



CHALLENGES IN IMPLEMENTING ATM AUTOMATION SYSTEM

**The First Meeting of Air Traffic Management Automation System
Task Force of APANPIRG (ATMASTF/1)**

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- PRE-CONTRACT PHASE
 - DEFINATION OF SCOPE OF WORK
 - PROJECT COST ESTIMATION
 - PROJECT TIME-LINE
 - QUALITY REQUIREMENT
 - TENDER INVITATION
 - TENDER EVALUATION
 - SELCTION OF BIDDER
 - AWARD OF CONTRACT

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- POST CONTRACT PHASE
 - PROJECT MONITORING GROUP
 - SYSTEM EVALUATION GROUP
 - SYSTEM DESIGN REVIEW
 - SYSTEM REQUIREMENT REVIEW
 - HMI CUSTOMIZATION
 - PROTOTYPE TESTING
 - INSTALLATION PHASE

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- POST CONTRACT PHASE
 - DATABASE CREATION PHASE
 - TRAINING PHASE
 - SYSTEM TESTING
 - SYSTEM ANAMOLIES RESOLUTION
 - TRANSITIONAL PHASE
 - FINAL SYSTEM OPERATION PHASE
 - WARRANTY PHASE

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

DEFINATION OF SCOPE OF WORK :

- **Clarity in defining System Architecture requirement**
 - **Design & nos. of controller work suites**
 - **System Redundancy requirement**
 - **External interface requirement**
 - **System recording requirement**
 - **Area of responsibility for cable trays, grounding etc**
 - **Power distribution scheme**

- **Definition of System operational requirement without any ambiguity**

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

➤ PROJECT COST ESTIMATION

- This is an important activity and needs to be completed keeping in mind various factors like :
 - Quality standards requirement
 - System architecture requirement
 - Type of Hardware & Software
 - Technical & Operational support required from supplier etc

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

PROJECT TIME-LINE

- Time-line of project is very important activity and shall be framed in a realistic manner.
- Activities which can be run in parallel Site readiness, availability of Manpower , external systems/interfaces, Testing methodology, Time required for resolution of system anomalies, Time required for training ATCOs and ATSEPs are some of the factors can be kept in mind

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- Quality Assurance requirement shall be well defined.
- Procedure to conduct the Quality Assurance Audit
- It is a good practice to ask supplier to keep Quality Assurance Program manager who should be responsible for Quality of documentation, Factory test, Site Installation, Quality of Test in accordance with ISO-9001-20XX specifications and DO-278A/ED-109A assurance level or Valid CMMI Level ...XX as per requirement
- QAP Manager shall not be same person as the Program Manager

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- **TENDER INVITATION :**
- As per purchase policy , tenders may be invited as per the prevailing practices in the Organization

- **TENDER EVALUATION :**
- Tender evaluation may be done in a transparent manner giving equal opportunities to all bidders . It is good practice to depute the same team of officers who have finalized the Technical and Operational requirement of the system
- **SELCTION OF BIDDER**
- **AWARD OF CONTRACT**

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- Selection of successful bidder and contract award shall be made as per the terms and condition of Tender
- It is good practice to include reference to all the correspondence made with the successful bidder from the date of Tender invitation, Tender evaluation till System Acceptance in the Contract

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

PROJECT MONITORING GROUP :

- During implementation of ATM Automation system, there are different groups involved like ATSEPs, ATCOs, External system suppliers, Decision making Officers, System Acceptance etc.
- It is good practice to depute Project Monitoring group who shall be responsible for monitoring various activities, Time lines, scheduling activities, keeping a record of various decisions, Perusing & Coordinating External stake holders and reporting the progress to Decision making level

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES: SYSTEM EVALUATION

- HMI CUSTOMIZATION & PROTYPE TESTING :
 - This is an important activity and shall be performed before starting System evaluation.
 - Group of ATCOs and ATSEPs shall be involved in finalizing the HMI of the system in coordination with supplier.
 - Sufficient time is required to be given to this activity .
 - Supplier shall also be given time to modify the system HMI as per the feedback given by purchaser.

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- **System Design Review (SDR) and System requirement review (SRR)** shall be completed after thoroughly examining the system design document submitted by supplier.
- At this stage any gap in understanding the System requirement by supplier shall be mutually agreed and properly recorded.
- This is an important milestone to avoid any dispute with the supplier at the time of project implementation.

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES: SYSTEM EVALUATION

- System Evaluation process starts from **Factory acceptance Test (FAT)**.
- FAT procedures shall be well examined before deputing officers for FAT
- FAT duration shall be realistic. All critical functionalities projected in Tender shall be thoroughly tested during Factory acceptance test.
- Supplier shall also resolve the System anomalies observed during FAT before dispatching the Systems to Purchaser site.

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

➤ **INSTALLATION PHASE :**

- It is important to invite supplier to start Installation of system after completing the prerequisite agreed as per the contract like :
 - Dust free environment
 - Air conditioning system in place
 - Availability of External systems ASMGCS, AMSS, MET etc
 - Power supply source is in place
 - Surveillance data to be integrated is available
 - ATC Consoles availability

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- **DATABASE CREATION PHASE :**
- This is an important activity and shall be completed in time before starting testing Phase. It is normal practice that FAT is conducted based on the Database created by Supplier for different customers.
- This activity shall start as early as possible in coordination with supplier . Normally, in such contract supplier provide training and may depute his Manpower to complete this exercise as per the terms of the contract.

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- **TRAINING ACTIVITY:**
- Training to ATSEPS and ATCOs is normally provided before Factory Acceptance test as well as after installation of the System.
- Hands on Training is a very important activity. Supplier provide the training to Trainers who will further provide the training to other Officers.
- Manpower constraint is big challenge Training
- Working on different HMI is a very big challenge and needs to be absorbed gradually

IMPLEMENTATION OF ATC AUTOMATION SYSTEM

CHALLENGES:

- System Testing
- Quality Assurance Audit
- Site Acceptance Test
- System Reliability & Stability Test (SRST)
- System Anomalies resolution
- Transitional phase
- Final System operation phase
- Warranty phase



**Thank you for
your attention**