

TrackSkull User Guide v1.1

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Introduction

TrackSkull has helped many haunters create more realistic animatronic shows by allowing them record real-life motion. Everything that you record in TrackSkull can easily be imported into Brookshire Software's VSA.

TrackSkull was developed as a 'tool' to help the home haunters with their new love building home make 3-Axis skulls. The initial idea was to record input from a joystick and export this information to VSA. Since then, we've added support for the TrackIR system, live output with "puppet mode", and other small tweaks and feedback systems. These additions have caused TrackSkull to go beyond being a simple 'tool' to a full-fledged software application.

As with all my software, TrackSkull will forever be an evolving application. Users are always welcome to submit ideas to nelson@monkeybasic.com. Enjoy!

Table of Contents

Introduction.....	1
Overview	3
Input Devices	4
TrackIR Camera (Version 4:Pro).....	4
Installation:	4
Where to buy:	4
Joysticks	5
Installation:	5
Where to buy:	5
Filtering and Options	6
Centering (TrackIR only).....	6
Filtering	6
Smoothing (TrackIR only).....	7
On Screen Feedback.....	8
TrackIR Display.....	8
Joystick Feedback.....	8
3D Cube.....	9
Puppet Mode.....	10
Setup	10
Controller Settings:	10
Servo Settings:.....	11
Recording.....	12
Setup	12
Audio	12
Adjustment.....	12
Export Recording to VSA	13
General.....	13

Overview

The screenshot shows the TrackSkull software interface with the following callout boxes and their descriptions:

- Stop Recording / Playback**: Points to the STOP button.
- Start Recording**: Points to the REC button.
- Replay Recording**: Points to the REPLAY button.
- Export Recording for use in VSA**: Points to the VSA EXPORT button.
- Add Audio to playback while recording**: Points to the speaker icon.
- Camera Connect and Centering**: Points to the Camera dropdown and Center button.
- Joystick Connect**: Points to the Disconnect button.
- Recording Time Adjustment (Improves sync...)**: Points to the Time Setting section.
- Camera and Joystick Filters / Smoothing**: Points to the Input Tweaks section.
- Record Time and Frame Count**: Points to the 0:08 | Frames 269 status bar.
- Servo Settings (channel, max, min, default)**: Points to the Servo Settings box.
- Puppet Mode section, (Controller Type, Port, Baud Rate)**: Points to the Puppet Mode section.
- Joystick Axis feedback**: Points to the Axis (Joystick) sliders.
- Joystick Button feedback**: Points to the Buttons (Joystick) section.
- TrackIR Camera Display**: Points to the central black display area.
- Camera OR Joystick 3D feedback**: Points to the 3D model on the right.

Input Devices

The following devices can be used for acquiring real-life positioning data that can be used by TrackSkull. The devices that are supported are the NaturalPoint TrackIR 4:Pro, TrackIR 5, and any Windows compatible USB joystick.

TrackIR Camera (Version 4:Pro)

The NaturalPoint TrackIR camera system consists of a special IR camera and reflective sensors you wear that captures your own heads position (up to 6 Degrees of freedom).



Installation:

Install the drivers and software that shipped with the TrackIR system. TrackSkull will access the camera via these drivers.

Next time you open TrackSkull, it will automatically detect and connect to the camera. If not, you can select the camera from the "Camera" dropdown selection on the left-hand side.

Attach the reflective sensors to your hat and stand/sit in front of the camera, you should see 3 green dots within the TrackIR display within TrackSkull, these are the 3 reflective sensors on your hat.



Where to buy:

<http://www.naturalpoint.com/trackir/02-products/product-TrackIR-4-PRO.html>

Joysticks

Any USB joystick that Windows recognizes should work with TrackSkull.

For example: Logitech Extreme 3D Pro (pictured on the left) or Logitech Attack 3 (on right)



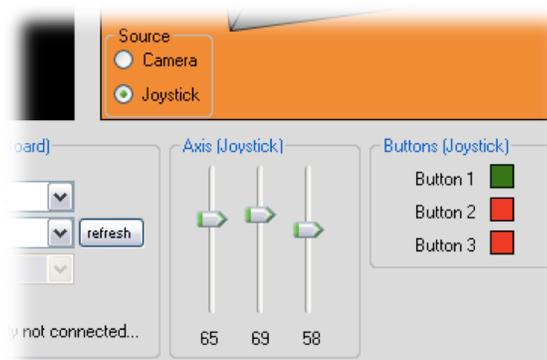
The advantage of the Extreme 3D is TrackSkull can utilize the “Twisting” handle action of the joystick rather than the throttle.

