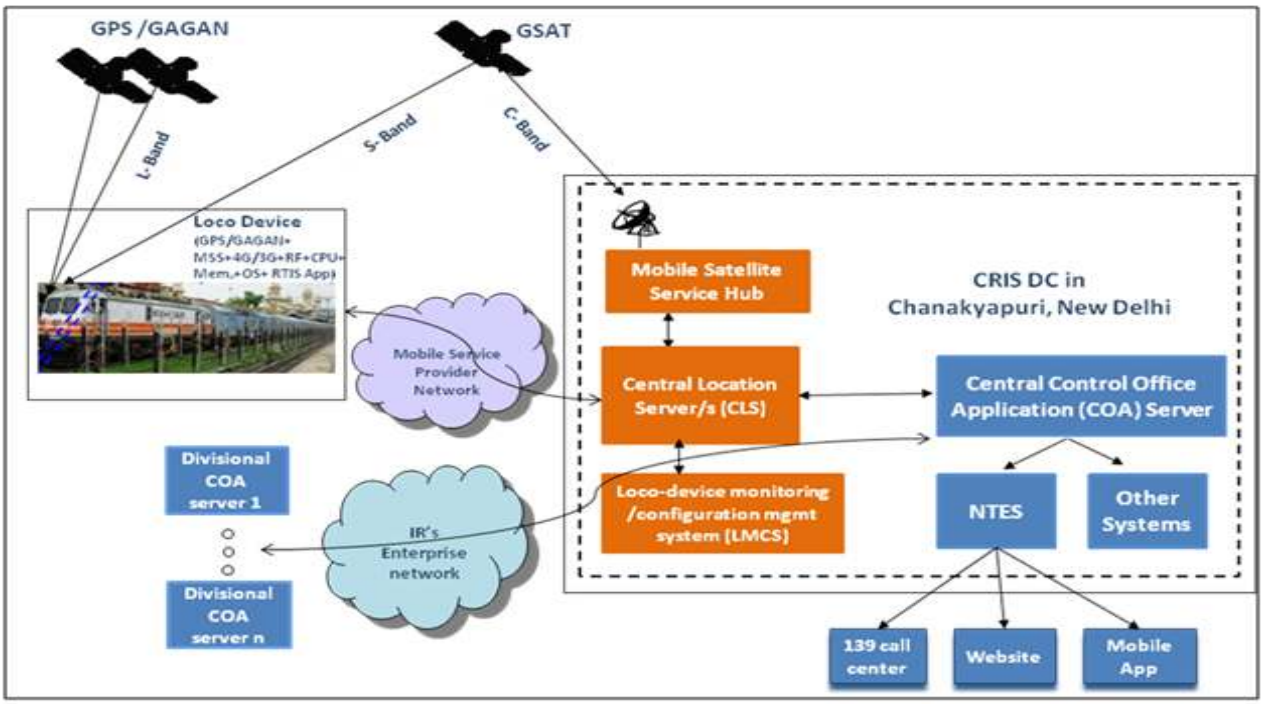
Real-time Train Information System for Indian Railways (Phase-1)

Project Overview:

Automatic acquisition of train movement data on Indian Railways is a key requirement for improving operational efficiency and quality of passenger information. This requirement gained greater significance after implementation of ICT based Control Office Application (COA) on all divisions of Indian Railways. Accordingly, Railway Board sanctioned a work "Real-time Train Information System (RTIS)". The project is being executed by Centre for Railway Information Systems (CRIS) in collaboration with ISRO. The trials for this system using GSAT series satellite have been done on New Delhi-Guwahati (NDLS-GHY) and New Delhi-Mumbai (NDLS-BCT) Rajdhani routes jointly by CRIS and SAC/ISRO. The trials have been done to ascertain the overall workability of the system, assessment of S/C bandwidth required on GSAT transponders and for finalization of system design & specifications for the rollout. Several successful trial runs were done and now the system is to be rolled out on Indian Railways. The roll-out of RTIS system shall be phased out appropriately. Indian Railways has about 5500 electric locomotives, 6500 diesel locomotives and 3000 EMU/ MEMU /DMUs. About 600 locomotives are added every year. Passenger carrying electric locomotive sheds serving the golden quadrilateral and diagonals except Mumbai – Chennai corridor and freight electric locomotive sheds serving the Delhi – Mumbai and Howrah – Chennai corridors shall be covered in Phase-1.

