

ALENIA FLIGHT TEST: REAL TIME AND POST FLIGHT DATA ANALYSIS.  
PRESENT SITUATION AND DEVELOPMENT

G. Gamalero - ALENIA Flight Test Department

INTRODUCTION

In the last two decades the increased complexity of the new military aircraft, combined with the requirement of verifying the sophisticated mathematical models adopted on the design phase, led to a rapid growth of the number of measurement to be made on a prototype.

In parallel the market now offers a large quantity of reliable, accurate, miniature and cheap transducer fulfilling any measurement task, while the recording techniques can completely satisfy the engineers requirement to keep the aircraft under control during the tests.

An additional large amount of data is available on Flight Test Instrumentation (FTI) acquisition system, simply copying the digital data links used to connect the various aircraft computers.

An idea of this data proliferation can be quickly given comparing the early 80's AM-X FTI system, with the one under design today for EFA.

On AM-X we used a single PCM to record and to telemeter a stream of 350 Kbps (at 15 ips tape speed) plus some 50 analog signals.

On EFA the system will instead be capable of producing up to 6 PCM streams. One of these will contain up to 1 Mbps of data and will be telemetered for real time processing, while the others, similar to the AM-X one, will be recorded on board. Thus the amount of data received in real time and available for post flight analysis will be roughly five time larger.

While the data acquisition techniques can thus be considered fully adequate to the ever growing requirements, the quantity of data to be managed by Flight Test Engineers is so massive that the traditional data analysis methods are not any more suitable.

Therefore it is an essential part of our job to define more adequate tools to maintain the required level of control on real time and to speed up as much as possible the post flight analysis.

This presentation has been prepared with the aim to show the main philosophies adopted by ALN Flight Test Engineering and therefore will not contain too many details about the hardware and software architecture adopted at our Flight Test Department.

Nevertheless it is worth, before starting the discussion on real time and post flight data analysis, to briefly describe our present ground station layout and the development already begun in view of EFA program.

**GROUND STATION ARCHITECTURE AND FUNCTIONS**

The current lay out of our Ground Station facilities is sketched at fig. 1.

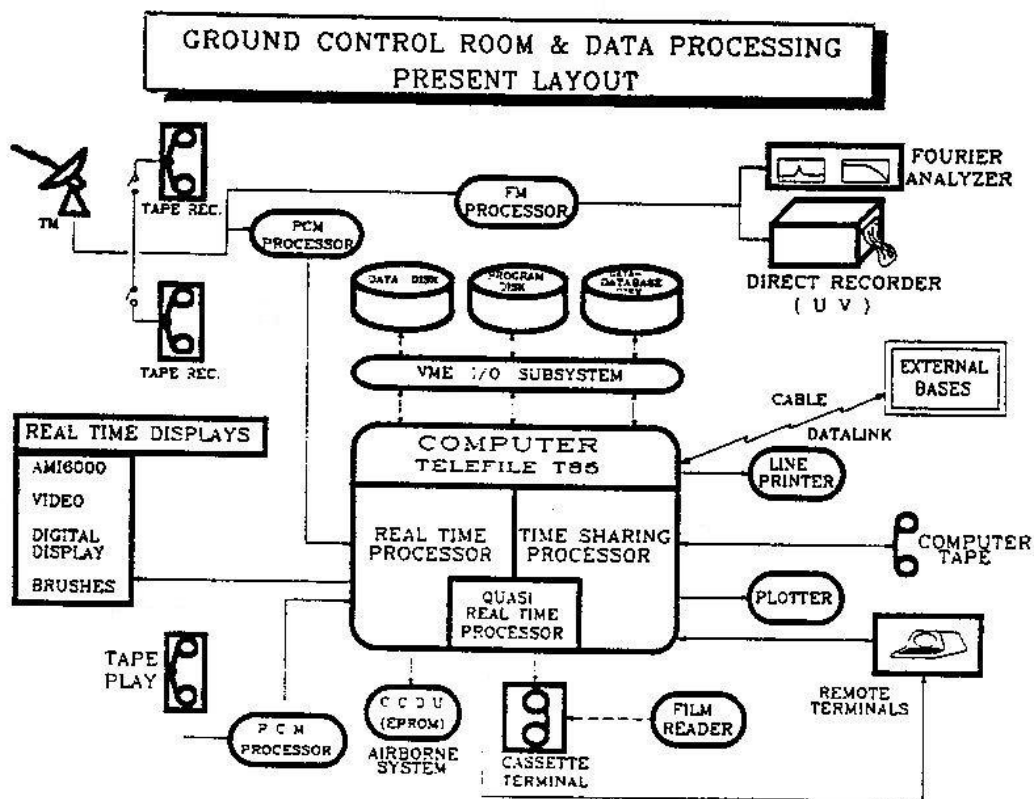


FIG 1