clearly lay down structures / procedures for garbage collection, garabage sorting and garbage disposal.

As part of the “Swachh Bharat Mission” announced by the Prime Minister, the Indian Railways has launched a massive special cleanliness campaign since 2nd October, 2014 Gandhi Jayanti Diwas involving ‘Shramdaan’ and awareness activities throughout the country. Entire fraternity of more than 13 lakh Railwaymen / Women including officers are being urged regularly to be a part of this campaign, either in the ‘Shramdaan’ relating to cleanliness activity or in spreading awareness on cleanliness.

Through the participative Governance model adopted by the Ministry of Railways, suggestions have been invited on the website for end-to-end solutions for general cleanliness and cleanliness in toilets over train toilets and stations.37
Facilities for Physically Challenged:

Indian railways enables journey of differently abled people by provisioning of standard ramps with railings for barrier free entry, earmarking at least one parking lot for two vehicles used by physically challenged persons, provision of a non-slippery walkway from parking lot to the building, provision of signages of appropriate visibility, provision of at least one drinking water tap suitable for use by a differently abled person and provision of at least one toilet on the ground floor.38

On-Board Medical Facilities:

A doctor with a paramedic staff has been provided in the Duronto trains, as a Pilot project. In addition to this, all passenger carrying trains are provided with First Aid Boxes and Augmented First Aid Boxes have been provided with the Train Superintendents of Rajdhani/Shatabdi Express trains and Guards of nominated trains. The front line staff viz., Train Superintendent, Train Conductors, Travelling Train Ticket Examiners, etc. are also trained in rendering First Aid. Trains can also make unscheduled halts, if necessary, at the stations, en-route, in emergencies. The Station Masters have details of doctors, clinics and hospitals, both Government and Private in the vicinity of the station, so that their services could also be availed, in emergencies.39

Redevelopment of Stations as World class stations:

World Class Station is envisioned as a Railway Station which will provide the state-of-the-art facilities to the travelling public suitably
adopted to the local conditions on Public Private Partnership mode by leveraging the real estate potential of the land around and the air space above the station without any cost to railways. The architecture of the station shall reflect the culture and character of the city where it is located and integrates development for a comfortable and efficient passenger experience, ease of movement, security, safety and accessibility in a harmonious and environmentally sustainable way bringing satisfaction and value to the passenger/user.

- Segregation of arrival/departure of passengers-No conflict between incoming and outgoing passengers
- Adequate concourse – no overcrowding
- All essential facilities at concourse – catering, small retail, wash rooms, cloak rooms, drinking water, and toilets, ATM, Internet and Pharmacy etc.
- Adequate waiting room facilities-ladies Dormitories-transit hold
- All essential facilities at Entrance such as information and guidance, ticketing etc.
- User friendly signage understandable by all sections of passengers in an intuitive way
- Unifying and integrating both sides of the city
• No congestion on approach roads

• Well illuminated circulating area and sufficient provision for drop off, pick up and parking

• Integration with public transport access to stations

• No parcel obstruction/or movement on the Platform

Redevelopment of Stations through **Indian Railway Stations Development Corporation Limited (IRSDC)**: As announced in Budget Speech 2012-13, a dedicated organization ‘Indian Railway Stations Development Corporation Limited. (IRSDC)’ has become operational since May, 2012, for this purpose. Set up as a Joint Venture between IRCON & RLDA, IRSDC has been entrusted with five stations viz. Anand Vihar (Delhi), Bijwasan (Delhi), Chandigarh, Habibganj (Bhopal) and Shivaji Nagar (Pune) in the 1st phase. It is planned to award development contracts for these stations by March, 2014, depending upon timely approval to the Master Plans by local bodies etc.

Master Plan of New Delhi and Mumbai CST stations are also being finalized after resolving all related issues.\(^{40}\)

**ELECTRIFICATION:**

Railway Electrification Organisation was set up in 1961, with the mandate to electrify Indian Railway tracks as approved by the Railways.
The unit initially based at Kolkata was called Project Office for Railway Electrification (PORE) and was headed by an Engineer in Chief. However, owing to growing emphasis on electrification, a separate unit to growing emphasis on electrification, a separate unit called Central Organisation for Railway Electrification (CORE) was set up in 1971, with headquarters at Allahabad. The unit is currently headed by a General Manager.

CORE currently has 10 project units operating from different locations viz. Ambala, Bhubaneswar, Chennai, Gorakhpur, Danapur, Jainpur, Jabalpur, Lucknow, New Jalpaiguri and Secunderabad. These units are responsible for field execution of electrification works. Indian Railway has 24891 route kms under the electric traction as on 31-03-2014. Electrified routes constitute 38.59% of the total railway network and 44.48% of the entire Broad Gauge network.

