The First Meeting of Air Traffic Management Automation System Task Force of APANPIRG

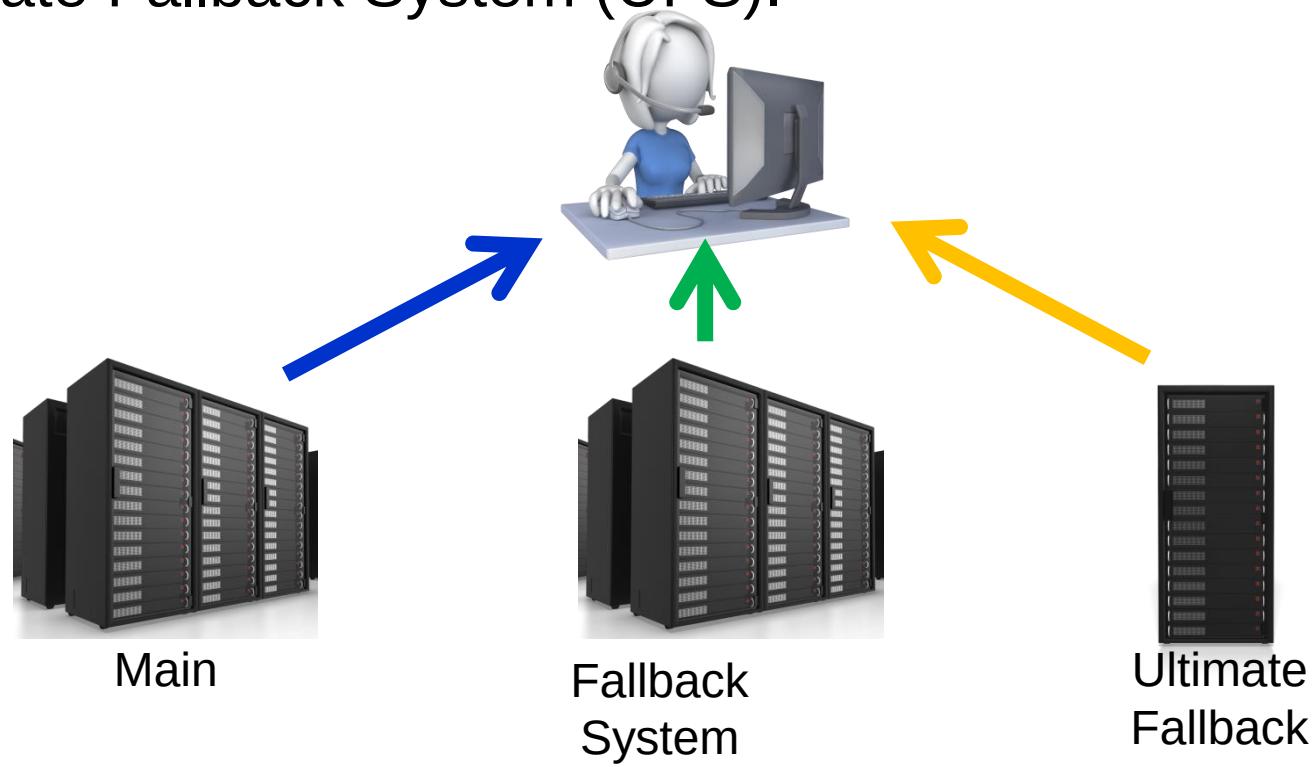
28-30 October 2020

Maintenance Management and Practice of Air Traffic Management System (ATMS) in Hong Kong, China

Presented by Hong Kong, China

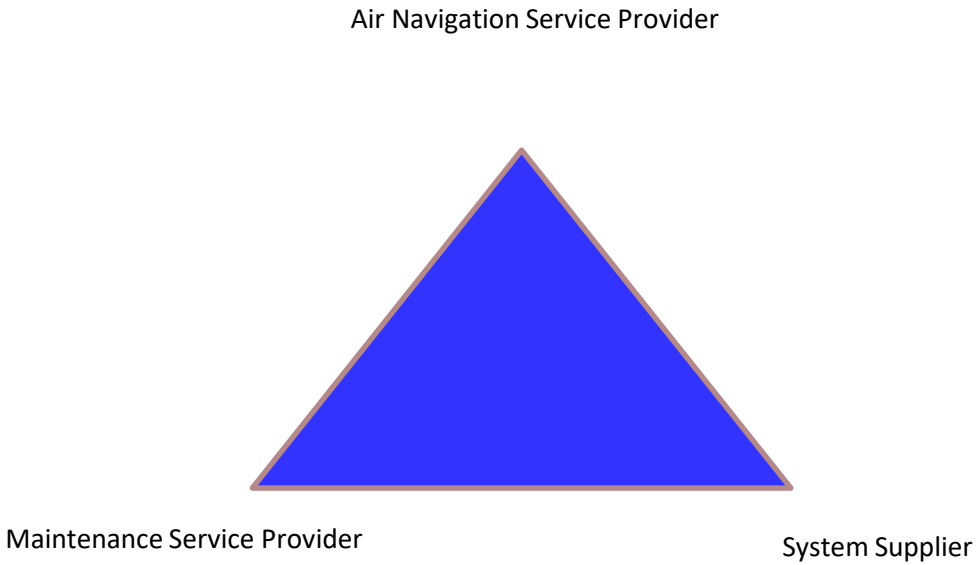
Overview of the AMTS in Hong Kong, China