Installation:

Typically Windows will automatically detect and install native drivers for Joysticks. If you have any trouble, check with the joystick manufacturer for specific drivers.

Next time you open TrackSkull, it will automatically detect and connect to the Joystick. If not, you can click [Connect] from the “Joystick” box on the left-hand side.

You should see the 3 Axis and 3 boxes on the bottom right-hand corner within TrackSkull respond to your joystick movements.



Where to buy:

[Logitech Extreme 3D](#) – Great twist handle feature.

[Logitech Attack 3 Joystick](#) – A little cheaper but works great.

Filtering and Options

Using a Joystick or the TrackIR system sometimes doesn't give you the smoothest of motions. That's where filters come in!

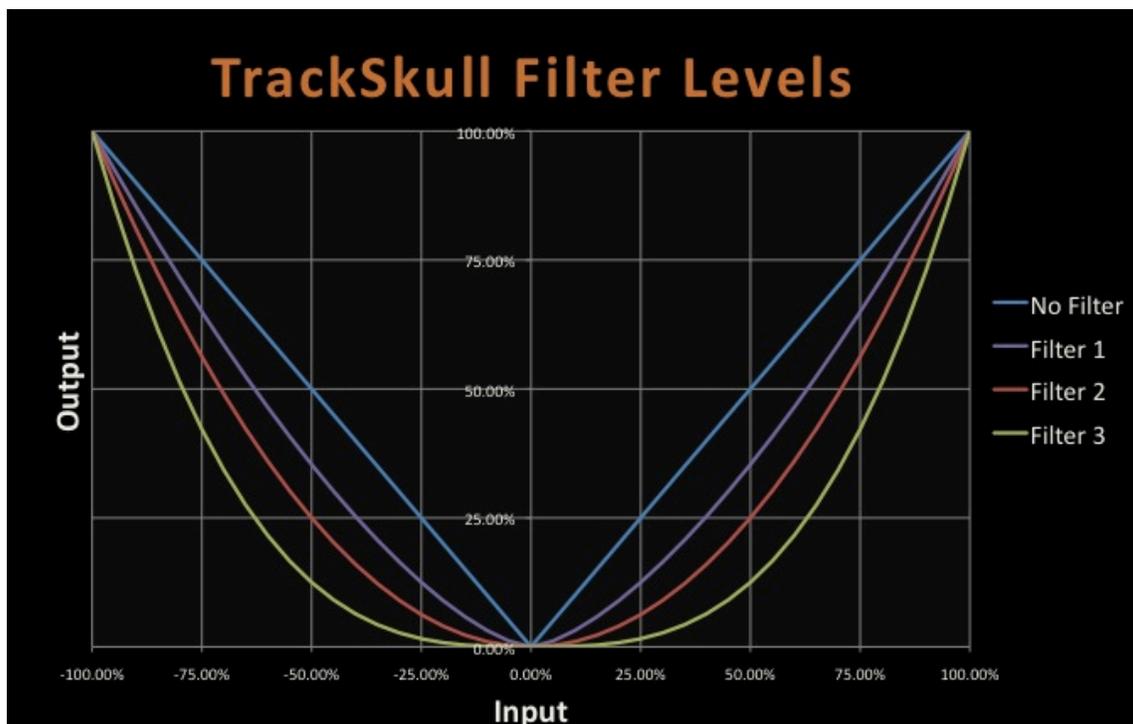
Centering (TrackIR only)

Centering is pretty simple. When using the TrackIR system, you need to tell TrackSkull what you consider "centered". In other words, what you want the default (or at rest) position of your head to be.

To do this, look straight ahead and hold still. Then click the [Center] button under the "Camera" box on the left-hand side. That's it!

Filtering

Filtering gives you the ability to have a more stable center position and more controlled movements. Filtering can apply to the TrackIR camera or joystick. There are 3 levels of filtering available. The picture below shows a representation of what is happening between the input (joystick or TrackIR) and what TrackSkull is using. This option can be found on the lower left-hand side.



