1 INTRODUCTION

The user manual contains all essential information for the user to make full use of the features in JawLogic products. The products covered in this user manual include JawLogic software, and the JawLogic camera.

1.1 Purpose and Scope

This manual includes a description of the systems interface functions and capabilities, alternate modes of operation, step-by-step procedures for system access and use, and a guide on how to properly use the JawLogic camera.

1.2 Organization

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1.3 Points of Contact

If any help is needed outside of the scope of the user manual, or if you have any issues with the user manual please feel free to contact JawLogics help center either through our email jawlogic@gmail.com or by calling 1-800-JAW-LOGIC to get in touch with one of our representatives.

1.4 Project References

JawLogics Software is compatible with any virtual reality system. JawLogic software is only supported on Mac and Windows Operating Systems.

1.5 Primary Business Functions

The JawLogic modeling software is intended to be used with the JawLogic Camera to produce a detailed model of the mouth for use in dental professionals offices. The personal version of
the software is publicly licensed however it does not allow for models to be created, only viewed. The intent of the personal version of the software is to allow users to see features of their mouth model without returning to the dentist.

1.6 Glossary

This section provides a glossary of all terms and abbreviations used in the manual. If the glossary is several pages or more in length, it may be placed as an appendix.

2 SYSTEM CAPABILITIES

The purpose of the JawLogic application and system is to provide a platform and tool for dental professionals to utilize in the oral care and education of dental health. The platform offers an easy interface to manage patient mouth modeling as well as enabling the virtual reality. The virtual reality is a tool to allow the patient and dentist to go on a tour of the mouth to build the trust factor between the two as well as allowing the patient to fully understand what is happening in their mouth.

2.1 Purpose

The main purpose of JawLogic is to provide an effective means of creating a 3D model of a patient's mouth while maintaining a simple and easy to use interface to allow a Virtual Reality tour of the patient's mouth. While allowing the dental professional as well as the patient to get a better understanding of their dental care experience.

2.2 General Description

The system includes four basic functions: modeling, virtual reality, camera and patient management. Each of these tasks involve many smaller tasks but all together creates a cohesive and highly functional service.

The modeling function is comprised of previewing a newly captured model from the camera, as well as selecting from a list of models that have been captured for the patient. In preview mode the dentist can confirm that the model that was just taken was a good capture. The model selection menu is a simple interface that allows the dentist to select a model from the list of available models that are stored on the patient.

The virtual reality function is comprised of two different methods for the parameters of the virtual reality experience. The first is the workshop, this allows the dentist to select different simulations of treatment plans as well as seeing what the mouth will look like with different appliances. The second is a feature that allows the patient to interact, called advanced start, this is a feature allowing the patient to customize their mouth such as braces color, retainer color, invisalign as well as treatment plans.

The third feature is the camera, this comprised of one step allowing the dental professional to capture new 3D models of the patient’s mouth. The interface is quite simple and only recommends to the dentist based on patient information what size mouthpiece maybe
required for the user. After the camera is in the patient’s mouth for 60 seconds a model will be created.

The final feature that JawLogic offers is the ability to easily manage patients through the application interface. This allows for the creation of new patients as well as managing current. The functionality for creating a new user is as simple as inputting patient data into the system. This is then stored in a database that allows for models to be saved that correlate to the patient. The second aspect of the patient feature is to select from a list of existing users. In this mode the existing users can be modified and deleted.

3 DESCRIPTION OF SYSTEM FUNCTIONS

This section describes each specific function of the system. In this high-level section, describe any conventions to be used in the associated subsections. Each of the subsequent sections should be repeated as often as necessary to describe each function within the system. The term “Function X” in the subsection title is replaced with the name of the function.

This section examines each of the four functions of the system and guides how each function can be utilized.

3.1 The Modeling Function

3.1.1 Modeling
The Modeling functionality encompasses instruction and detail on capturing a new model with the camera, viewing the obtained model, and utilizing the model.

3.1.2 Description
A model of a mouth must be created first in order to use it for stimulation or utilize it within the Jaw Logic Virtual Reality Environment. To initialize the modeling process, within the Jaw Logic Application, click ‘model,’ and select ‘new.’ Next, take the Jaw Logic Camera and insert it inside the mouth, and press the ‘O’ button on the camera to scan the mouth. Scanning will take 60 seconds, and a model of the mouth will be created once the scanning is finished.

