

VRPDS

Virtual Reality Pain Distraction System



User's Manual

5DT

Fifth Dimension Technologies
www.5DT.com

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1 Introduction

Welcome to the 5DT VRPDS. Contained within this document are descriptions of the features and controls of the VRPDS application, accompanied by examples of how the application works. This document is subdivided into several sections, of which each describes a separate function on the VRPDS application. Please refer to the table of contents to quickly locate the specific information that is required.

2 System Functions

This section describes the various system functions. These descriptions are broken up into smaller sub-sections, and each sub-section describes a certain aspect of the system in more detail.

2.1 Logon

Logging onto the system is required. When the application starts up, the user Logon dialog box will be displayed. Enter the username and password (case sensitive) and click OK. Once logged on, a user can log out by selecting the Log Off option from the User menu found on the menu bar.



Figure 1 - The figure shows the user Logon dialog box.

2.2 Sessions

General Session Information can be configured by clicking on *Configure->Session Information*. Doing this will display the *Configure Session Information* dialog box. The information entered in the *Configure Session Information* dialog box will be used as default values when a new session is started. The dialog box is shown in Figure 2.

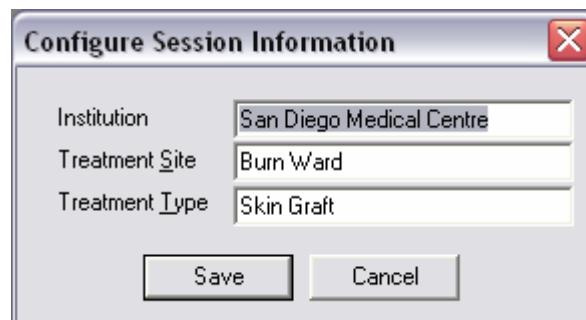


Figure 2 - The figure shows the *Configure Session Information* dialog box.

A session can be started by clicking on *Session->Start Session*, by pressing the *F5* key on the keyboard or by selecting the *New Session* option from the quick launch menu.

In the session start-up dialog box (shown in Figure 3) the relevant patient and physician/therapist for the current session are selected. If the names of the relevant patient and/or physician do not appear in the drop down lists, it will have to be added under the *Users->Administration* menu (see section 2.3).

Figure 3 - The *Start Session* dialog box.

The *Institution*, *Treatment Site* and *Treatment Type* fields will be populated by the default values as found under the *Configure->Session* menu. These values may be changed at any time, if so desired for the current session.

A video recording with or without audio can be made by clicking on the *Record Video* and *Record Audio* tick boxes. It should be noted that a webcam or other appropriate type of media capturing device be properly connected and installed on the current system for this function to be used. For more information on the recording function, please refer to section 2.4.

In the *Notes* edit box the session administrator or similar responsible person can add any startup memos about the session that will be displayed in the reports later on.

By clicking on the *Start button*, the selected distraction game will be started along with the dialog box shown in Figure 4. This dialog enables the session administrator to log information about the session while the session is in progress. This is done by typing any relevant notes in the *Event Information* edit box. Information entered this way can be reviewed at later stage by consulting the reports section.

The following functions can also be performed, with the relevant shortcut keys shown in brackets:

1. Pause/Resume Game (P)
2. Mark Event (E)
3. Stop Game (G)
4. Stop Session (S)

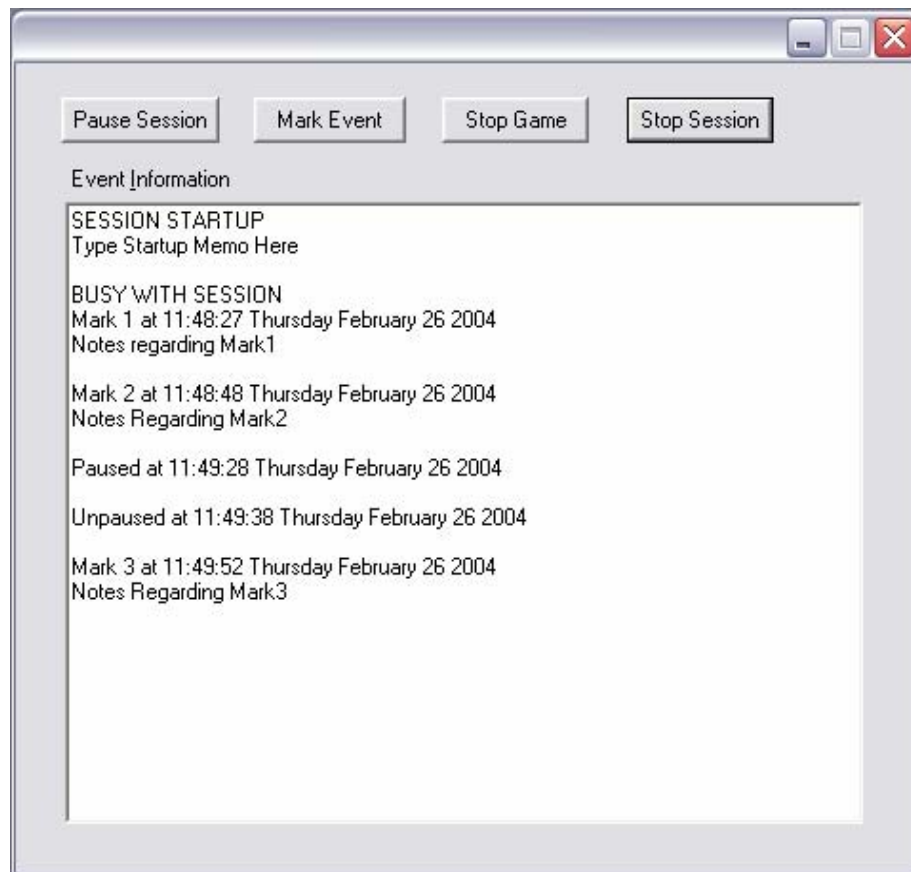


Figure 4 – The figure shows the *Session Progress* dialog box.

The dialog box shown in Figure 4 is displayed once the session is executed, and runs concurrently with the game. When the *Mark Event* button is pressed, a mark number and time is auto recorded in *Event Information*. Session notes may also be added at any time. These notes may be either general notes, or notes regarding a mark made. Stopping the game causes the game to time-out after a fixed period of time. This time period depends on the current game.

When the session is stopped the dialog is closed the *Session Completed* dialog appears (Figure 5).

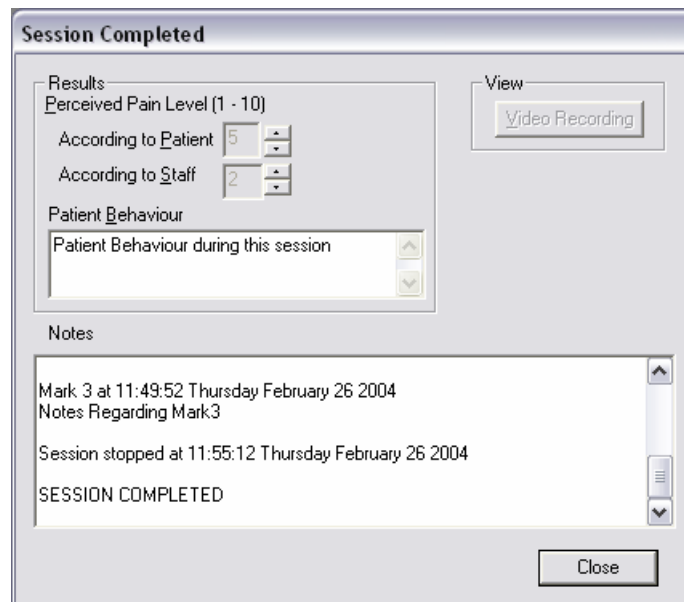


Figure 5 - This figure shows the *Session Completed* dialog box.

The *Session Completed* dialog allows the patient and the therapist to select the pain perceived during the session by the patient, i.e. the patient and therapist both enter their own opinions on the pain perceived by the patient on a scale from 0 to 10.