Introduction of Railway Electrification has caused major impetus to Technology upgradation on Indian Railways. With a view to bring down the maintenance cost and improve the reliability of power supply system, Railway Electrification has gone in for state-for-the –art technology, as prevalent in the International arena viz., dry cast resin transformers, SF-6/Vacuum switch-gear, long creep age solid core insulators and PTFE neutral section, 8 wheeler self-propelled OHE inspection cars have also been introduced to improve maintenance. Action has also been initiated for
procurement of OHE recording car for monitoring the performance of overhead equipment.

Signalling and Telecommunication systems are also upgraded by adopting state-of-the-art technology. Semaphore signalling system is being replaced by colour light signalling system. Use of colour light signals results in better visibility of signalling aspects to the loco pilots of running trains and this makes train running safer and operationally efficient. Interlocking system is also being changed to panel or route relay interlocking. Besides speedier movement of traffic, these up-gradation measures contribute towards increase in safety. 41

**RAIL VIKAS NIGAM LIMITED (RVNL):**

Rail Vikas Nigam Limited (RVNL), a Special Purpose Vehicle created to undertake project development, mobilization of financial resources and implement projects pertaining to strengthening of Golden Quadrilateral and Port Connectivity. It is the first major non-budgetary initiative for creating rail transport capacity ahead of demand and on a commercial format. RVNL has been registered as a company under Companies Act 1956 on 24-01-2003. It is a wholly owned government company under the provisions of section 617 of Companies Act. Certificate of Incorporation was obtained on 24-01-2003. Rail Vikas Nigam Limited was set up with twin objectives of mobilization of private and market funds and implement railway projects on fast track basis.
Future Strategy:

RVNL is reorienting itself by using high tech IT tools to meet its growing future business demands. It proposes to find ways to use ICT to make its business work better. Striving to position itself to respond to future challenges with targeted, pertinent services. It is likely to on-board a company with strong “System Integration” capabilities and practice and will ensure business is supported by robust IT and Networking platform to help optimise its performance, efficiency and availability with larger collaboration tools to run on it in the near future.

The overall scope of the System Integrator is to develop the Project implementation plan also to foresee, analyze, plan, build, suggest, design, deploy, implement, maintain, manage and revamp the total IT infrastructure.

The System Integration solution for RVNL for an Integrated IT Solution would aim to automate its business functions and would include all the Project Implementing Units (PIUs as well as Corporate Office). The solution, among other components, regular refresher courses to the user groups as well.

User Support and Maintenance of the Integrated IT application for 5 years is also part of the SI scope of work in which the Application monitoring and Compliance to Service Level Agreement Application support including modifications and integration with future systems, fixing
bugs, Software changes with Version Controls and associated maintenance of Configuration Information & System documentation are envisaged. RVNL would like to have a comprehensive and robust Video conferencing & video repository solution as well.42

IRCON INTERNATIONAL LIMITED (IRCON):

Ircon International Ltd. (IRCON), a ‘Mini-Ratna’ category-I and Schedule ‘A’ Public Sector Undertaking, was incorporated in 1976 under the aegis of Ministry of Railways with the prime objective of construction and development of railway network in India and abroad. In its journey of over three decades, the Company has diversified its activities to other transportation and infrastructure sectors such as highways, tunnels, bridges, flyovers, road-over-bridges, airport hangar and runways, metro rail and buildings, EHV transmission line and grid sub-stations, industrial electrification, signalling and telecommunication systems etc.43 IRCON has successfully completed over 430 world-class projects in India and abroad. In all it projects the Company has always adhered to high quality, safety and environment standard even under challenging circumstances and adverse geographical conditions. Engineering News Record (ENR) of USA has ranked IRCON at 158 among the top 250 International contractors of the world for the year 2013.

IRCON has formed two subsidiaries ‘Ircon Infrastructure & Services Limited’ (Ircon ISL) and ‘Indian Railway Stations Development
Corporation Limited’ (IRSDC) to diversify its area of work. The wholly owned Ircon ISL was incorporated in September 2009 to undertake services related to projects and real estate development. The other subsidiary IRSDC was incorporated in April 2012 jointly with Rail Land Development Authority (RLDA) (with IRCON holding an equity share capital of 51%) for development of new railway stations and for re-development of the existing ones to upgrade the level of passenger amenities at railway stations. IRCON is currently executing projects in country like Malaysia, Sri Lanka, Algeria, Bangladesh and Nepal.

HYDERABAD METRO RAIL LIMITED:

Hyderabad Metro Rail Project Selected as Best Engineering Project of the World “Global Engineering Project of the year – 2013”.

MISSION HMR:

“To create an efficient, safe, reliable, economical and world class public transportation system in Hyderabad which will facilitate the city’s transformation as a competitive global city with high quality of life”.

Project:

One of the world’s largest Metro Rail projects in Public Private Partnership (PPP) mode, in three high density traffic corridors of Hyderabad, covering 72 km in Phase-I at a cost of Rs. 14,132 crore. The work is under progress.
i. Miyapur-L.B. Naar (29 km; 27 stations) within 45 minutes (1hr 44 minutes by road).

ii. Secunderabad-Falaknuma (15km; 16 stations) within 22 minutes (1hr 10 minutes by road).

iii. Nagole – Shilparamam (28km; 23 stations) within 39 minutes (1hr 26 minutes by road).

