



**3D Immersive
Workstation**

personal space *station*



***a complete interactive virtual reality system
on your desk***

- co-located intuitive 3D interaction
- high resolution 3D visualization:
autostereoscopic or polarization
- seamless integration of 2D and 3D
- complete turnkey integrated
hardware and software solution
- six degrees of freedom optical tracking
- compatible to most 3D applications

virtual reality made easy

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personal space
technologies

Personal Space Station - PSS

The PSS is a co-located 3D visualization and 3D interaction workstation, a VR system that enables the user to interact with the virtual world in a direct and intuitive way. All interactive 3D tasks are realized directly by using graspable input devices while traditional 2D interaction tools like mouse and keyboard ensure seamless integration of 2D and 3D tasks. The PSS is a complete flexible turnkey virtual reality solution.

The PSS will allow you to interact with images in ways you've only imagined!

The PSS explained

The user looks at the screen via a mirror. This enables the user to bring his hands into the same environment as the virtual 3D-objects without interrupting the visual image. The user is invited to grab, hold and interact with the data. To facilitate interaction highly accurate wireless optical tracking is used. Interaction controllers are used to position an object in 3D with six degrees of freedom.

6DOF optical motion tracking

The Personal Space Tracker (PST) is a sub mm accurate and fast six degrees of freedom optical tracking system.

Some advantages:

- arbitrary objects can be turned into tracked objects
- no calibration
- robust against electric and magnetic interferences
- wireless passive targets that do not require batteries
- easy training of custom built tracking devices

A choice of high resolution 2D/3D screens

In the standard PSS a user can choose between normal and stereographic viewing. In order to meet your requirements, the PSS is available in a variety of screen sizes and stereo technologies.

Complete flexible solution

The PSS is a complete turnkey immersive desktop VR solution, including all hardware and software to immediately start working. High quality standard third party components are used for the PSS. Therefore the PSS can easily be expanded, upgraded, maintained and configured to your specific needs.

3D interaction next to 2D tools

In the PSS a user has access to 3D interaction tools as well as traditional 2D tools, like a mouse and keyboard. Depending on the task at hand the user selects the right tool (e.g. menu operations using 2D tools, positioning a data set using 3D tools).

Optimization of existing VR infrastructure

The PSS can be used stand alone, as part of a complete network, in combination with other VR systems and with external computing power. This maximizes the usability of the PSS as well as the existing VR infrastructure.

VR API

The PSS comes with our lean and powerful VR-API; PVR, PVR allows users to focus on their application and have PVR deal with the VR issues. PVR is suited for both developers and users. Furthermore PVR users do not need specific VR knowledge.

technical data - standard PSS¹

design	co-located immersive 3D visualization and 3D interaction workspace that ensures highly intuitive interaction. the PSS, that is placed on a table, embeds all components into a turnkey and easy to transport system	
computer	integrated, flexible, high performance networked PC system. Standard system (minimal): Intel Core Duo, 750 GB hard disk, Gforce 8800 or Quadro fx 4500 ² , 2 GB memory, DVD-RW (upgrades on request).	
optical tracker	Personal Space Tracker ³	
	refresh rate	60Hz
	degrees of freedom (DOF)	6 (position and orientation) at least 15 independent 6DOF bodies
	# of targets (60fps)	built-in IR flash
	lighting	normal indoor lighting conditions
	ambient conditions	60 degrees
	field of view	< 1 mm
	precision ⁴	< 1 deg
	calibration	pre-calibrated unit easy calibration of custom built targets
	6DOF target calibration	640x480
	no. of pixels	x,y, z positional coordinates and orientation angles, rotation matrix or quaternions
	output	
head tracking	optional ⁵	
3D screens	standard: 24" wide screen polarization - 2D 1920 X 1200 - 3D 1920 X 600 optional: 19" auto stereoscopic (glasses free) - 2D 1280 X 1024 - 3D 640 X 1024 22" wide screen polarization - 2D 1680 x 1050 - 3D 1680 x 1050 other screens available on request (e.g. 22" CRT, active stereo)	
mirror	surface mirror (250 X 750 mm) semi transparent mirror is optional	
3D interaction devices	2 pre-trained interaction devices	
foot switches	3 pedal system	
software	VR API: PVR ⁶ toolkit: Proteus ⁷ tracking and training software demo applications	
software support	standard interfacing to Trackd, VRPN SSD, PVR and most VR API's and VR programs	
plug ins	optional industry solutions available: • Petrel Plug in (oil and gas industry) • Amira Plug in (scientific and industrial visualization)	
size	erect 70* 70 *85 cm transport size: 70 * 85 * 30	
weight	approx. 25 kg	

¹preliminary specifications, specifications are subject to change without notice

²depending on screen used

³for full details see the Personal Space Tracker documentation.

⁴precision measured using 7mm markers at a distance of 60 cm

⁵depending on screen used

⁶other API's can be used as well

⁷Proteus is a proprietary VR toolkit that allows users to immediately start working with 3D and 4D data

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