

AVIATION MAINTENANCE INFORMATION SYSTEM CONFIGURATION

KARADŽI RADOJE Ć^{1*}, BULATOVIĆ MIODRAG², PETKOVIĆ DARKO³,
ŠABIĆ MUHAREM³

¹ Faculty for Management in Transport and Communications of Berane,
Montenegro

² Academic IACG i IAS, Faculty of Mechanical Engineering of Montenegro University,
Montenegro

³ Faculty of Mechanical Engineering of Zenica University, Bosnia and Herzegovina

⁴ Faculty of Transport and Communication of Sarajevo University, Bosnia and
Herzegovina

Abstract: Aviation maintenance IS physical topology network of “star shape” model consists of several LAN networks (Airline company, Overhaul facility, branch offices of airline company and warehouse of spare parts), which are all interconnected to central server by the means of modems and concentrators.

Keywords: aircraft, maintenance, information system

1. INTRODUCTION

There is a reason of Aviation maintenance existence and functioning and it is related to operative readiness category, which is defined as possibility of task performing. Operational readiness is necessary to keep as highest level as possible, with low expenses.

Long term business goal of aircraft maintenance is to provide such maintenance system that is based on scientific approach to maintenance issue, which is functional in practice, efficient and from expenses aspect rational [1].

Medium term maintenance goal is providing aircrafts recourses. This goal is realized through Overhaul facility activities, by the means of reorganization and airline company financial stabilization, which is mainly necessary for stabile provision of spare parts for units and aircrafts systems [2].

Short term business goal is to achieve solution that within present situation will provide three aviation maintenance priorities:

- maintaining of aircrafts flying functionality;
- providing of flight safety;
- providing functionality of aircrafts weapon systems.

* Corresponding author, email: karadzic.radoje@yahoo.com

2. AIRCRAFT MAINTENANCE SYSTEM BUSINESS PROCESSES

Aircraft maintenance system business processes are (Figure 1):

- preventive maintenance – this maintenance aspect represents basic aviation maintenance concept;
- corrective maintenance – all physical damages must be repaired to keep the aircraft in operation readiness condition, in other words to bring aircraft back in usable condition. Other sub process in corrective maintenance is modernization and by that is included reconstruction and adaptation;
- maintenance quality control – aircraft maintenance quality control is by normative documents sufficiently present;
- planning – planning is present in all stages, plans are coordinated, and higher levels of decision making are modifying plans according to approved maintenance funds.