If a video recording was made for this session it can be viewed by clicking on the *Video Recording* button.

Additionally, in this dialog box, a description of the patient's behaviour and information recorded during the session can be added or edited into the *Patient Behaviour* and *Notes* edit boxes. To review a session at a later time, a report for that specific session can be accessed (for more information, refer to section 2.3).

2.3 Users and Reports

The Users screen can be opened by clicking on the *Users->Administration (A)* menu item or by selecting the *Administration* option from the quick launch menu.

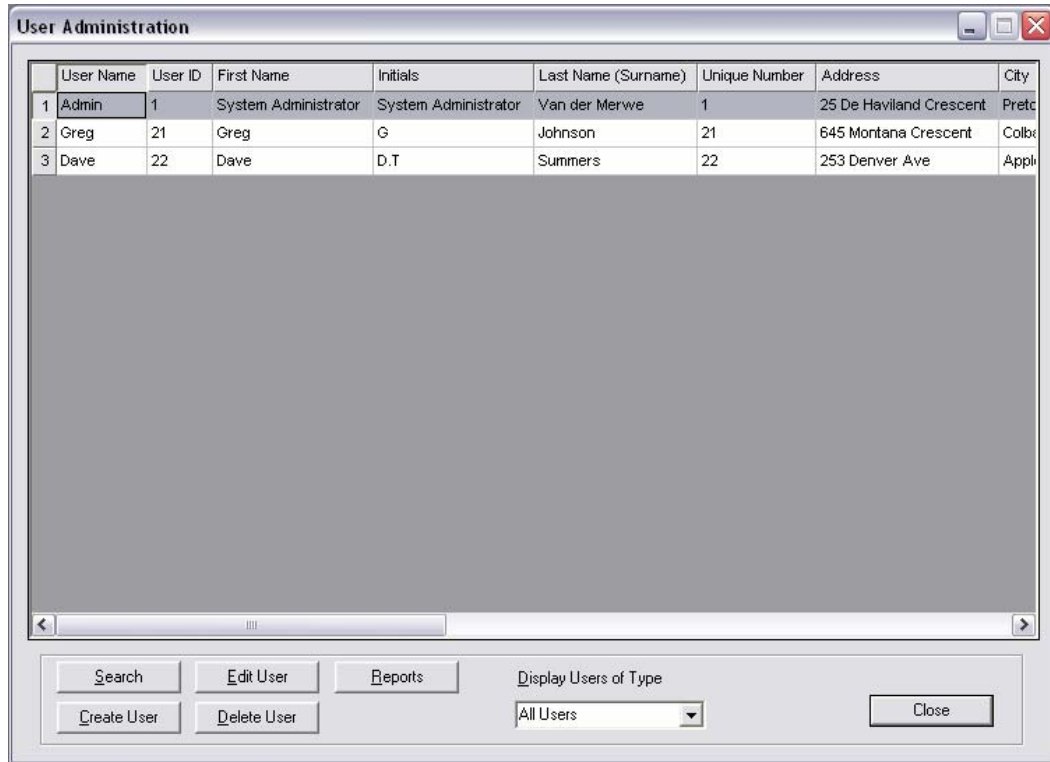
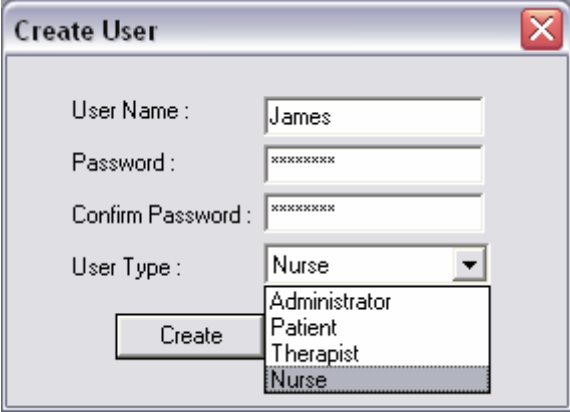


Figure 6 - This figure shows the *User Administration* dialog box.