For example: Filter level 3 requires you to move almost 20% before any movement is seen by TrackSkull.

Smoothing (TrackIR only)

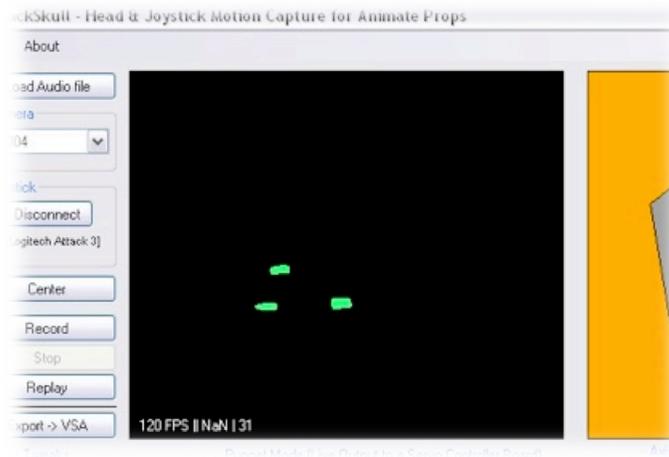
To put it simply, this cleans up the output from the TrackIR system. If you experience any type of twitching or instability when using the TrackIR system, increasing Smoothing can help. This option can be found on the lower left-hand side.

On Screen Feedback

TrackSkull offers a few ways to see what is being outputted from the TrackIR system or joystick. These are to aid you on what will be exported to VSA or sent to your servo controller board directly.

TrackIR Display

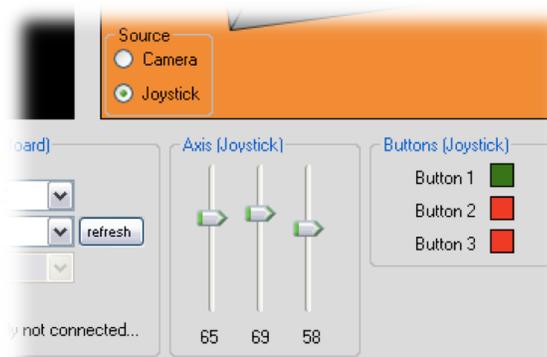
The TrackIR display will show you what the TrackIR camera is seeing. You should see 3 green dots within the display; these are the 3 reflective sensors on your hat. If you see additional green artifacts, the camera may be seeing other reflective surfaces or bright lights.



For best results, be sure to check that your head movements remain within the display window. If not, move back, away from the camera.

Joystick Feedback

You should see the 3 Axis and 3 boxes on the bottom right-hand corner within TrackSkull respond to your joystick movements.



3D Cube

The 3D cube is meant to represent 3 axis of freedom; Nod, Tilt, and Rotate. This gives you a visual representation of how the 3 different axes interact with one another. The source of the 3D cube can come from either the TrackIR system or joystick. The selection can be made at the bottom left-hand side of the 3D cube box (orange box on the right side).



Puppet Mode

Puppet Mode allows for you to control your servos directly from TrackSkull without having to first import a recording into VSA. Many users refer to it as “live” feedback.

For example, you can control a 3-axis skull by moving around a joystick or have it mimic your own head’s movements.

Setup

What you need to know:

- What type of servo controller (miniSSC, SSC32, DMX, etc...)
- How to access it (Com port, baud rate, etc...)
- The parameters of each servo (address, max, min, default positions)

NOTE: IF YOU ARE UNSURE, BUT HAVE VSA WORKING PROPERLY, YOU CAN FIND THESE SETTING THERE BY HITTING F3.