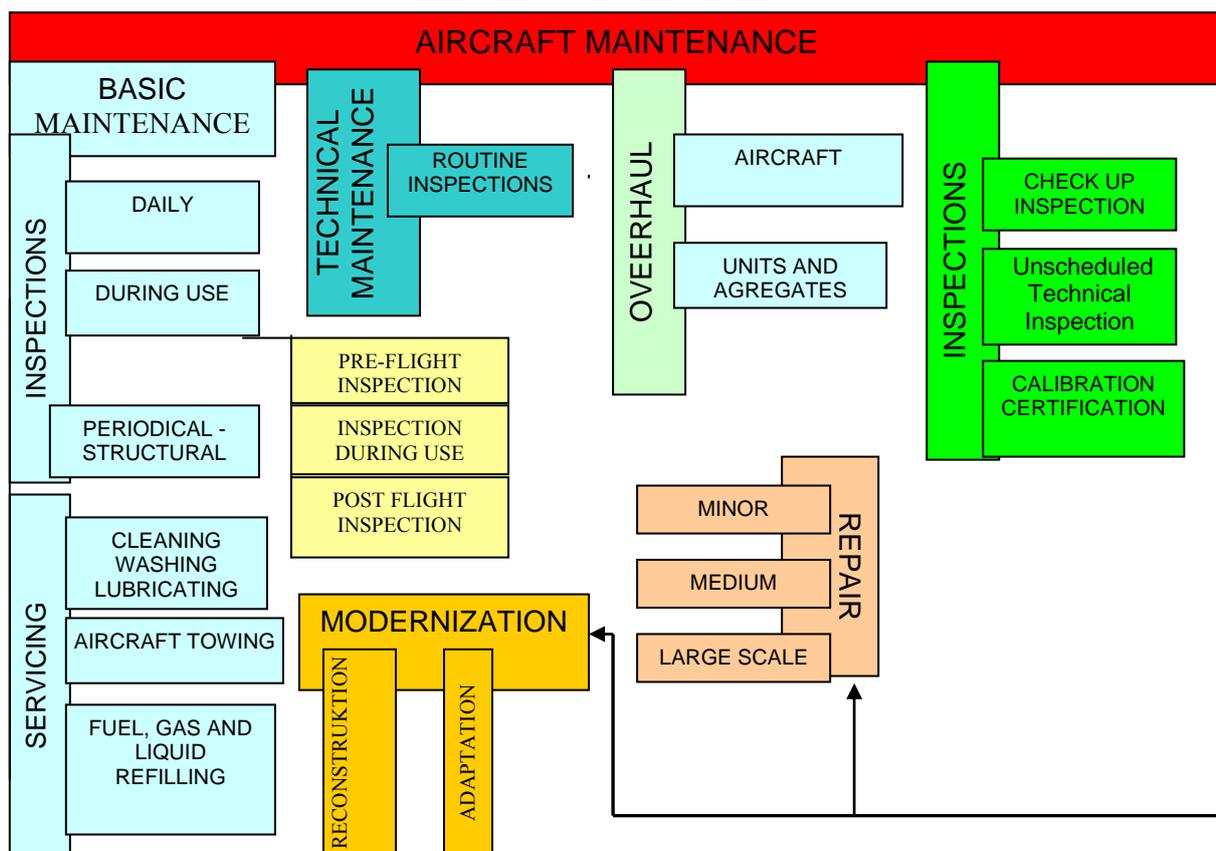


Fig. 1. Army of Montenegro Aviation maintenance model [3].

Aviation maintenance system is presented in diagram form through processes and sub-processes (Figure 2).

Aircraft maintenance IS subsystems are:

- I - Maintenance planning;
- II – Performing of maintenance activities;
- III – Maintenance quality control.

Aviation maintenance IS (Figure 3) subsystems are included in creation of Data Base and are using data from DB for their own work [4].

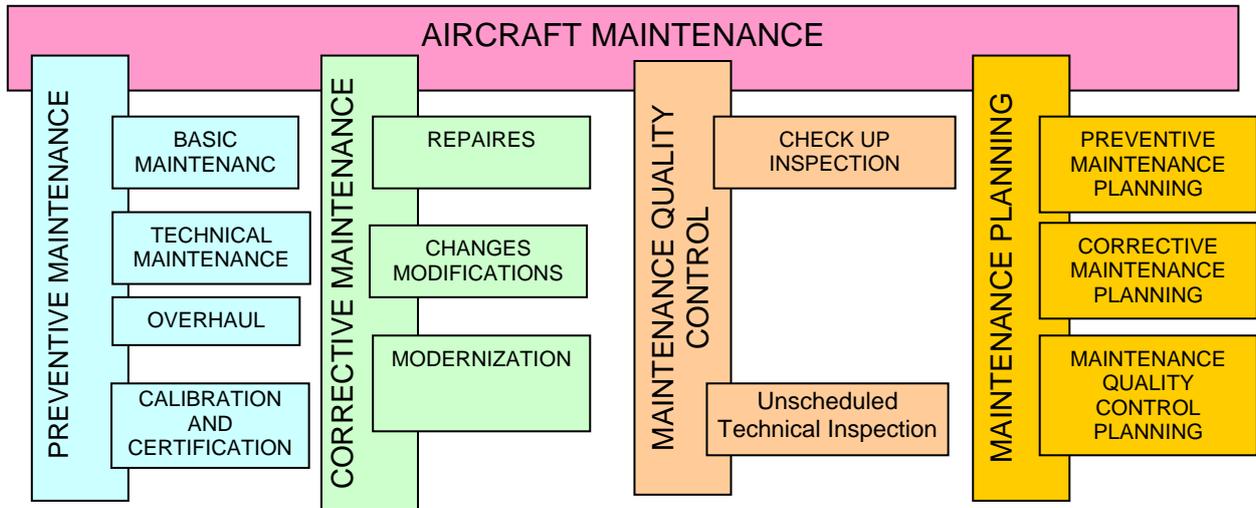


Fig. 2. Aviation maintenance visual presented diagram.