Once the model is created, click 'approve' to save the model or deny to re-scan the mouth. The system will automatically store it within the folder selected when opening the Jaw Logic Application. To save to a different folder, right-click 'approve' and choose 'select folder' and select a folder. In order to utilize the model, it must be saved within the right folder. It is recommended to use the automated option.

Summary;
Create a new model by first, click ‘model’ and select ‘new.’ Then use the camera to scan a mouth by inserting the camera into the mouth and press the 'O' button. Once the scanning is completed, a model of the mouth will be created. Click 'approve' to save the new model.
3.1.3 **Input**
To ensure that the best and most accurate mouth model is created, make sure that the system is up to date with the latest Jaw Logic updates. See 4.2.2 for System Update if needed.
To create a model, data on the mouth is needed, which is done by scanning the mouth with the Jaw Logic Camera. Make sure that the camera is connected to the system via wire or Bluetooth, depending on the version of the camera. The camera needs to function properly; otherwise, the system will not be able to create an accurate model of the mouth. See 3.3 for Jaw Logic Camera functionality. Do not pull out the camera before the scanning process is complete.

3.1.4 **Result**
The model functionality will create a model of the mouth and save it to the working folder. The model can be modified via the Jaw Logic Application; however, most of its utilization is within the Jaw Logic Virtual Reality Environment. If the system failed to create a model, an error message would pop up, and the system will prompt for a rescan. If the error message happens continuously or frequently, make sure that the camera is connected to the system or is functioning properly. Secondly, check if the system is running the latest Jaw Logic updates. If the issue continues, contact Jaw Logic technical support at 1-800-JAW-LOGIC.

3.2 **The Virtual Reality Function**
3.2.1 **Jaw Logic VR Environment**
The Jaw Logic Virtual Reality Environment has two main functionalities, which are the workshop, which allows dentists and dental professionals to simulate treatments and accessory appliances, and the advanced start, which will enable patients or users to customize their mouth model according to their needs.

3.2.2 **Description**
The Jaw Logic Virtual Reality Environment allows users to utilize mouth models. To initialize the Jaw Logic Virtual Reality Environment, click on 'model' and select 'VR.' A virtuality reality environment will be stimulated by the system. To enter into the virtual reality environment, put on the VR headset. Make sure that the VR headset is connected to the computer that runs the Jaw Logic Application.
Inside the Jaw Logic Virtual Reality Environment, click on 'menu' and select 'VR' and then 'Workshop' to initialize the Jaw Logic VR Workshop.
Inside Workshop, choose 'Health' to do a health analysis on the model. Select and drag with the VR hand controller to zoom in to a particular area of the model. Choose 'Procedure' to simulate a treatment plan. Click each area with the hand controller to find detail on each operation. Choose 'Accessory' to simulate appliances. All the appliances and accessories will show up in an inventory. To choose an appliance or accessories, click it with the hand controller.
The 'Advance Start' feature allows the user to customize the mouth model to fix his or her needs. From the main menu, select 'VR' and then 'Advance Start' to initialize advance start. In the 'Advance Start' menu, choose 'Health and Procedure' to customize a health plan and treatment procedure. Choose 'Stimulation' to simulation the customized health plan or treatment procedure. Choose 'Accessory' to customize the model with appliances and accessories.

Summary:
Click on 'model' and select 'VR' to initialize the Jaw Logic Virtual Reality Environment. User the VR headset to enter the Virtual Reality Environment. Inside the Jaw Logic Virtual Reality Environment, click on 'menu' and select 'VR' and then 'Workshop' to initialize the Jaw Logic VR Workshop. Choose 'Health' to do a health analysis on the model, choose 'Procedure' to simulate a treatment plan, and choose 'Accessory' to simulate appliances. Click on 'menu' and select 'VR' and then 'Advance Start' to initialize the Advance Start feature.

3.2.3 Input

3.2.4 In order to use the Virtual Reality Environment to utilize models, a mouth model must be created and stored within the working folder. If no mouth model exists, Workshop will prompt a message asking for a model to be created. Select 'scan' to create a new model.

Note: The scanning process makes use of the Jaw Logic Camera to scan a mouth and create a new model. See 3.1.1 on how to create a new model with the Jaw Logic Camera.

The system requires a properly functioning VR headset hand controller to navigate within the Virtual Reality Environment. Make the controller is connected to the headset and can be used to select, drag, or point at the model.