Salient Features:

- L & T MRHL of the $12 billion (Rs. 60,000 crore) L & T group is the concessionaire.

- Eco-friendly elevated stations at every 1km distance with natural ventilation passenger access through staircases, escalators and lifts.

- World class travel facility at affordable ticket prices ranging from Rs. 8/- to Rs. 19/-.

- Lower energy consumption (1/5th road vehicles) and significant reduction in air and noise pollution.

- High efficiency in urban space usage, occupying just 2 metres (7ft) at ground level – one rail line equals to 7 bus lanes or 24 car lanes.

- A 3-car (coach) train carries 1,000 passengers and 5-car train carries 2,000 passengers. Hyderabad Metro will carry more than 50,000 passengers per hour in each direction.
- Video cameras in coaches and CCTVs in stations for better security.

- Substantial reduction in travel time with a maximum speed of 80 kmph and an average speed of 34 kmph (3 times the road speed).

- Frequency of 2 to 5 min during peak hours.

- Hyderabad Metro is an urban redesign effort to transform Hyderabad into a people-friendly global city.

- Green and eco-friendly mode of travel that reduces carbon emissions, fuel consumption and pollution.

- Easy commute for children, senior citizens, differently-abled and women.

- Comfortable air-conditioned coaches with automatic doors.

- ‘Seamless travel’ facility through integration with rail terminals, bus depots, MMTS stations and “Merry-go-round” feeder buses to nearby colonies and business areas / offices.

- Single largest investment in Hyderabad / AP –expected to generate about Rs. 50,000 crore. (Rs. 20,000 crores direct + 30,000 crores indirect) investment in and around Hyderabad.45
INDIAN RAILWAYS VISION 2020:

Indian Railways is the backbone of the socio-economic growth of India. As such it is described as the ‘lifeline of the nation’. Presently, it is world’s fourth largest and Asia’s second largest rail network. It has formulated a plan and programme to gain the number two position in the coming decade and thereafter gain the number one position in the subsequent decade not only in size but also in all other areas. The plan, programme and policy framed in a railway document is known as ‘VISION-2020’ document.

Vision 2020 aims at considerably enhancing the Indian Railway’s contribution to the national goal of achieving double-digit GDP growth rate on a sustainable basis. It will accelerate economic growth, open up new avenues for employment in the primary, secondary and tertiary sectors and also promote geographically and socially balanced growth.

Major goals of the Vision 2020 document are as under:

a) Establish quality of service benchmarked to the best of the Railway systems in the world.

b) Expand its route network at the rate of 2500 kms per annum. By 2020, 25,000 kms of new line will be added and almost the entire network (barring the hill and heritage railways) would be in Broad Gauge. This would include completion of the pending shelf of new
line projects of 11985 kms. More than 30,000 kms of route would be of double/multiple lines. Electrification of 14,000 kms of routes would take the total length of electrified route to 33,000 kms. This would include all inter- metro links and the other busy corridors.

c) Have more than 6000 kms for quadrupled lines with segregation of passenger and freight services into separate double-line corridors. This shall include Delhi-Kolkata, Delhi-Mumbai, Kolkata-Mumbai and Delhi-Chennai routes. All these routes would have separate dedicated freight corridors and high-speed passenger corridors.

d) Raise speeds of passenger trains from 130 (110) kmph to 160-200 kmph on segregated routes and speed of freight trains from 60-70 kmph to 100 kmph.

e) Virtually attain a state of "availability on demand" in freight, passenger and parcel services.

f) Design and deliver targeted services for transport of perishables, agri-produce and products of small and medium enterprises (SMEs) such as auto-hubs and others similar clusters.

g) Target to achieve Zero accidents.

h) Target to achieve Zero failures in equipments.
i) Utilize at least 10% of its energy requirement from renewable sources and institute a foolproof eco-friendly waste management system.

j) Complete 4 high-speed corridors of (2000 kms) and plan development of 8 others.47

**Vision 2020 for railway security:**

Vision 2020 of the Indian Railways envisages that the Railway Protection Force would be strengthened /empowered and technology and HR interventions would be used to enhance capability. Installation of Integrated Security System (ISS) for round the clock surveillance over sensitive and vulnerable stations is already underway. Passenger security will get further impetus with setting up of All India Security Help Line. Under the Helpline Project, a unique toll free helpline number will be made available to passengers for round the clock security related assistance during their journey over Indian Railways. Passenger calls would be received in a centralized control room and disseminated to concerned field units for rendering necessary assistance to the needy passengers. For speedy transmission of data, feedback and complaints, networking of Security Control Rooms and RPF Posts is also under progress under the ‘RPF Security Management System’(RSMS) and pilot project is successfully running from 187 locations. Ministry of Railways has also moved a proposal for amendment in the RPF Act, 1957, for empowerment of RPF to deal with passenger related offences.48
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