VR as an alternative to physical travel

Technology is driving transport beyond supersonic capabilities

By Burt Rutan
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Sixty-five years ago few people traveled on airlines and corporate aircraft. I believe that 65 years from now, air travel will once again become a rare event in the general scheme of things.

There's no question in my mind that the amount of travel we do will be way down from what it is today and certainly much lower than the peak that will happen between now and then. More and more, we will conduct our business virtually—without the need to travel.

Thanks to technological breakthroughs, business meetings and the need to take our physical bodies to these meetings should become obsolete. Already, with the advent of today's Internet and high-speed data communications, the need for much travel has already been eliminated.

My travel is down about 30% from a year ago, mostly as a result of improved communications technology. But this is just the beginning in terms of where we're headed with electronic communications and virtual reality (VR) travel alternatives.

Crude VR systems available today will evolve into high-resolution environments complete with multisensory sound, visuals, smell and feel. I predict that within the next 20 years future-generation VR environments will be almost indistinguishable from physically being there.

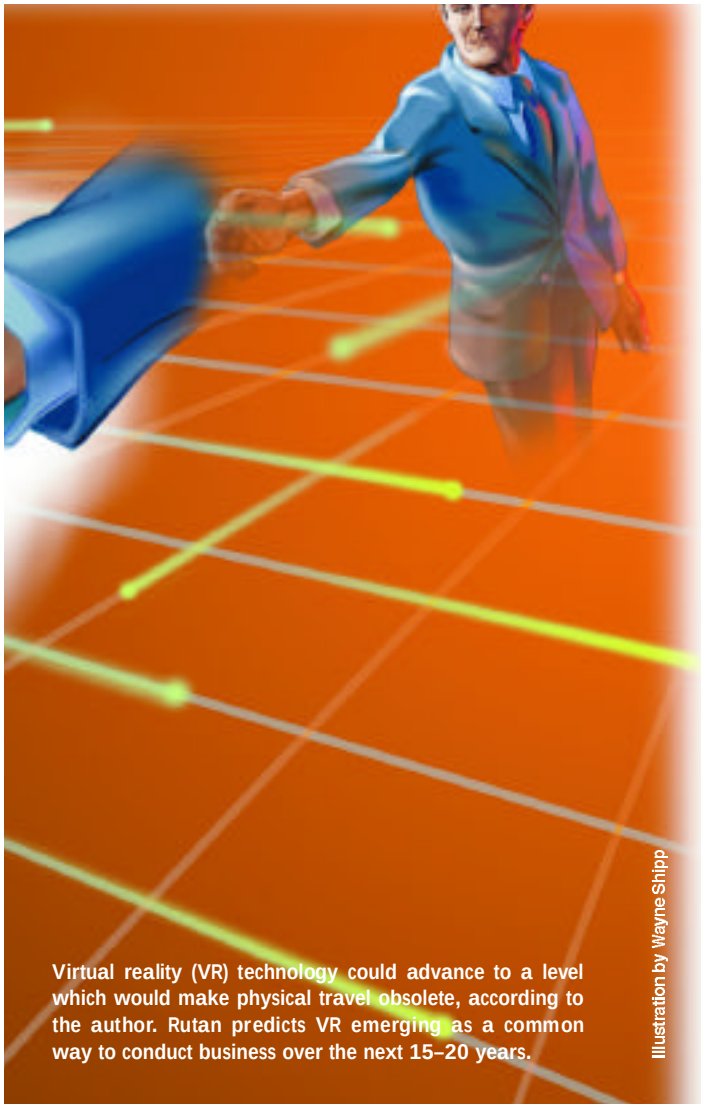
And, it won't be long before 80–90% of the need to travel physically will evaporate. Traveling to a meeting across the country is already an extremely clumsy and difficult process. Why would you want to take a business jet or fly on an airline to a destination if you didn't have to?

Virtual reality or supersonic?

The best estimates I've heard for the development, certification and delivery of a supersonic business jet (SSBJ) range from 15–20 years out. When SSBJs become available I believe they'll likely be one of the slowest ways to go to a meeting, sign a contract or make a deal.

By that time, one-on-one VR meetings will mimic being there in person. Using such technology, your competitor will be in Taipei or Frankfurt virtually, have a meeting and sign the contract before you can get to the airport to board your subsonic transport or SSBJ.

When business travelers discover that everyone else is conducting their meetings virtually, they'll quickly tire of multihour business jet rides. Fighting traffic to an airport and boarding an SSBJ or supersonic airliner to go



Virtual reality (VR) technology could advance to a level which would make physical travel obsolete, according to the author. Rutan predicts VR emerging as a common way to conduct business over the next 15–20 years.

Illustration by Wayne Shipp

somewhere for a meeting will be the equivalent of taking an oxcart through the Rockies today.

The scenario I'm laying out depends on VR being almost completely indistinguishable from being there in person. You'll have to be able to look in someone's eyes, feel the handshake and really sense that you are both there. Skeptics feel we'll never be able to achieve such a high level of virtual definition, but all the facts point to our doing this.

Just look at where technology is taking us. Even today's crude VR goggle systems give you the sense that you're in a completely different environment. With computer processing capability doubling every 14 months and likely every 8 to 10 months, we're going to have unthinkably huge amounts of data floating around.

This level of data-processing speed will provide us with an ability to immerse ourselves in a level of virtual detail that we could never dream possible. It won't be long before even personal computers, as powerful as the human brain, will offer much of this potential affordably.

