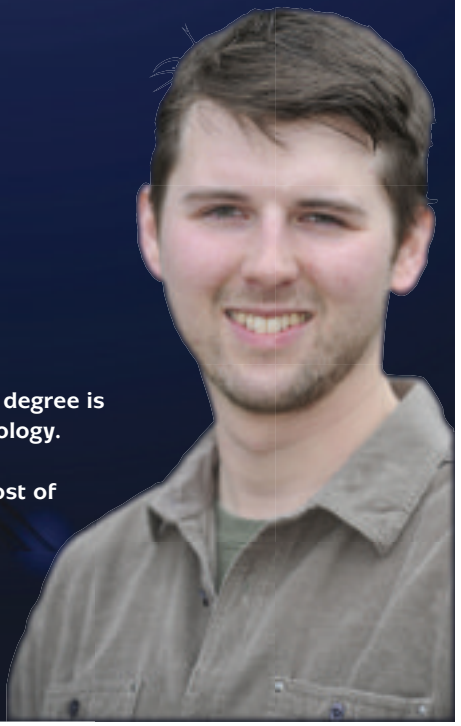
VIRTUAL REALITY:

It's the real thing

PJ Belcher looks at the story behind Virtual Reality headsets



FOR the past year Virtual Reality or VR has been grabbing headlines thanks to a recent surge of developments in the domestic market.

Have you heard of the Oculus Rift and Sony's Project Morpheus? These are VR headsets and although they come under many names - head-mounted displays (HMDs), VR Goggles and even 'immersive multimedia' - they are essentially the same thing. Even Google Glass to some degree is following the pattern of the technology.

So what exactly is VR?

It's a broad term for a whole host of technology but basically refers to anything that has an element of sensory feedback to an end user (normally visual) that's generated artificially in a computer (usually 3D real-time graphics) while >

>> also combining elements of human computer interaction or HCI, commonly via controller and head-motion tracking.

In practical terms this is usually realised as a headset with stereoscopic 3D visuals that fill your entire field of view and obstruct the outside world. This combined with motion tracking for head movement and a computer generating real-time 3D graphics leads to a very immersive experience. More often that not, this is what people are referring to when they talk about VR. Google Glass, although similar with its HMD and HCI wouldn't be classed as VR, but it has certainly done its part to bring this field of technology back to the public's attention.

Commonly the hardware is a pair of small screens you wear on your head, one for each eye, which gives the 3D effect. Also built into the headset are sensors for motion tracking, providing detailed information to the computer about head movement and orientation. Finally there needs to be a computer to connect it all to and software to generate the world you'll soon be travelling to and interacting with.

By the way I should point out that what's interesting about this recent wave of VR excitement is that it's all happened before. The VR concept has been in practice since the mid-80s and saw a popularity bubble in the early 90s. What no-one expected at the time, though, was that it would disappear into obscurity for the next 24 years, only to come back looking pretty much exactly as it did before! So why did VR fail to launch as spectacularly as everyone had hoped, and why is it not now in every home in the same way as the internet or mobile phones? More importantly, what's so special about VR this time round that means it should demand our attention once more?

To answer that we must first look at everything that was wrong with VR in the 90s. There are many reasons that possibly contributed to the premature demise of VR but we'll just look at the biggest ones.

1 The computers were slow and the content for VR was basic (remember, this was an era where the most powerful gaming console on the market used a 7.61Mhz processor). Real-time 3D graphics were only just becoming possible and most computer-generated content at the time was 2D. The content to show off VR just wasn't there, nor would we see it for quite a few years.

2 Bad hardware. Although the headsets of yore were fundamentally the same thing, developments in the speed and accuracy of the sensors have been incredible and the quality of screens, largely thanks to the mobile phone industry, means a huge selection of affordable, lightweight, high resolution, small screens are available.

3 The world just wasn't ready for it. Most new technologies occupy the time and space of an existing tech (that's why early home computers looked like typewriters). So where would VR have fitted into your home? Now, though, we are much more accepting of new gadgets and our lives are better aligned to using technology all the time.

So what has VR been doing this last quarter-century while it hasn't been grabbing headlines? Well, it hasn't been completely forgotten, that's for sure. Companies such as Virtual Research Systems Inc have been designing and selling headsets since 1991 and they don't appear all that dissimilar to those that are grabbing headlines now. While they may not have been media-friendly, their technology is widely applicable in non-domestic markets and this is where VR has been all this time.

Cutting back to the present, what's happening now for VR? Its application as a gaming peripheral seems to be getting the biggest attention and it's easy to see why. An industry focused on artificial realities, player immersion and a love for new ways to interface with computers seems perfect for VR hardware and many developers have realised this. Since there is currently no commercially available VR hardware for the consumer market (a few lucky people have taken delivery of Oculus Rift prototypes but it isn't currently on sale), the applications for entertainment are limited. Despite this, lots of developers are modifying their games to support Oculus and are now producing bespoke content for the hardware. This ranges from basic 3D visuals to utilising the head tracking to great effect.

Cambridge's very own Frontier Developments has integrated Oculus support into its up-coming title Elite Dangerous. This allows the player to look around their cockpit by simply moving their head, which makes for a very immersive experience.