Controller Settings:

To setup “Puppet Mode”, select your Controller, Port & Baud Rate (if applicable)

The image shows two overlapping windows. On the left is the 'Puppet Mode (Live Output to a Servo Controller Board)' control panel. It has a 'Controller' dropdown menu set to 'DMX BoC', a 'Port' dropdown menu set to 'COM2', and a 'Baud Rate' dropdown menu set to '19200'. A 'Connect' button is visible, with the text 'Currently not connected...' next to it. On the right is the 'Settings' dialog box, which has tabs for 'Device Settings', 'Timing Settings', 'Port Settings', and 'Audio Settings'. The 'Device Settings' tab is active, showing a table of servo configurations. The table has columns for Track, Name, Type, Port, Addr, +Value, -Value, Default, and Color. The first two rows are highlighted with red boxes: the first row (Track 0, Name Nod, Type SSC32 Servo, Port COM3, Addr 0, +Value 2500, -Value 500, Default 1500) and the second row (Track 1, Name Tilt, Type SSC32 Servo, Port COM3, Addr 1, +Value 2500, -Value 500, Default 1500). A red arrow points from the 'Type' column of the first row to the 'Controller' dropdown in the Puppet Mode panel. A yellow arrow points from the 'Port' column of the first row to the 'Port' dropdown in the Puppet Mode panel. A large watermark 'VSA Settings' is overlaid on the bottom right of the Settings dialog box.

Track	Name	Type	Port	Addr	+Value	-Value	Default	Color
<input checked="" type="checkbox"/>	Nod	SSC32 Servo	COM3	0	2500	500	1500	Blue
<input checked="" type="checkbox"/>	Tilt	SSC32 Servo	COM3	1	2500	500	1500	Blue
<input checked="" type="checkbox"/>	Rotate	SSC32 Servo	COM3	2	2500	500	1500	Blue
<input type="checkbox"/>	Device #3	MiniSSC Servo	NONE	3	254	0	127	Blue
<input type="checkbox"/>	Device #4	MiniSSC Servo	NONE	4	254	0	127	Blue
<input type="checkbox"/>	Device #5	MiniSSC Servo	NONE	5	254	0	127	Blue
<input type="checkbox"/>	Device #6	MiniSSC Servo	NONE	6	254	0	127	Blue
<input type="checkbox"/>	Device #7	MiniSSC Servo	NONE	7	254	0	127	Blue
<input type="checkbox"/>	Device #8	MiniSSC Servo	NONE	8	254	0	127	Blue
<input type="checkbox"/>	Device #9	MiniSSC Servo	NONE	9	254	0	127	Blue
<input type="checkbox"/>	Device #10	MiniSSC Servo	NONE	10	254	0	127	Blue
<input type="checkbox"/>	Device #11	MiniSSC Servo	NONE	11	254	0	127	Blue
<input type="checkbox"/>	Device #12	MiniSSC Servo	NONE	12	254	0	127	Blue
<input type="checkbox"/>	Device #13	MiniSSC Servo	NONE	13	254	0	127	Blue
<input type="checkbox"/>	Device #14	MiniSSC Servo	NONE	14	254	0	127	Blue

