

# MEDIALON

## Planetarium Show Control System

### Pre-Functional Analysis And Programming Time Quotation

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Prepared by: AC / DR

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## Pre-Functional Analysis And Programming Time Quotation

**Project:**  
Programming of the Planetarium Show Control System

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# 1 INTRODUCTION

## 1.1 Purpose

The purpose of this document is to guarantee that all parties involved agree on the answers to the following questions regarding the Planetarium:

- What is the system described actually intended for?
- What are the different components of the system?
- What functionalities will be implemented?
- Who will use the different components and what is their knowledge?

This document is a pre-functional analysis, after approval by the customer, more details will be added in each chapter, in order to turn it into a detailed functional analysis approvable by the Museum.

It will then be used as a reference guide for programming and as a commissioning document of this very programming.

After commissioning, the final document will constitute the manual of operation and maintenance guide of the programming work.

## 1.2 Application description

The system is intended to control the various equipment in order to run pre-shows at the entrance of the planetarium and the main show in the planetarium. The system must be able to run several shows, some existing which would have to be re-programmed on the new system and future shows.

The system will offer a framework for all the controlled equipment independent from the show itself and a specific programming for each show.

The system must provide front end to:

- Control the pre-show and the show for normal use
- Control the equipment for a use lecturer use
- Run tests and debugging

The system will consist of 2 similar primary and secondary control hardware/software for back up purposes with an easy mechanism of switch on the secondary in case of failure of the primary one.

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## 2 System components and overview

### 2.1 Control System

2 Show Control Machine Pro each equipped/connected with:

- PCI 7432 32 I/O card with break outbox
- AD RG1 card for Time Code inputs
- Moxa Nport for 32 serial ports (TCP/IP)
- MIDI Sport 4x4 for MIDI in/out (USB)
- Manager V5 Control Software
- X Monitor
- 1 Rugboard remote control touch screen

### 2.2 Equipment to be controlled

#### 2.2.1 Main Show

1 Star projector Lift	Digital IO
1 Fog machine	Digital IO
1 Fire alarm input	Digital IO
3 Evertz Time Code generator	Serial
1 Zeiss star projector	Serial
3 Sharp Video Projector	Serial
1 Alcorn audio playback	Serial
1 ETC Lighting desk	MIDI
1 Yamaha 3OD	MIDI
1 LCS audio matrix	MIDI

#### 2.2.2 Pre-show

The equipment for the pre-show are remotely connected to the control system using an Evertz serial / Fiber transmitter

1 Yamaha O1V	MIDI via serial converter
1 Evertz RGB Matrix	Serial
1 Alcorn audio playback	Serial
1 Electrosonic video HD player	Serial
16 Plasma Screens	Serial via a serial repeater

The 3 time code generators are used to synchronize the Audio, the Video system (a SEOS dome projection system) with an offset. The time code is also returned to the controller for synch purposes.

- > To be added in final document.
- > Exact list, drivers required, commands per driver, etc.

### 3 Functional Requirements

#### 3.1 Workflow

The system will offer 3 main modes of operation, each one referring to a group of pages with appropriate buttons and functionalities:

- Show mode
- Direct control and Pre flight check
- Maintenance mode

A fourth specific mode will be accessible to administrators only:

- Show Programming, in which the systems still offers the direct control mode and the maintenance mode but also offers the show programming interface.

The show mode is used by semi-experienced technician to select the show of the pre-show and show of the day, configure the system and equipment accordingly, and run the show.

The direct control mode is used by semi-experienced technician for either directly control some equipment for a lecture or run some basic test of the equipment.

The maintenance mode is used by experienced technician to check the equipment, change their configuration or set-up or perform maintenance operation. Operation in this mode may affect the process of the main show.

The Show Programming mode is reserved to experienced technician to program shows.

#### 3.2 Show mode

The Show Mode offers 2 main pages.

##### 3.2.1 Main selection page

Which provides:

- Selection of a combination of Pre-show, trailer and Main show.

##### 3.2.2 Run Main Show page

Which provides:

- Status of the pre-show
- Ability to fire / cut announce
- Control of the walk in music
- Control of the main show start / stop / pause etc.
- Information about the readiness of equipment and alarms
- Information about the main show processing (time code, comment, count down, duration, equipment status).

An extra mode or page might be added to provide more information accessible only during show programming.

### 3.3 Direct control and Pre flight check

This mode offers a number of pages to directly control the various equipment in order to run preflight check or for lecturer use (direct independent control of equipment without pre-recorded show / content)

This mode offers:

#### 3.3.1 Fogger page

Organized with buttons and functions arranged in a workflow manner, to run a pre-configuration of the fogger which require complex test and set up before show.

#### 3.3.2 Router page

Which provides all necessary commands to control the router,

- Select input
- Send to output
- Change label of inputs and outputs

#### 3.3.3 Projector and monitor page

Which provides all necessary command for the video display (projectors & monitors)

- On/Off
- Select input
- Etc.

#### 3.3.4 Lecturer page

Which provide set of commands to use the planetarium in lecturer mode.

- Select input / output
- Play video
- Etc.

### 3.4 Maintenance mode

#### 3.4.1 Projector page

Which provide technical commands for projector set up

- Brightness, Colors, etc.
- Inputs
- Lamp use
- Etc.

3.4.2 Miscellaneous page

With all necessary commands to test the equipment

- Time code test
- Speaker test
- Zeiss control ?

3.4.3 Log file and status monitoring page

Which provides,

- Log file of all actions performed on the system
- Overview of the main status variable monitored, logged and potentially sent to supervision software.

> To be added in final document.

Workflow diagram if relevant

**4 Application functional blocks**

This chapter describes the functionalities from a programming point of view. It lists the different blocks of the application to be programmed.

> To be defined in final Functional Analysis

**5 Graphical user interfaces**

> To be defined in final Functional Analysis

**6 Miscellaneous**

The customer shall supply all equipment references and technical features in order for Medialon to write the appropriate drivers and run tests during the analysis process, if necessary. This is to ensure that all controlled equipment will be controllable in a way relevant to the required functionalities.

Programming will be supplied with appropriate comments in order for the Museum experienced and trained technician understand and edit it if necessary.

> To be detailed in final Functional Analysis

## 7 Workload estimation

Meetings & Project Management	2 days
Functional Analysis & tech specs	4 days
Programming and test of all drivers	1 day
Workshop programming of the frame work	3 days
Workshop programming of basic show structure	2 days
On site deployment of the frame work programming	2 days
Workshop Show Programming of existing Trax Show (est. per show)	1 day
On Site Show Programming of NEW Show & Rehearsal, to be defined based on synopsis	
This count does not include travelling days and travel expenses.	

Example