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5DT <Fifth Dimension Technologies>

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5DT Releases New Head Mounted Display (HMD) Series

5DT <Fifth Dimension Technologies>, a world pioneer in Virtual Reality (VR) peripherals and training systems, today released a new advanced Head Mounted Display (HMD) Series.

The series includes:

- **5DT HMD 800-26**
  800x600 Resolution, Liquid Crystal on Silicon (LCOS) technology, 26° Field of view (FOV) HMD

- **5DT HMD 800-40**
  800x600 Resolution, Organic Light Emitting Diode (OLED) technology, 40° FOV HMD

- **5DT Virtual Binoculars 800-26**
  800x600 Resolution, LCOS, 26° FOV Generic Virtual Binoculars

- **5DT Virtual Binoculars 800-45**
  Effective 600 Circular Resolution, OLED, 45° FOV Custom Virtual Binoculars

- **5DT Virtual Laser Range Finder 800-45**
  Effective 600 Circular Resolution, OLED, 45° FOV Custom Virtual Laser Range Finder (V-LRF)

- **5DT Virtual Night Vision Goggles 800-45**
  Effective 600 Circular Resolution, OLED, 45° FOV Custom Virtual Night Vision Goggles (V-NVG)

- **5DT Virtual Monocular Display 800-45**
  Effective 600 Circular Resolution, OLED, 45° FOV Virtual Monocular Display

A Head Mounted Display (HMD) consists of two miniature displays that are mounted in front of the user's eyes with a headmount. Special optics enable the user to view the miniature screens up close (near-eye). This provides the same result as when big screens are viewed at a distance. The HMD also contains two headphones, so that the user may also experience

the virtual environment aurally. The HMD is normally fitted with a Head Tracker. The position (x, y, z) and orientation angle (yaw, pitch, roll) of the user's head is tracked by means of the Head Tracker. As the user looks around, the position and orientation information is continuously relayed to the host computer. The computer calculates the appropriate view (virtual camera view) that the user should see in the virtual environment, and this is displayed on the miniature displays. For example, let's assume that the virtual environment is the inside of a car and that the user is sitting behind the steering wheel. If the user looks forward, the head tracker will measure this orientation and relay it to the computer. The computer would then calculate the forward view and the user will see the windshield, wipers and hood of the car (the user will obviously also see the outside world, or out the window (OTW) view). If the user looks down, the computer will present a view of the steering wheel. If the user looks further down, the accelerator pedal and brake pedal will be shown. The orientation information may also be used to experience stereo and 3-D sound. If the user looks straight ahead, he/she will hear the engine noise of the car. The volume will be equal for the right and left ear. If the user looks to the left, the volume of the engine noise will be higher in the right ear and lower in the left ear. Trackers that only track the orientation (yaw, pitch, roll) are referred to as 3 degrees of freedom, or 3 DOF trackers, while trackers that also track the position (x, y, z) are referred to as 6 DOF trackers.

HMDs are generally used in Simulation and Visualization applications. The HMD immerses the user in the virtual environment, that is, the user feels as if he/she is actually in the environment.

The 5DT HMD 800-26 offers 800x600 Resolution (Liquid Crystal on Silicon [LCOS] technology) and a 26° FOV. This is 5DT’s economic HMD model.

The 5DT HMD 800-40 offers 800x600 Resolution (Organic Light Emitting Diode [OLED] technology) and a 40° FOV. The unit also has a 3m long cable. This is 5DT’s high end HMD.

Both units offer superior sound quality packaged in a sleek, comfortable and extremely light headmount design.

The 5DT HMD Series also includes Virtual Binoculars (V-Bs), Virtual Laser Range Finders (V-LRFs), Virtual Night Vision Goggles (V-NVGs) and Monocular Displays (MDs).

Virtual Binoculars are used with Ship Bridge Simulators, Air Traffic Control (ATC) Tower Simulators and Observer Post (OP) Training Simulators. 5DT offers two solutions, a generic solution and a very realistic custom option where the microdisplays are mounted into the shell of real binoculars. The image form factor of the generic solution is rectangular (4:3 ratio). The image form factor of the custom solution is circular, as is seen in real binoculars.

Virtual Laser Range Finders (V-LRFs) are used to teach troops how to operate laser range finders in general and how to apply laser range finders in battlefield scenarios. Apart from offering the Virtual Laser Range Finder unit (hardware), 5DT also supplies training software for LRF training.

Virtual Night Vision Goggles (V-NVGs) are used by helicopter and fixed-wing aircraft pilots during simulation training. 5DT also supplies state-of-the-art imaging solutions for NVG

images. This includes special effects like NVG blooming, halos, light pools, shadows and sensor noise.

Monocular Displays are used in operational environments where text and imagery are overlaid on real images, e.g. maintenance applications where the user wants both his/her hands free.

'Our latest HMD Series addresses most of the problems that were experienced by simulator users and system integrators to date. They need a wide field of view and a crisp image packaged in a comfortable lightweight headmount with an interface cable that is long enough to not restrict movement. We have now reached a performance level where the focus will move away from the HMD to the realism and functionality of the application software.' Said Mario Schehle, Virtual Reality Hardware Division Manager of the 5DT Group.

'With our HMDs, Virtual Binoculars, Virtual Laser Range Finders and Virtual Night Vision Goggles we now offer a full range of hardware products for military simulations. We also have individual simulations for binoculars, LRF and NVG training. Our next step is to integrate these applications into our Integrated Virtual Battlefield application.' Said Paul Olckers, CEO of the 5DT Group.

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Electronic Resources:

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Data Sheet: http://www.5dt.com/downloads/hmd/5DTHMD800Datasheet.pdf

Images: www.5dt.com/HMDImages.html

Virtual Reality Technology Primer:
www.5dt.com/virtualinfo.html

Virtual Reality is a technology that needs to be experienced. We would therefore like to invite you to Booth # 1062 to experience this exciting technology yourself.