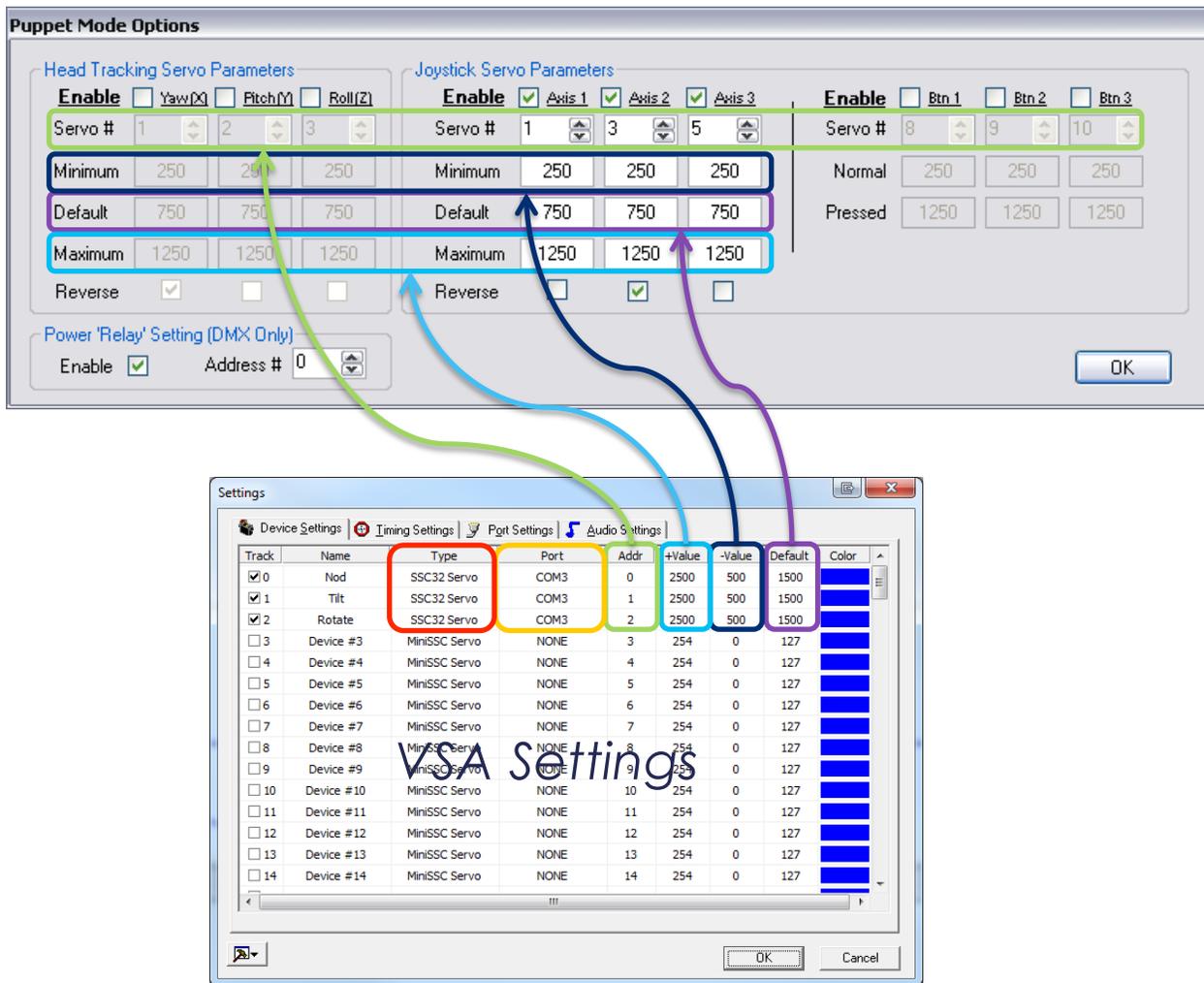
Servo Settings:

To setup your servos, click the big button labeled [Servo Settings] under the Puppet Mode box.

You will need to 'enable' each axis or button of the TrackIR system or Joystick that you wish to use for sending position data to your servo controller.

Then set the Servo #, Minimum, Default & Maximum servo position value.

NOTE: IF THE SERVO IS RESPONDING IN THE REVERSE DIRECTION AS EXPECTED, CHECK THE "REVERSE" CHECKMARK FOR THAT SERVO.



The [Power 'Relay' Setting] option is used when specific DMX controllers (such as the Skulltronix Board of Chuckee) have a specific address used to turn ON and OFF power to the servos. Consult your servo controller if this is required.

After setting up your servos, click [Connect] to connect to your servo controller.

Recording

Recording quite simply records the movements made with the TrackIR system or joystick. The recording can then be re-played in TrackSkull or exported for use in VSA.

Setup



To record your movements, click the large orange record button **[REC]**.

To stop recording, click the large orange stop button **[STOP]**.

To replay what you just recorded, click the large orange replay button **[REPLAY]**.

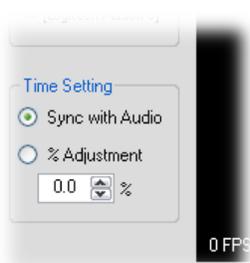
NOTE: IF YOU WISH TO USE "PUPPET MODE" WHILE RECORDING, MAKE SURE TO CONNECT TO YOUR SERVO CONTROLLER FIRST.

Audio

You can also play audio when recording to help you synchronize movements. To do this, simply click the large blue speaker button and select the MP3 or Wave file you wish to use.

NOTE: IT IS BEST TO USE THE SAME AUDIO FILE THAT YOU WILL BE USING IN VSA (IF APPLICABLE) TO ENSURE SYNCHRONIZATION.

Adjustment



Occasionally recording can become out of sync. Such as, your movements will occur before or after the point in the audio where you wanted it to occur.

By using "Time Settings", we can help resolve these issues. See the chart below for an explanation.