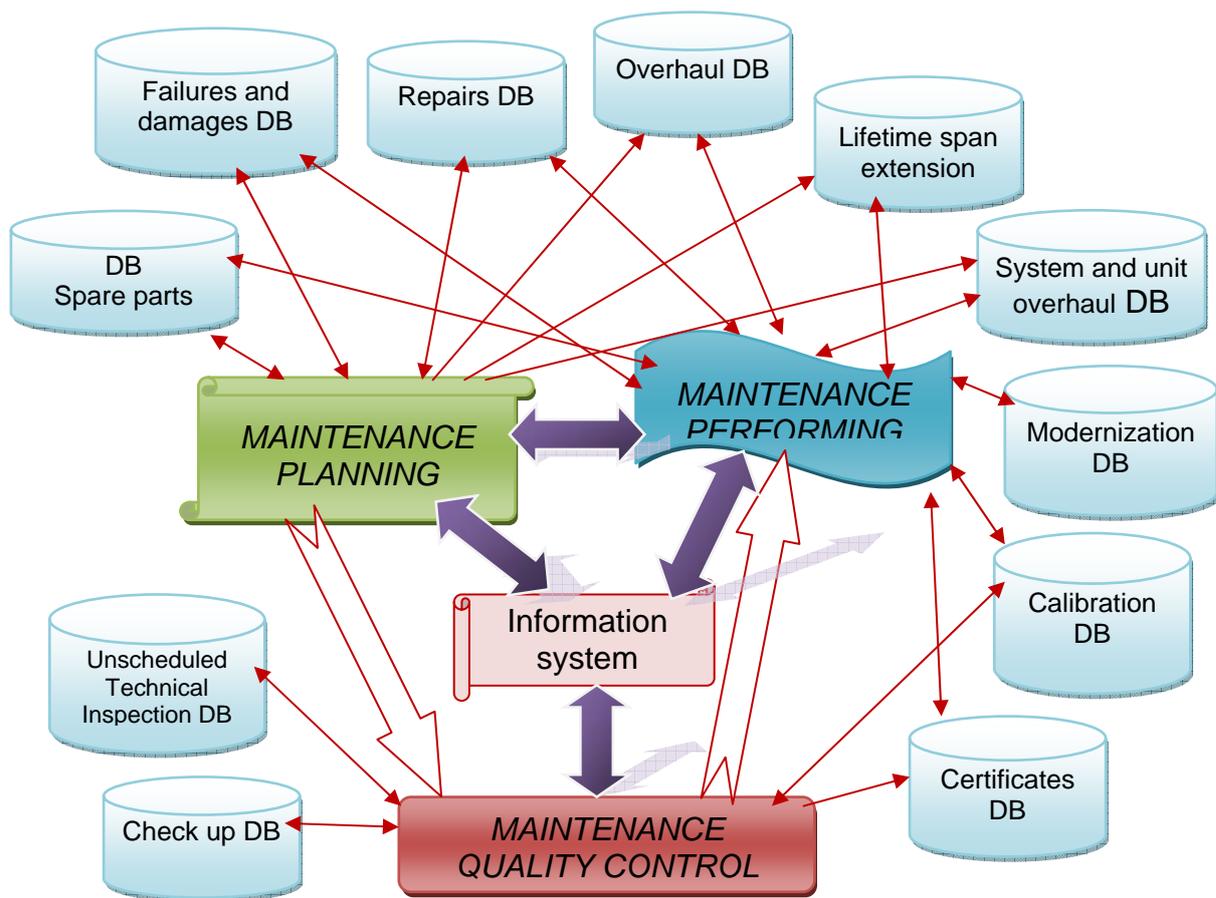


Fig. 3. Maintenance IS relations.

3. INFORMATION SYSTEM PHYSICAL TOPOLOGY

Based on maintenance characteristics Data Bases and IS with its components are defined: hardware communication, software and organization application components [5]. Logistic IS consists of software and hardware components.

Hardware component consist of (Figure 4):

1. Central computer unit (server) – that is saving and processing unique user defined Data base and depending on requested safety degree serves local area networks (LAN) (receiving and sending information);
2. Local area networks – which are presenting set of networked computers;
3. Modem – device that is connecting local area networks with server. Modems are equipped with data crypto protection;
4. Telecommunication equipment – already existing equipment (links) built-in within unique Company network.