- The Air Traffic Management System (ATMS) of Civil Aviation Department, Hong Kong, China, was fully commissioned in November 2016.
- The ATMS consists of Main System, Fallback System, and Ultimate Fallback System (UFS).



Trio for Maintenance Management

- Under the maintenance framework for ATMS, the system supplier, MSP and ANSP form a close coordination trio in operating and supporting the maintenance framework.



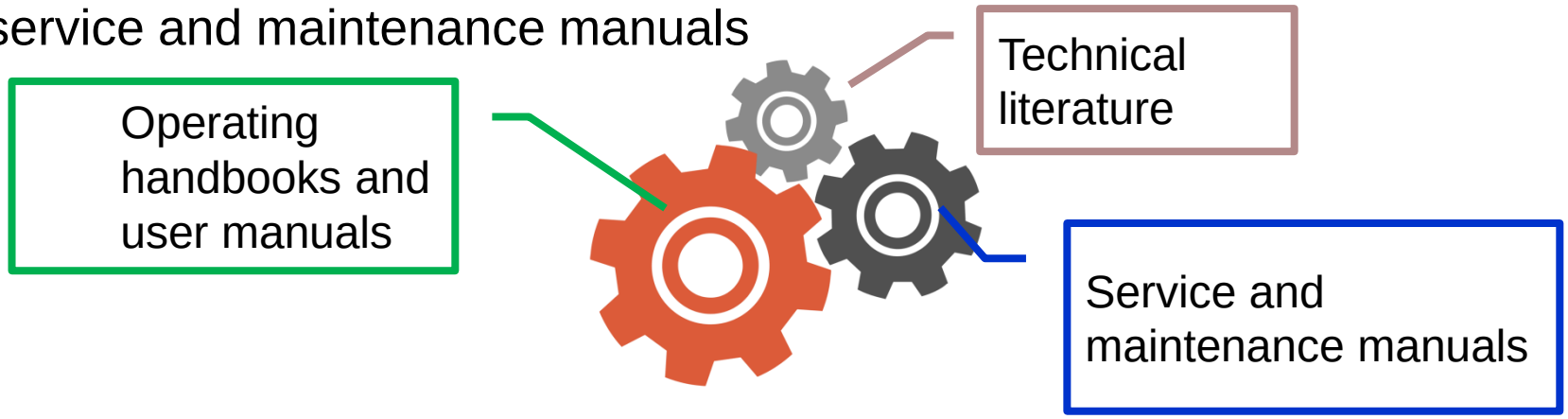
System Supplier

- The design of system plays a critical part for ease of maintenance in operation stage.

- Before system commissioning, system supplier as the entity with the most comprehensive know-how on the system, should provide sufficient maintenance documentation and training to ANSP and MSP containing complete information for the proper installation, set-up, use, operation, support and maintenance of the system.

System Supplier

- System supplier should provide documentation to the ANSP and MSP for aiding the use, application and maintenance of the system and individual equipment. These documentation should include:
  - operating handbooks and user manuals
  - technical literature
  - service and maintenance manuals



- All documentations should be reviewed and endorsed prior to use.

System Supplier

- System supplier should prepare training plans and training course materials to ANSP and MSP for review with sufficient lead time prior to critical milestones.
- ANSP, in coordination with MSP, has to set out the required training topics in the contract to system supplier.
- Training topics should be specific to different user groups.
- Subject to actual needs, after ANSP and MSP have built up their own training capability, on-site maintenance review and assessment on MSP should be conducted by system supplier.

System Supplier

- As ATMS is a complex system, it is unavoidable that unexpected technical issues might emerge, especially teething issues during the early stage of operation.