From the *User Administration* dialog box (Figure 6) all user management is done, allowing the session administrator to search for users, create new users, edit existing users, delete users, as well as access to previous reports of patients.

When creating a new user, the user has to supply a new password, and the type of user also has to be specified by means of the *User Type* drop-down list as shown in Figure 7. Patients and staff members may be added as users. Once the desired users have been created, the session administrator will be able to select the new user names for a session in the relevant drop-down list.



The image shows a 'Create User' dialog box with the following fields and options:

- User Name : James
- Password : *****
- Confirm Password : *****
- User Type : Nurse (dropdown menu open showing Administrator, Patient, Therapist, and Nurse)
- Create button

Figure 7 – This figure shows the *Create User* dialog box.

Once a user has been created the user details have to be entered via the *User Details* dialog box as shown in Figure 8. These details can be changed by clicking on the *Edit User* button in the *User Administration* dialog box.

Details of user 'Greg'

Please complete. Fields marked with * are mandatory.

Personal Details

First Name	Greg	Notes
Initials	G	Some notes for Greg.
Last Name (Surname)	Johnson	
Unique Number*	21	
Username*	Greg	
Password*	xxxx	
Confirm Password*	xxxx	
User Type*	Patient	
Address	645 Montana Crescent	
City	Colbain	
State/Province	Texas	
Zip/Postal Code	787125	
Country	USA	
Telephone Number	287876342	
Fax Number	287098124	
Mobile Number	0736549872	
E-mail Address	N/A	
HMD Name	Good Med	
HMD Member Number	09803612357	
Next of Kin	Dr. P Johnson	
Tel of Next of Kin	287652098	

OK Cancel

Figure 8– This figure shows the *User Details* dialog box.

Report data is automatically generated during sessions and saved for the specific patient. These reports can be accessed by selecting the appropriate patient in the *User Administration* dialog box, and clicking on the *Reports* button. This will open the *Reports Index* (Figure 9) from where the patient's session reports (Figure 10) can also be accessed.

San Diego Medical Centre			
Index Report			
User Name	Greg		
Date Created	Mon Jan 26 14:38:48 2004		
Title	Date and Time	Duration	ID
Report	Thu Feb 26 10:41:52 2004	0h:0m:44s	31
Report	Thu Feb 26 11:07:53 2004	0h:4m:3s	32
Report	Thu Feb 26 11:16:42 2004	0h:4m:39s	33
Report	Thu Feb 26 11:21:26 2004	0h:8m:33s	34
Report	Thu Feb 26 11:30:29 2004	0h:45m:20s	35

Figure 9 – An example index report for a patient.

ID	35
Institute	San Diego Medical Centre
Site of Treatment	Burn Ward
Type of Treatment	Skin Graft
Game Played	Jolly Jumpin Jellies
Game Results	(Rank)..(Level)..(Time)
Perceived Pain - Patient	5
Perceived Pain - Staff	2
Patient Behaviour	Patient Behaviour during this session
Session Notes	SESSION STARTUP Type Startup Memo Here BUSY WITH SESSION Mark 1 at 11:48:27 Thursday February 26 2004 Notes regarding Mark1 Mark 2 at 11:48:48 Thursday February 26 2004 Notes Regarding Mark2 Paused at 11:49:28 Thursday February 26 2004

Figure 10 – An example session report for a patient.

2.4 Video Recording

Video recordings via a capturing device such as a webcam can be made during a session. To enable video recording during a session please refer to section 2.2.

With the *Recordings Manager* (*Video Recordings->Open Video Recordings (R)*) dialog active, a user can view saved recordings by selecting a user and then a recording for that user. Recordings can also be deleted in a similar fashion by clicking *Delete* with a recording selected. Only the three latest recordings are stored for each user, this is necessary to limit the amount of storage space used by video recording files.

