Document	***Description***	***Author/Date***
TDVision comparison White Papers.	Explains TDVision technology comparing versus other 3D companies	MRGN/Feb 06.

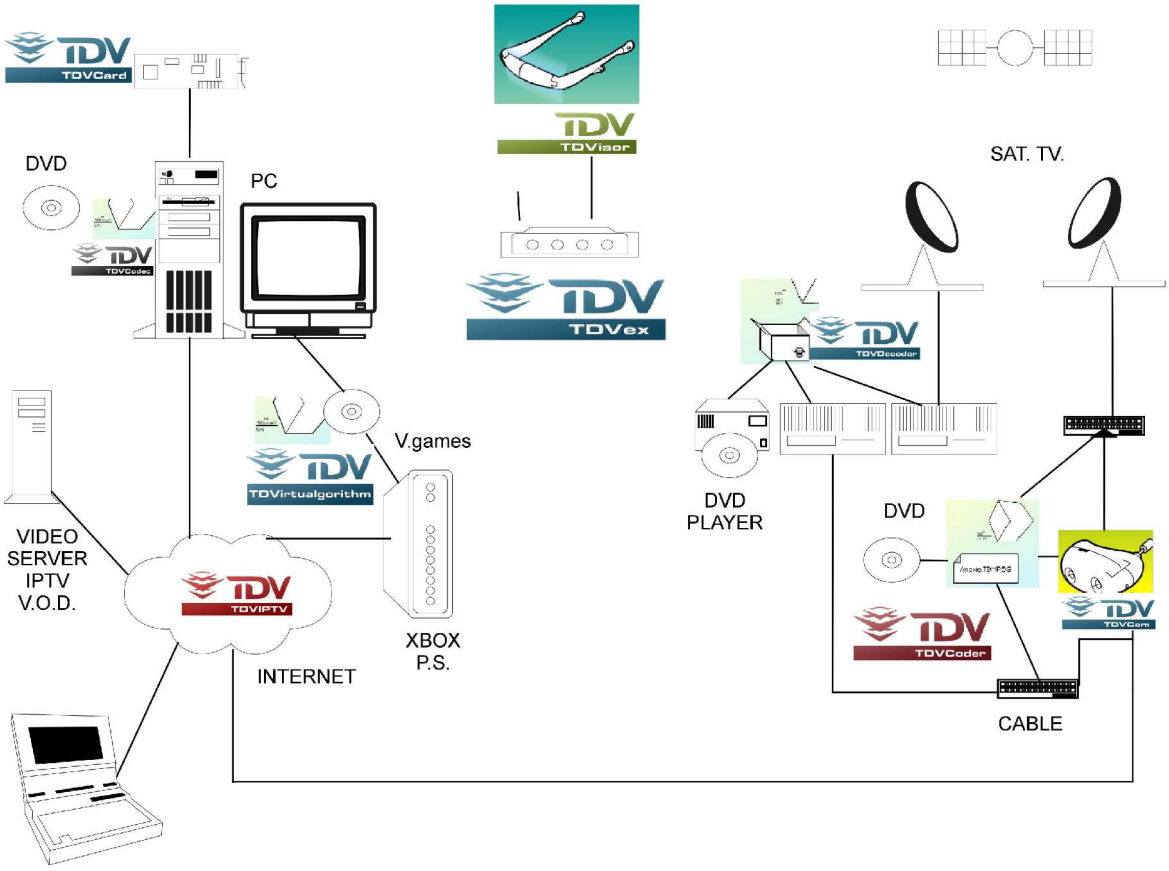
Objective: To mention the key differences of our technology and how this differences make TDVision's technology an active part of the digital convergence like no other 3D company as of today.

Here we can see a bidimensional technology map showing the different technologies out there in the market.

Contents of this document:

- TDVision technology map
- Comparison chart
- Comparison Map
- Description of other technolgies

TDVision technology map:



As we can see, TDVision's technology works in different layers:

- Display layer
- Decoding layer
- Transmission, storage and deploy layer
- Processing and encoding layer
- Acquisition layer

TDVision has created all the software, hardware, firmware and interfaces to integrate a completely different 3D infrastructure that can simultaneously display 2D and 3D, deploy over current 2D infrastructures and present in true 3D emulation.

All the other technologies work in only one layer of the technology map.

In particular, I-O systems only works on the Display layer and has no active participation in other layers.

TDVision Systems Inc.