- As such, system supplier should be required to respond to requests from ANSP or MSP to provide timely assistance in dealing with and rectifying all faults or deficiencies in software and hardware within pre-defined response time according to the criticality of such faults or deficiencies as specified in the contract.

- Same faults occur repeatedly should be handled with high priority by system supplier to investigate root cause and implement measures to prevent recurrences.

System Supplier

- As technology is changing rapidly, some spare parts might become obsolete and will be difficult to source in the market. System supplier should provide a list of obsolete equipment and its replacement models on regular basis, and the replacement model should be evaluated on-site for its compatibility prior to use as a spare for operation.

- The performance of system supplier has to be regularly reviewed in suitable forum, such as performance review meetings in conjunction with ANSP and MSP representatives.

- System supplier should form user groups to allow sharing of users' experience and gather feedbacks. System supplier should facilitate regular hosting of user group meetings.

Maintenance Service Provider (MSP)

- Engagement of a MSP to perform frontline maintenance under supervision of ANSP is a practical solution in leveraging skill sets and latest technology available in private sector in order to facilitate provision of reliable services with cost benefit.
- Under the regime of compliance to all applicable ordinances and regulations, Safety Management System and Air Traffic Safety Electronics Personnel (ATSEP), the maintenance services provided by MSP should include,
  - watch-keeping of equipment,
  - preventive/corrective maintenance,
  - system/equipment minor modification/replacement works,
  - staff training, and
  - procurement of spares and test equipment/tools.
- Support services such as record-keeping on maintenance activities, preparation of statistics and reports and inventory control etc. could be provided as part of the package from MSP.

Maintenance Service Provider (MSP)

- MSP needs to perform maintenance according to system supplier's established procedures at recommended intervals.

- Proactive system housekeeping procedures adopting industry best practice with recommendation from system supplier and expertise from MSP, together with close monitoring of system healthiness/system resources, and housekeeping of servers/workstations on regular basis to upkeep the system performance, should be in place.

- There could be cases that due to local specific environment/operational status of the ATMS, it would require extra steps or more frequent maintenance on top of recommended maintenance procedures by system supplier.

Maintenance Service Provider (MSP)

- In addition, like any critical systems running on round-the-clock basis, ATMS has no exception that it might encounter system fault where immediate attention from MSP is required.
- It is important that MSP has geared up with a full deck of operational instructions for their watch-keeping staff to handle all sorts of foreseeable system scenarios with proper initial and re-fresher trainings/drills on such scenarios.
- The build-up of know-how and experience for MSP in dealing with urgent scenarios is crucial to smooth operations of the ATMS.
- Similar to system supplier, the service level of performance of MSP has to be constantly monitored to meet with the target levels set out in the contract and regularly reviewed in suitable forum to ensure maintenance provisions could meet the service needs.

Air Navigation Service Provider (ANSP)

- As the party to govern maintenance service performance by MSP and system supplier through various means discussed above, ANSP has to ensure the necessary support and resources to be provided to MSP and system supplier for fulfilling, or even exceeding, the baseline maintenance requirements set out in the contracts with these parties.

- Payment deduction might be incorporated into the contract to handle cases where performance does not meet requirements but it might bear impacts on maintaining good relationship with MSP or system supplier.

Air Navigation Service Provider (ANSP)

- ANSP has to ensure the services provided by MSP and system supplier are in compliance with ICAO standards and international best practice.

- ANSP can share experience and best practice gained from ICAO and international meetings/symposia/seminars, as well as overseas facts-finding visits, with MSP and/or system supplier with a view to enhancing the maintenance regime.

Air Navigation Service Provider (ANSP)

- To allow air traffic control (ATC) professionals to perform their work safely and satisfactorily, it is highly desirable for ANSP engineering professionals to understand the ATC needs such that the ATMS could fully support their work.

- As such, constant communications with ATC in addressing their needs via suitable steering forums and communication channels would be critical to the smooth operations on ATMS.

- Following the commissioning of the ATMS in November 2016, an ATMS technical team comprising ANSP engineering professionals, system supplier and MSP was established with regular meetings with ATC to oversee system performance and deployment of software builds/system adaptation updates to ensure smooth operation of the ATMS.

ACTION BY THE MEETING

- The meeting is invited to:

  a) note the information contained in this paper;

  b) discuss any relevant matter as appropriate; and

  c) incorporate relevant contents of this paper into the guidance materials.

Thank you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• Airworthy • Teamwork
Committed to a Safe, Efficient and Sustainable Air Transport System