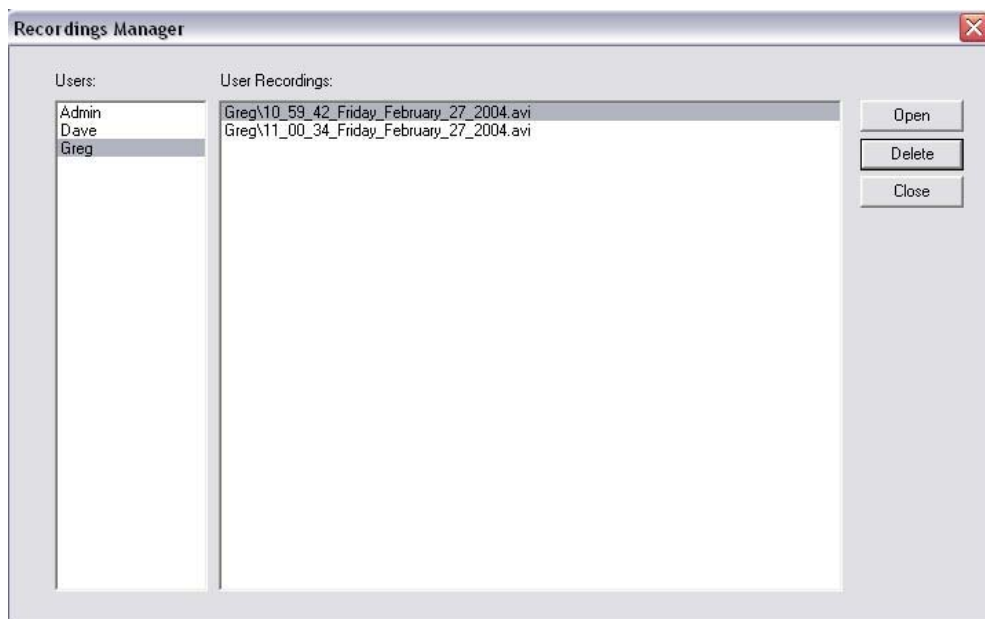


Figure 11 - The Recordings Manager Dialog.

An example of a *Video Format* (*Video Recordings->Video Format*) dialog is shown below. However, this screen is device dependant and may vary in look and functionality for different devices. With this dialog active, a user can specify the resolution and pixel depth of video to be captured. This adversely affects the quality and size of captured video files. A resolution of 320 x 240 and a pixel depth of RGB 24 are recommended.

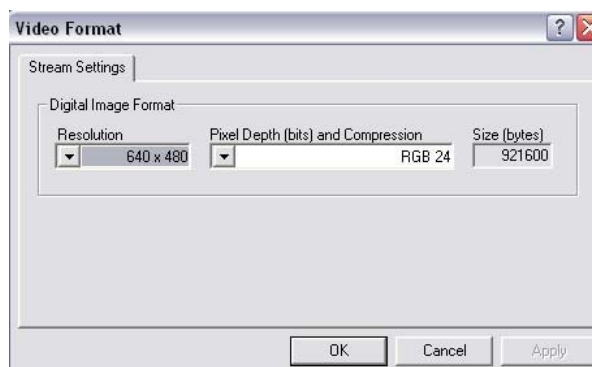


Figure 12 - Example of a Video Format dialog.

An example of a *Video Source* (*Video Recordings->Video Source*) dialog is shown below. As with *Video Format* this screen is also device dependent. With this dialog active a user can select the video device source used for capturing video. Depending on the device, other settings such as brightness, contrast and zoom can also be adjusted from this dialog.

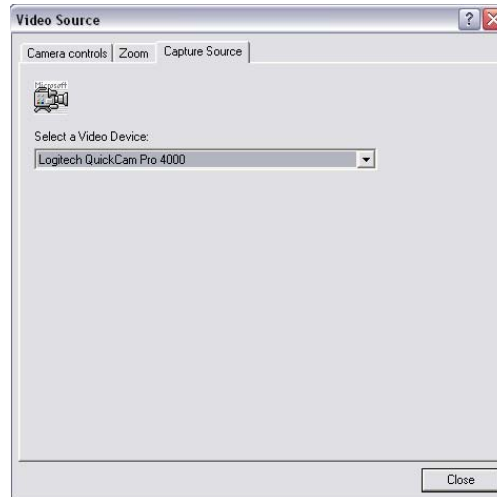


Figure 13 - Example of a Video Source dialog.