3.2.5 Result

The Virtual Reality Function allows the utilization of a mouth model. The 'Health' functionality performs a full analysis of the model and detects any health issue. The report will be automatically saved and available to be viewed outside the Virtual Reality Environment. The 'Procedure' functionality performs a simulation of the best treatment plan and procedure to fix the health issue detected. The simulation report will be automatically saved available to be viewed outside the Virtual Reality Environment. The 'Accessory‘ functionality allows the user to try-out mouth appliances and accessories. A model of the mouth with the appliance will be created and can be saved to view or use later.

3.3 Camera Functionality

3.3.1 The Jaw Logic Camera

The Jaw Logic Camera is a high-resolution 360 camera that is used to scan mouths to generate mouth models.
3.3.2 Description
The camera needs to be inserted into the mouth to scan the mouth. Insert the camera until the mouth-piece on the camera is touching both lips.

Camera Interface:
The camera has two buttons on the top surface; one marked 'O' and one marked 'X.' Press the 'O' when ready to scan the mouth. Press 'X' to cancel the scanning process.

Connection:
The Jaw Logic Camera is wired to a computer via a USB cord. The Jaw Logic Application will automatically detect the camera if it is connected to the computer that runs the application.

The Jaw Logic Camera Wire-Free is connected to the computer via Bluetooth. Make sure to pair the camera to the computer that runs the Jaw Logic Application. The camera will automatically be detected by the system if it is paired to the same computer.

Cover-Head:
The camera comes with a cover-head. The cover-head has room for 200 plastic wrappers, which is used to wrap the camera to allow re-usability. The wrapping process will be automatic once the camera is stored back into the cover-head after use. Manually disregard the wrapper after each use before storing it in the cover-head. The small LED light at the end of the cover-head will flash red if wrappers are out. To reload wrappers, pull open the end of the cover-head and insert wrappers.

Summary:
The Jaw Logic Camera has two buttons 'O' and 'X' that scan the mouth and stop scanning, respectively. The Jaw Logic Camera is connected to the computer by a USB cord, and the Jaw Logic Camera Wire-Free is connected via Bluetooth. Wrappers allow the camera to be re-use and is automatically done by the cover-head.

3.3.3 Input
The camera's primary function is to scan mouths to generate a model, which required instructions from the system to operate. See 3.1 on how to create a new model. The 'O' button is to begin scanning once the camera is inserted into a mouth, and the 'X' is to cancel scanning.

3.3.4 Result
Once the scan is completed, a model of the mouth will be created. If the scan failed, an error message would pop up on the computer notifying the user. Check if the camera is functioning properly and connected to the computer that is running the Jaw Logic Application. If the error message occurs frequently, check for software updates and contact Jaw Logic technical support at 1-800-JAW-LOGIC for help if the problem continues to occur.

Note: Jaw Logic Camera Wire-Free requires charging and has a battery life of 10 hrs scanning time.
3.4 User Management Functionality

3.4.1 User Management
The User Management Functionality holds the interface for professional accounts and independent working environments. It also encompasses a file system for each specific patient.

3.4.2 Description
Users' models, data, and information can be easily managed with the User Management system.

Professional User:
Each professional user has an independent working environment that contains all the files of his or her patients. Professional users are required to log in to their account when running the Jaw Logic Application and log out once done to protect their work and their patients' information.

Patients:
To access a patient file, click 'Patient' and select 'all' to view all the patients, or search the patient name on the search bar to find the patient's folder. To create a new patient, click 'Patient' and select 'new.' To delete a patient, first search and find the patient's folder. Right the folder and select 'delete.'

3.4.3 Input
The User Management system requires selecting folders with keyboard and mouse, which are done mostly on the computer. Each patient's folder must be created manually before creating a mouth model of the patient or storing other information of the patient on the working environment. The patient folders system allows easy management of patients' data.

3.4.4 Result
Professor User Accounts come with the licensing. Each Professor User account has a working environment, and all the professor user patients' information. Create a new patient will add a new patient folder on the Professor User working environment for the new patient. Deleting a folder will erase the patient folder along with all the data stored within that folder.

4 OPERATING INSTRUCTIONS

4.1 Initiate Operation

4.1.1 Installation
JawLogic is available for Windows, Mac, and Linux. To install navigate to: www.downloadjawlogic.com. Follow the instructions on the site to download the JawLogic distribution for your OS. If you have not yet purchased a license for JawLogic you may also do so at this site.
Once the installation wizard is downloaded simply run it and follow the prompted instructions to install JawLogic. An administrator password may be required.