System Architecture:



The application software in loco device shall determine train movement events i.e. Arrival, Departure, Run-through at stations based on pre-defined logic applied on spatial coordinates and speed received continuously from GAGAN receiver. These events along with position/locations updates shall be communicated to a Central Location Server (CLS) using S-MSS as well as 4G/3G mobile data service. The CLS processes the received data and relay it to Control Office Application (COA) for automatic plotting of control charts. As COA is already integrated with National Train Enquiry System (NTES), accurate real-time information for passengers will get enabled automatically as a by-product. LMCS Software shall be utilized to monitor the health of loco device, managing its configuration & updating the software/firmware in the loco device. Emergency messaging between Loco driver and control office shall also be implemented through RTIS.

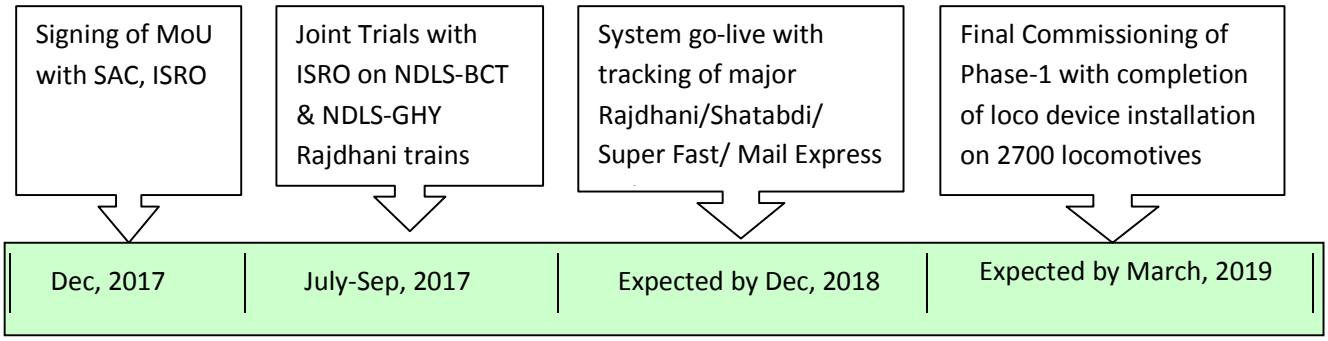
Scope of Work:

- Procurement, Installation and Maintenance of end-to-end RTIS solution for automatic capture of train movement data for about 2700 electric locomotives of Phase-1.
- End-to-end RTIS solution inter-alia includes Installation of loco devices, establishment of MSS Hub at CRIS Chanakyapuri, New Delhi, installation of central DC hardware/software components including Central Location Servers (CLS), development of RTIS application software, implementation of Loco unit Monitoring and Configuration Management System (LMCS) and RTIS-COA integration.

Benefits of RTIS:

- Automatic capture of train running Information & automatic plotting of Control Charts in COA
- Stress free work conditions for train controllers
- Optimum utilization of resources
- Accurate train running information to passengers
- Improved Customer Services
- Richer MIS for management

Timeline:



Project Status:

- The project is being executed by CRIS in collaboration with ISRO. MoU has been signed between CRIS and Space Applications Centre (SAC), ISRO for this project in Dec, 2016.
- Joint trials with ISRO on NDLS-GHY & NDLS-BCT Rajdhani trains using S/C transponders on GSAT series satellite were successfully done during July-September, 2017.
- Tender for RTIS Phase-1 implementation has been floated .