The *Video Compression Codec* (*Video Recordings->Compression*) dialog allows the user to specify the video compression codec used when capturing video. The selected compression codec influences the performance of the application during sessions, as well as the quality and size of the captured video. A recommended codec is the Microsoft MPEG-4 Video Codec V3.

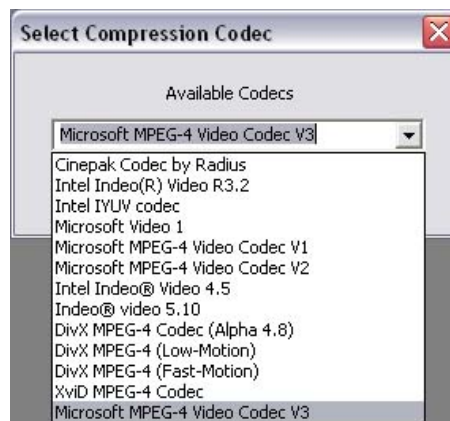


Figure 14 - Video Compression Codec Selection Dialog.

2.5 Shortcut Keys

Key(s)	Function
Session	
F5	Start Session.
P	Pause/Unpause Session.
E	Mark Event.
G	Stop Game.
S	Stop Session.
User Administration	
A	Administration.
System	
Ctrl + Shift + B	Show/Hide Status Bar.
Q	Activate Quick Launch Menu.
F1	Display Help.
Video Recordings	
R	Open Recordings Manager.

3 Games

3.1 Jolly Jumpin Jellies

The game consists of five levels, each with an increasing level of difficulty.



Figure 15 – The Jolly Jumpin Jellies game.

The main objective of the game is to catch all seven of the Jolly Jumpin Jellies in the shortest amount of time. To catch a jelly, the character must touch the jelly. As soon as a jelly is caught, it will disappear and a small icon will be added in the progress bar to indicate the number of jellies caught.

The character also uses up his stamina while walking or running. Each time a jelly is caught, his stamina is regenerated with a certain amount. The stamina of the character can also be regenerated by interacting with any of the interactive objects in the terrain, or by simply letting the character rest by not walking or running.

Each time the character is near an item, with which it can interact, an icon showing the item is displayed in the top left corner. The character can interact with this usable item, by pressing the button marked as number 1 in Controllers.

The time elapsed is also in the bottom of the screen. A lower time will indicate a better score.

3.1.1 Controllers



Figure 16 – Logitech Wingman Force 3D



Figure 17 – Logitech RumblePad

3.1.1.1 Game Play

1. Select / Unselect interactive item.
2. Nothing
3. Nothing
4. Toggles run/walk modes. When held down while moving forwards/backwards the character will run, and when released the character will walk.
5. Activates the menu.
6. Controls the movement of the main character. When pressing left or right the character will turn in that direction. Pressing forward or backward will cause the character to walk in that direction.

3.1.1.2 Menu Navigation

1. Select highlighted menu option.
2. Scroll down
3. Scroll up
4. Nothing
5. Return to previous menu, and exit when main menu is reached.
6. Nothing.

3.1.2 Keyboard Controls

Key(s)	Function
Menu Navigation	
Up & Down arrows	Navigate the menu items.
Enter	Selects a menu item.
Escape	Return to a previous menu, or exit when main menu is reached.
Game Play	
Arrow keys	Control the movement of the character.
Escape	Activate the menu
View Controls	
Ctrl + Shift + F	Display statistics
Alt + Enter	Switch to full screen mode
C	Switch camera view between first and third person
O	Switch to world orbit camera. (Use mouse to navigate)
Setup Controls	
T	Reset Inertia Cube
I	Activate/Deactivate the Inertia Cube.
Program Controls	
Alt + F4	Exit the program
M	Toggle Game Music On/Off

3.2 StreetLuge

The StreetLuge game has five levels, each with an increased level of difficulty. To advance to a next level the player must beat a predetermined time, which is decreased as the level of difficulty increase.



