## Configuration Module

### Assumptions

The Configuration Module assumes that only valid configuration information will be input by the user. The subsystem also assumes that the Database Interface module exposes the appropriate interfaces needed by the Configuration Module to store the configuration information.

### Responsibilities

The Configuration Module is responsible for providing an interface to the user so that he or she can input configuration information related to materials and printing hardware. The Configuration Module passes the user input to the Database Interface module so that it can be stored and later accessed by the Print Module.

### Subsystem Inter-layer Interfaces

None

### Subsystem Public Interfaces

Table 5.1. Public Interface to Configuration Module

|  |  |  |  |
| --- | --- | --- | --- |
| Method | Description | Information Required | Information Returned |
| setPrinterConfiguration | Sets the printer configuration. | * Printer Bed Dimensions * Printer GCode Flavor * Custom GCode to be run before and after the print * Extruder Configuration Information | None |
| setMaterial | Sets material information | * Material Name * Material Filament Diameter * Material Extrusion Temperature * Material Extrusion Speed | None |
| displayPrinterConfiguration | Displays the printer configuration information. | * None | * Printer Bed Dimensions * Printer GCode Flavor * Custom GCode to be run before and after the print * Extruder Configuration Information |
| displayMaterial | Displays material information. | * None | * Material Name * Material Filament Diameter * Material Extrusion Temperature * Material Extrusion Speed |

## Database Interface Module

### Assumptions

The Database Interfaces assumes that it is the only subsystem that will be interacting with the database directly.

### Responsibilities

The Database Interface module is responsible for providing an abstract interface between the database of the system and any subsystems that need to store or retrieve information from the database. As such, the Database Interface module is responsible for exposing all the methods necessary for the other subsystems to communicate with the database in an abstract manner.

### Subsystem Inter-Layer Interfaces

None

### Subsystem Public Interfaces

None

## Import Module

### Assumptions

The Import Module assumes that the file that is chosen to be imported is a valid object description.

### Responsibilities

The Import Module is responsible for providing an interface to the user from which he or she can import files that describe the objects the user intends to print. The Import Module is also responsible for passing the imported files to the Print Module.

### Subsystem Inter-Layer Interfaces

None

### Subsystem Public Interfaces

Table 5.2 Public Interface to Import Layer

|  |  |  |  |
| --- | --- | --- | --- |
| Method | Description | Information Required | Information Returned |
| import | Imports an object file into the system. | * Object File Name | None |

## Print Module

### Assumptions

The Print Module assumes that the user has imported the necessary object files and correctly input all necessary configuration information. The Print Module also assumes that the Database Interface exposes the interfaces necessary to retrieve all required material and printer configuration information.

### Responsibilities

The Print Module is responsible for providing an interface to the user from which he or she can set configuration options for a specific print and also initiate a print. This means that the print module is also responsible for collecting all the material and printer configuration information required for the print, bundling that information with the object file information received from the Import module, and sending that bundle to the Pre Processing Layer to begin the printing process.

### Subsystem Inter-Layer Interfaces

Table 5.3. Public Interface to Definition Management Layer

|  |  |  |  |
| --- | --- | --- | --- |
| Method | Description | Information Required | Information Returned |
| getPrintRequest | Gets a print request object that contains all the information necessary for preprocessing. | None | * Print Request Object |

### Subsystem Public Interfaces

Table 5.4. Public Interface to Print Module

|  |  |  |  |
| --- | --- | --- | --- |
| Method | Description | Information Required | Information Returned |
| mapMaterialToObject | Maps a material to an object file. | * Material * Object | * None |
| setPrintJobConfiguration | Sets the print job configuration information | * Layer Height * Fill Density * Support Material | * None |
| displayPrintJobConfiguration | Displays the print job configuration information | * None | * Layer Height * Fill Density * Support Material |
| print | Initiates the printing process. | * None | * None |

## Status Module

### Assumptions

The Status Module assumes that it is receiving up-to-date and accurate information from the State Monitoring Module in the Printer Feedback Layer.

### Responsibilities

The Status Module is responsible for displaying the printer and current print status to the user. The Status Module is also responsible for telling the Printer State Controller to pause, resume, or stop a print job based on user input.

### Subsystem Inter-Layer Interfaces

None

### Subsystem Public Interfaces

Table 5.5. Public Interface to Status Module

|  |  |  |  |
| --- | --- | --- | --- |
| Method | Description | Information Required | Information Returned |
| stopPrint | Sends a message to the Printer State Controller ordering it to stop the print job. | None | None |
| pausePrint | Sends a message to the Printer State Controller ordering it to pause the print job. | None | None |
| resumePrint | Sends a message to the Printer State Controller ordering it to resume the print job. | None | None |