If an error occurs during the installation contact our support staff via one of the methods outlined in section 5.2. If the installation completes successfully you should be left with a clickable shortcut on your desktop.

4.1.2 Launch
When JawLogic is finished installing it will be available as a clickable icon on your desktop. If this is not the case for some reason open your OS’s application menu. If you have a search option simply type ‘JawLogic’ to find the program. If the program is not found contact our support staff via one of the methods outlined in section 5.1.

Since this is your first time launching JawLogic you will be asked for the license information from the license purchase you made on our website. Simply type in the license confirmation code to activate your JawLogic distribution. Following this you will be asked to create an admin user. This user will have complete access to any other JawLogic user accounts on this computer, as well as full access to the JawLogic software. Choose a username and password carefully. After this you will be asked to create at least one regular user who will have access to most JawLogic functionality but the management options available to the admin. Further regular users can be added later by the admin. Once this is all done JawLogic is available for normal use.

4.1.3 Login
At launch you will be presented with a screen asking for a username and password. Entering the admin username and password will enter into a main menu reserved for the admin. Entering a regular users username and password will enter you into the regular main menu as that user with access to their files and their patient profiles.

4.2 Maintain Operation
4.2.1 Update
JawLogic will occasionally require software updates. These updates will ensure that JawLogic offers relevant features, functions with minimal error, and is otherwise as refined as possible. When these updates are available JawLogic will display a message at launch until the update is installed. The user can either click the option to accept and download the update or to move past it and use JawLogic immediately.

If the update is accepted the admin credentials will be required. The administrator credentials for the operating system may also be required. On screen instructions will lead you through the process of entering the credentials and installing the update.
Once the credentials have been entered the update will download and then install. During this period normal JawLogic functions will be unavailable. The update may be cancelled at any time.

When the download and installation are finished JawLogic will close and restart. At this point normal functionality will be once again available.

4.2.2 System Update
If JawLogic does not start after your operating system update please get in touch with our support staff via one of the methods outlined in section 5.2. Releasing an update to ensure JawLogic continues to function on a given operating system is one of our top priorities.

4.3 Terminate and Restart Operations

4.3.1 Terminate
To terminate your current JawLogic session select the ‘Logout’ option that will be displayed in the upper right hand corner so long as you are displaying a menu and not currently in VR. Once you have selected this button you will be presented with a confirmation prompt and then you will return to the login screen. From here you can select a ‘Quit’ option displayed under the option to enter credentials and login.

When unscheduled termination occurs JawLogic will attempt to save any unsaved information. If this information could not be saved JawLogic will inform you upon the next start of the software.

4.3.2 Restart
Upon restart from unscheduled termination JawLogi will inform you if any information was lost from the past session. When you next login with the credentials of the user who was logged in at the time of termination this alert will be displayed again. If the user’s information could be saved in part the user will be given the option to dump the unsaved information or restore as much as possible to the current session.

5 ERROR HANDLING (HAL)

5.1 ERROR TYPES

5.1.1 Terminal Error
Terminal errors are those errors that cause JawLogic to crash to desktop. These will not appear with a message as they are operational errors that result in the inability of JawLogic to function. If these errors happen repeatedly or regularly please contact our support staff via one of the methods outlined in 5.2.
5.1.2 **Missing Module Files**
When set up for a VR session is taking place one has the option to load a module that represents an appliance that a patient would like to try out. If a module is improperly installed or configured it may be missing a file that is required for its rendering in VR. If this is true of a module that a user selects for use in VR a message will be displayed stating, “This Module is Improperly Configured”. If this is so the module should be reinstalled or the producers of the module contacted.

5.1.3 **VR Connection Error**
If a VR session is launched by a user and no VR headset is connected to the system or is improperly configured or otherwise inaccessible by JawLogic the message “Your VR Connection is Incorrectly Configured”. To resolve this error one should ensure that the system VR drivers are up to date and the physical connection of the headset is secure and present. If these steps do not resolve the error contact the JawLogic support staff via one of the mechanisms in section 5.2.

5.1.4 **Credential Error**
If an attempt to login is done with a username and/or password that is incorrect or nonexistent the message “Username or Password not found”. Ensure that the credentials have been entered correctly. If this does not resolve the error contact your admin user.

5.2 **HELP FACILITIES**
Our help facilities are composed of a dedicated support staff. They can be contacted at:
Phone: 1-800-JAW-LOGC aka 1-800-529-5642
Email: jawlogic.support@gmail.com