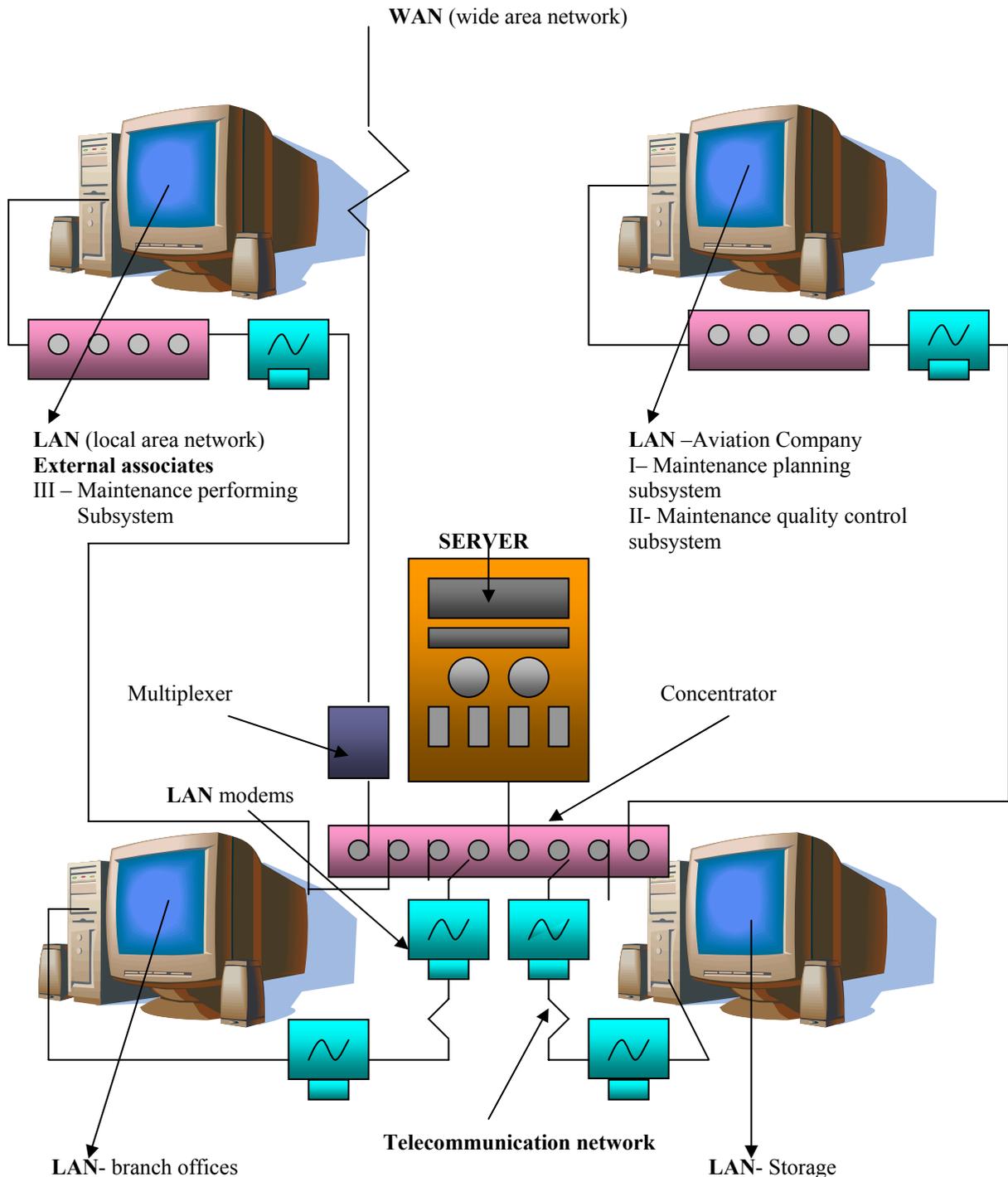


Fig. 4. Aviation maintenance IS physical topology.

Software component consists of:

1. Operating system (Windows recommended);
2. Application defined data bases (MS Access, Oracle, MS SQL...);
3. User defined applications (created for each user that are defining data access in some of Data base oriented program languages (visual basic, C++,...);
4. Communication software – which is connecting local networks with main server trough already existing and protected company communication lines.

Communication within Logistic IS is achieved through existing Airline company communication lines, while external associate's communication goes over internet; during this connection of server or any other computer from the system with other networks is not allowed. Data received from external associates are inputted afterward in server by maintenance management.

For computer network architecture is selected "star shape" model for several reasons: it is easy to extend this type of network with new participants, failure of one unit in network does not lead to network failure, expenses optimization because existing Airline company network is used.

4. CONCLUSION

For the Aviation maintenance IS physical topology is selected "star shape" model as optimal. All branch offices of Aviation Company are connected to IS.

Maintenance IS consists of three subsystems: maintenance planning subsystem, maintenance performing subsystem, maintenance quality control subsystem.

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