Setting	Result
Sync with Audio {Default}	Rather than use your PC's internal clock to keep timing, we look at the play time of your audio to keep in sync with.
% Adjustment	Positive Percentage (%) = extended in VSA or TrackSkull Replay (slower) Negative Percentage (%) = shortened in VSA or TrackSkull Replay (faster)

Export Recording to VSA

Now that you've created a great performance, how do we get it out of TrackSkull and into VSA? Here's how.

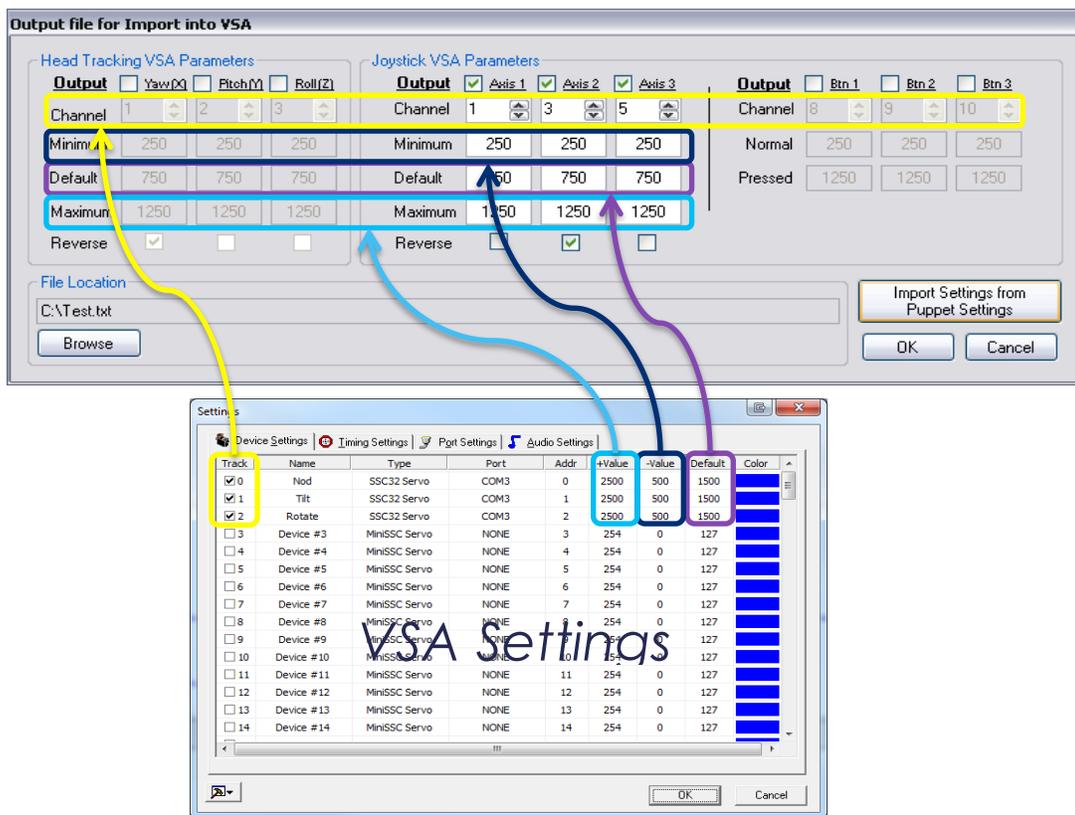
General

After your recording is complete, simply click the large blue button labeled [VSA EXPORT].

You will need to 'enable' each axis or button of the TrackIR system or Joystick that you wish to export from TrackSkull.

Then set the Channel #, Minimum, Default & Maximum servo position value.

NOTE: IF THE SERVO IS RESPONDING IN THE REVERSE DIRECTION AS EXPECTED IN VSA, CHECK THE "REVERSE" CHECKMARK FOR THAT CHANNEL.



NOTE: IF YOU WERE USING "PUPPET MODE", YOU CAN USE THE "IMPORT SETTINGS" BUTTON TO COPY OVER YOUR PUPPET MODE SETTINGS.

IMPORTANT: MAKE SURE YOUR VALUES ARE EXACTLY THOSE OF VSA, IF NOT, GENERIC IMPORT ERRORS WILL BE GIVEN BY VSA.