Figure 18 - The *StreetLuge* game.

The display on top of the screen indicates the current speed of the rider as well as the elapsed time. The time which must be beaten to advance to the next level is displayed in the top right corner.

The objective of the game is to reach the finish line as fast as possible, while staying on the road. When the rider leaves the road for more than 5 seconds, the game will reset the rider to the last position where he left the track.

3.2.1 Controllers



Figure 19 Logitech Wingman Force 3D



Figure 20 Logitech RumblePad

3.2.1.1 Game Play

1. Nothing
2. Nothing
3. Nothing
4. Nothing
5. Activates the menu.
6. Controls the movement of the character. When pressing left or right the rider will turn in that direction. Pressing forward will accelerate the rider. Pressing backward will cause the rider to reduce speed.

3.2.1.2 Menu Navigation

1. Select highlighted menu option.
2. Scroll down
3. Scroll up
4. Nothing
5. Return to previous menu, and exit when main menu is reached.
6. Nothing.

3.2.2 Keyboard Controls

Key(s)	Function
Menu Navigation	
Up & Down arrows	Navigate the menu items.
Enter	Selects a menu item.
Escape	Return to a previous menu, or exit when main menu is reached.
Game Play	
Left & Right arrows	Control the movement of the rider.
Down arrow	Slows the rider.
Escape	Activate the menu
View Controls	
Ctrl + Shift + F	Display statistics
Alt + Enter	Switch to full screen mode
C	Switch camera view between first and third person
O	Switch to world orbit camera. (Use mouse to navigate)
Setup Controls	
T	Reset Inertia Cube
I	Activate/Deactivate the Inertia Cube.
Program Controls	
Alt + F4	Exit the program
M	Toggle Game Music On/Off

4. About 5DT

5DT (Fifth Dimension Technologies) is a high technology company specializing in Virtual Reality (VR). 5DT develops, produces and distributes VR hardware, software and systems.

5DT's main focus is Virtual Reality Training Systems and Virtual Reality Peripherals.

For more information about 5DT's products and activities please visit our web site at: <http://www.5dt.com/>

Hardware by 5DT

- 5DT Data Glove Series
- 5DT Head Mounted Display (HMD) Series
- 5DT Motion Base Series

Training Systems (Computer Based Training - CBT) and Training Simulators by 5DT:

Automotive

- Driving Training Simulator Series
- Road Safety Training System

Aviation

- Airspace Visualizer
- Air Traffic Control (ATC) Training Simulator
- Experimental Avionics Testbed
- Flight Visualization System
- Unmanned Aerial Vehicle (UAV) Training Simulator

Defense

- Air Defense Training Simulator
- Fiber Optic Guided Missile Training System and Training Simulator
- Integrated Virtual Battlefield
- Rocket Launcher Training Simulator
- Stand-Off Weapon Training Simulator and Visualizer

High Voltage

- High Voltage Line Inspection Logging System
- High Voltage Line Inspection Training Simulator
- High Voltage Line Inspection Training System (CBT)
- High Voltage Line Repair Training System
- High Voltage Line Visualization System
- High Voltage Yard Training Simulator

Industrial

Crane Operator Training Simulator

Marine/Naval

Marine Technology Demonstrator

Unmanned Underwater Vehicle (UUV) Training Simulator

Medical

Bronchoscope Training Simulator

Exposure Treatment Phobia Simulator

Gastroscope Training Simulator

Tele-Rehabilitation (TR) System

Mining

Underground Mining

Continuous Miner Training Simulator

Long Wall Training Simulator

Roof Bolter Training Simulator

Surface Mining

Haul Truck Training Simulator

Shovel Training Simulator

Wheeled Loader Training Simulator

Dragline Training Simulator

Visualization

Flight Visualization System

Flow Visualization System

High Voltage Line Visualization System

Other

Virtual Landscape Generation Technology

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