Comparison Sheet

	TDVision	**Red/Blue Polarization (Spykids 3-D)**	**Shutter Glasses like Barco/Vrco systems**	**Vertical/ Horizontal Polarization (Chicken Little 3-D)**	**Auto-Stereoscopic like Sharp3d laptop and ddd, Samsung 3-D cellphone**	**Other Stereoscopic (3d field sequential 3d interlaced like i-o systems, Emagin, Icuiti)**
3-D Content	**Image uses two displays, one for each eye (stereoscopic)**	Image is created by polarizing two cameras lens with red and blue color	Image is sent to the screen and needs the shutter glasses (active multiplexing or polarizer) and alternates quickly between right and left	Image is generated through filtering content with vertical and horizontal lines	Image is a layered filter (Lenticular lense) over TV/monitor screen, eye views image at angle	This technique divides the full frame in either vertical or horizontal even and odd lines, i.e.: assigning the even for left and odd for right.
Eye Apparel	**Viewer uses a TDVISOR**	Viewer is required to wear Red/Blue glasses to filter image	Viewer needs shutter glasses to view 3-D	Viewers need visor to separate images	No Visor	Viewer is required to wear a visor
Needs a Monitor/TV	**NOT NECESSARY (optional)**	Yes. 3-D video production is required to view. The simultaneous projection of both images (red and blue-LR) is required.	Yes. Needs an external device with specific refresh rate.	Yes. Must view an external projection white screen, can not be projected on a TV/monitor, as light is required to be polarized.	Yes. TV/monitors must be modified, all existing monitors are useless for this display technology.	No.

TDVision Systems Inc.

Comparison Sheet

Side Effects	**NONE**	Various including: Headaches Blurred vision Restricted length of time to wear glasses	Various including: Headaches Fatigue after prolonged use (35 minutes) Extensive stress in the eye and brain. Double vision.	Various including: Headaches Fatigue Forces Brain to interpret images Extensive stress in the eye and brain.	Eyes need to be at predefined distances and angles- typically at 16 inches from screen and +/- 3 degree viewing angle. Can not see entire image in true 3-D, (two planes, front plane and rear plane). Not conducive to multiple viewers. Expensive.	Various including: Headaches Fatigue Extensive stress in the eye and brain. Double vision Blurry Flickering.
Resolution	**HDTV Equivalent to 72" Plasma TV**	Resolution is the same as the content, but there is a severe distortion without glasses, and considerable difference with the glasses on (all red, all blue) leading to loss in color.	Poor resolution Image distorted Double vision Blurry Reduction in Frame Rate and flickering.	Resolution could be very high, but without glasses yields double vision.	Poor resolution (cuts the resolution by half, yielding 1:2, 1:3 or 1:2.3 resolution ratio)	Poor resolution as original image resolution is divided by 2, 3 or 2.3. Actual image is 400x600 unless the even and the odd portions are duplicated which yields a loss of information.

TDVision Systems Inc.

Comparison Sheet

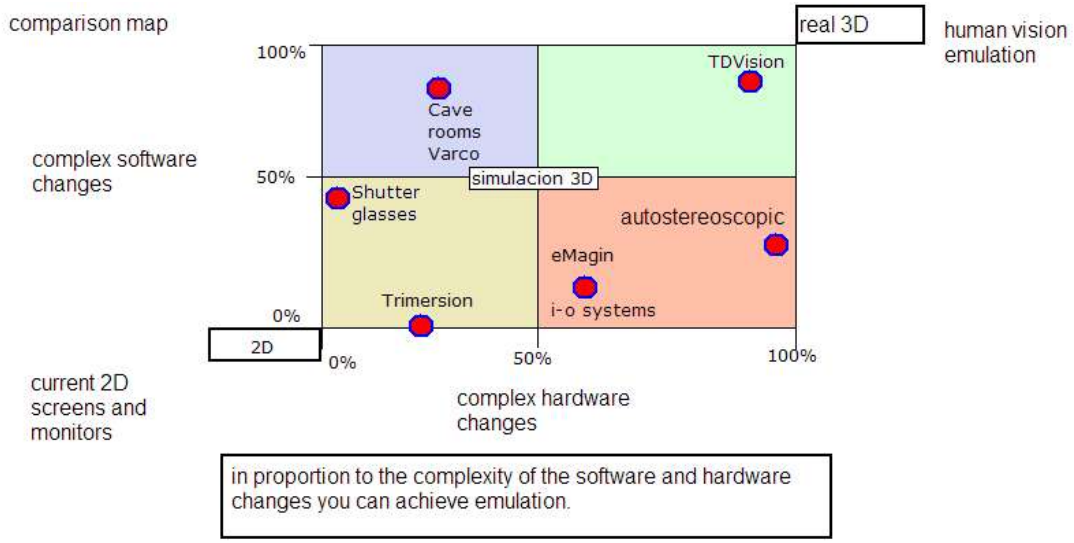
Simultaneous 2-D and 3-D	**YES. Simultaneous viewing in 2-D and 3-D is capable with no loss in frame rate or resolution of either image.**	No. Content can not be viewed with the original resolution once it is converted.	No. Content can not be viewed with the original resolution once it is converted.	No. Content can not be viewed with the original resolution once it is converted.	No	No. Content can not be viewed with the original resolution once it is converted.
View with others	**YES. Multiple TDVisor's are required or others can view the traditional 2-D TV/monitor/screen**	**YES.** Multiple red and blue glasses are required; the traditional 2-D TV/monitor/screen image is distorted not allowing viewing without the red/blue glasses.	**YES.** Multiple shutter glasses are required; the traditional 2-D TV/monitor/screen image is distorted not allowing viewing without the shutter glasses..	**YES.** Multiple polarized glasses are required; the traditional 2-D TV/monitor/screen image is distorted not allowing viewing without the polarized glasses.	**NO.** The limited viewing angle and required distance from screen prohibits multiple viewers.	**YES.** Multiple visors are required; the traditional 2-D TV/monitor/screen image is distorted not allowing viewing without the polarized glasses.
Versatile Applications	**YES PC, Video, military, Wireless Streaming, Video Games, DVD, TV, Homeland Security**	No	Not compatible with current systems	No only for theatre and cinema.	No	No
Cost	**Mid at viewer side and mid-high at production side**	Low at the viewer side, high at the production side	Mid at viewer side Mid-High at production side	Low at viewer side High at projection time	High	High
Portable	**Yes**	No (required monitor)	No (requires monitor)	No (requires large projection screen and professional camera)	No	Yes