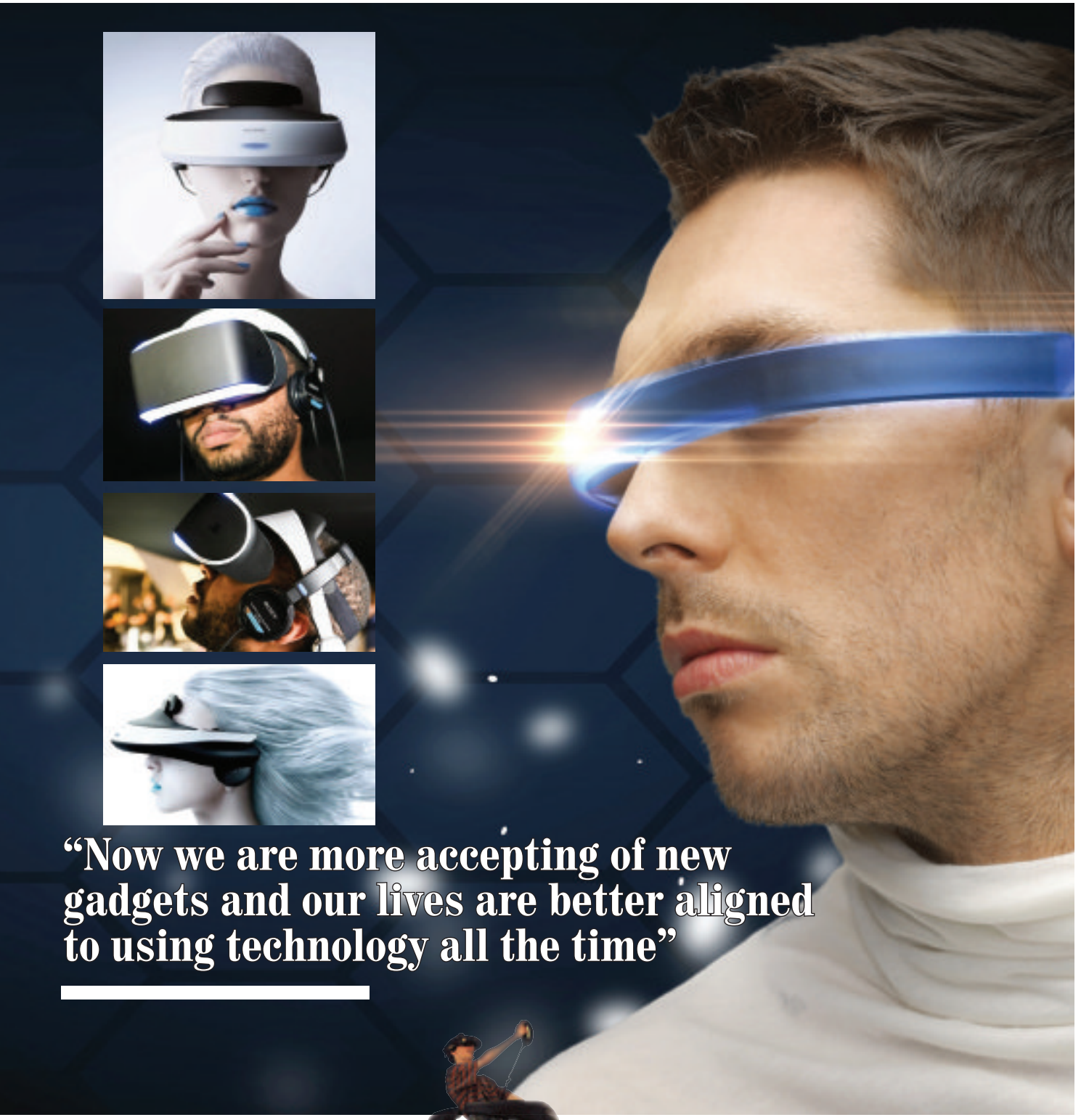
What we've seen come out of the demonstrations from companies for VR so far has been amazing - and it's only the beginning. The expectations that were widely missed back in 1990 are now being matched and surpassed - and that's just with prototype hardware and developer demonstrations.

So is VR here to stay this time or is this going to be another bubble of interest before another vanishing trick? Despite the lack of commercially available hardware, the level of innovation and content for VR hardware in the entertainment market demonstrates that there is not only a hunger for the tech, but also the capability of supporting it. We already know the public is more open to this type of gadget thanks to Google Glass and the hardware has come on leaps and bounds in the last two decades thanks to similar hardware developments in other sectors such as mobile phones.

Thanks to the more open adoption of VR in the entertainment sector, hardware prices are coming down which, in turn, opens up opportunities for VR to be used more prolifically in the sectors that have been keeping it warm all this time. We can also start to see other companies jumping on the bandwagon and producing consumer VR tech, with Valve and Samsung also recently announcing their plans and developments in the industry. ■

More from PJ Belcher at *pjbelcher.com*

Specs appeal: The Morpheus 1, 2, 3 and 4 range (inset, top to bottom)



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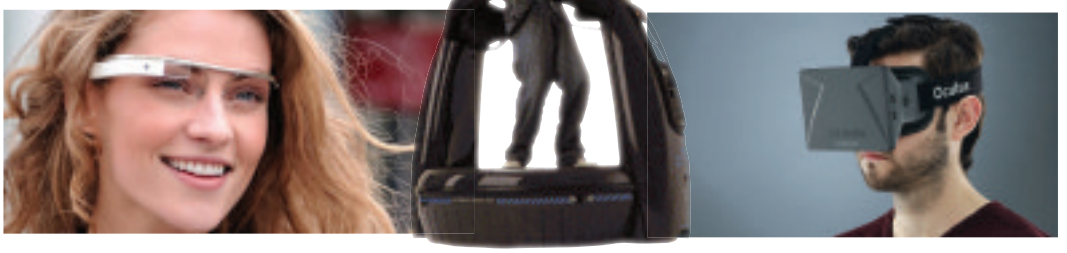

The eyes have it: VR eyewear including the OculusRift and a virtuality pod