TDVision Systems Inc.

Comparison Sheet

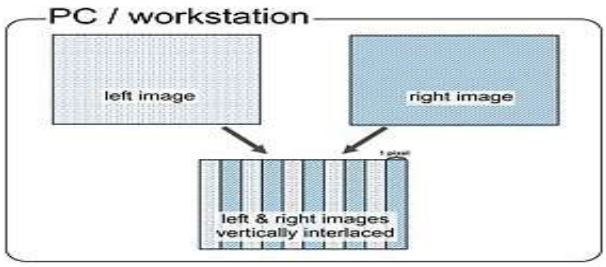
Platform independent	**Yes.** **Can run in 2-D without any modification and runs in 3-D for "TDVision enabled software and hardware" without adversely affecting the original content.**	No. Requires special production. Works only for 3-D content. Once content is converted to this format, can only be viewed with this technology.	No. Requires special hardware and software. Works only for 3-D content. Once content is converted to this format, can only be viewed with this technology.	No. Requires changes on production and software multiplexing. Works only for 3D content. Once content is converted to this format, can only be viewed with this technology.	No. Requires changes on software and hardware. Once content is converted to this format, can only be viewed with this technology.	No. Requires changes on software and hardware. Once content is converted to this format, can only be viewed with this technology.

COMPARISON MAP



DESCRIPTION OF OTHER TECHNOLGIES

3D field sequential/3D interlaced: i-o systems / eMagin / Trimersion: This companies use their visors to display in 2D, if they want to display in 3D they need to use 3D Field sequential or 3D interlaced techniques. This techniques can be represented with the following diagram:



This affects the resolution (cuts by half the horizontal resolution) and has flickering and low frame rate.

The mentioned companies are only on the Display layer and do not have any participation or contribution to the Processing infrastructure.

Shutter glasses: a.

The USA patent is based on a method for displaying a 3D image, which is constructed from one right and one left frame each, on a display which is assigned at least by one separating device (shutter). This shutter always assigns frames of one image channel to each eye of the observer. Each frame is alternately displayed with the other frame as in each case presented on a TV display.

Video images are composed by sequences of frames. The USA patent alternates a left frame and a right frame on the same display, and uses a shutter (a lens that turns transparent or black alternating left and right synchronously for each left or right frame and blocking the other right or left eye to watch the external display)

Autostereoscopic: This technology is a monitor with a lens-in-a-film that divides the image in two different angles, It only displays 2 image planes (back plane and forth plane), giving a certain deep effect. This technology also requires a new monitor to be replaced. It produces poor resolution, due to the semi-cylinders mentioned before.

Cave Rooms / Varco / Barco: They use polarization glasses and require a big room to project with two projectors over a big white wall. The power processing needed to drive the imagese is depending on Silicon graphics workstations.