Broadband emerges

I know it takes a bit of a leap to comprehend a world of virtual, nonphysical travel. But look back 200 years and consider how unimaginable the concept of flying from Los Angeles to London in about 10 hrs—while enjoying 4-course meals at FL410—would have seemed.

Even 15 or 20 years ago it would have been hard to imagine the broadband high-speed Internet capabilities that exist today. I perform many tasks electronically today that would have required physical travel in the past. Instead of flying somewhere to present a slide or PowerPoint presentation, I send it over the Internet and communicate online with the recipients.

With today's powerful Internet search engines I'm able to research entire world databases without leaving my offices in Mojave CA. Likewise, automobile designers no longer have to live in Detroit and movie screenwriters don't have to live in Hollywood. With personal computers and the Internet, a person can be just as connected and productive from virtually anywhere in the world.

I'm not predicting that air travel will become obsolete. Greyhound buses have not gone away—they still stop at Mojave and drop people off at Carls Jr's. But of the 1000 people that come to visit my company each year perhaps 1 arrives by Greyhound.

There will always be people who feel that physical travel will be necessary and passenger air travel will exist in some form 65 years from now. But I believe predictions of an expanding air travel market are wrong.

Virtual business likely

Many people think of VR as some sort of glorified video conferencing and possibly a less effective substitute for physical meetings. But this will not be the case as we move into future generations of nonphysical VR travel.

The next generation of VR technology will likely allow us to duplicate meeting environments and put a dozen people at a virtual conference table. Arriving at this point is mainly a matter of computer processing evolution, storage capacity, communications speed and software refinement.

Once we begin to develop the initial capability to experience virtually the sense of touch and feel, enormous amounts of work will go into VR development, probably led by the pornography industry, to create better virtual simulations.

One day we'll be able to experience the feeling of sun and surf in Hawaii, see and hug a relative in Pittsburgh or shake hands with a convention exhibitor in Las Vegas without actually being there.

For VR to truly replace physical travel, people will want to experience a remote environment real-time complete with access to random events which can take place when we travel physically.

While your physical body may be on the other side of the world, you'll want the ability to get up from the virtual boardroom table, interact with management, and perhaps take a real-time tour of a factory in Hong Kong.

One of the obvious benefits of today's physical travel routine is the opportunity to experience unplanned events. You may bump into a business associate and perhaps make a deal, when traveling physically through an airport or even in an elevator. Such random events are a possibility with future generations of VR. If you decide you want to experience taking a virtual business jet to your virtual destination, complete with virtual cab

rides and chance encounters at either end, this will all be possible.

Today, when you log onto Amazon.com the software knows the books you like and makes selected recommendations to you. Japanese teenagers program their likes and preferences into their cell phones and they're alerted when someone with similar interests comes within infrared range of their phone.

Take all of this a few orders of magnitude out, with computers as powerful as the human brain, and think of the possibilities. You may be traveling virtually to a meeting in Japan and "meet" someone along the way in cyberspace with similar business interests. As VR technology evolves we can expect phenomenal capabilities far beyond simply orchestrated holographic images.

Being there—almost

The next step in virtual reality is fully interactive "being there" capabilities. If you want to tour a temple in Egypt in real-time and interact with the locals, this will be possible virtually.

With today's technology, we can build a full motion/visual simulator to create the experience of driving through New York City's traffic. In the future, with unlimited bandwidth and processing capability, we'll be able to take a VR cab ride through New York City or Cairo complete with all the real-time traffic and pedestrians that are actually there.

Take this capability even further and we'll be traveling virtually in environments rich in random events. There will be few limitations in the VR world.

Future VR technologies will evolve beyond the holographic image shown above to include other senses, including sound and touch.

In 25–30 years you'll see people moving to places they prefer to live and there'll be very little commuting to work. You may choose to locate physically close to a beach or on top of a mountain.

Once you're there, you may choose only to travel physically a couple of times a year. You may "travel" more than you do today but you'll do this virtually. In 30 years or so, you'll be able to "move around" the world effortlessly without wasting time or burning jet fuel.

Our living domiciles will be different from what we're accustomed to today. Our homes, which may be wallpapered in digital displays, will support our abilities to communicate, travel and experience the world without the need for physical travel.

When you go into your cyberoffice you may physically be in the Hawaiian Islands but you'll be able to work and attend meetings instantly all over the world.

Future generations of business people will have the ability to create a company, hire employees, arrange for the manufacture of a product or provisioning of a service, "attend" industry conventions and make sales without the requirement for physical travel.

I believe that in the future physical travel will only slow you down in achieving your business objectives. You won't have to miss anything with these virtual alternatives, as they will feel indistinguishable from our sense of physical presence today.

I haven't focused on specific technical hardware or timeframes when all of this capability will be on the market. I'm trying to look at the big picture of emerging technology, how this will change our focus and make us realize that we don't necessarily need to travel.

Computers are the key

The most exciting technological advances are the ones we don't know about. Until something new is really understood as a breakthrough technology most people will say it's nonsensical. We can't visualize today the innovations of the future. However, we do know that we'll have ongoing advances in computer horsepower, storage and capability with an absolute flood of information to harness.

Over the past 10 to 20 years we've developed important new computer and communications technology and we'll use much of the next 20 years in adapting it to enable a new way of life. To achieve the VR goals I've presented does not necessarily require new scientific breakthroughs—it's just a matter of expanding the capabilities we have today.

One day in the future, people will look back at today's business aviation travel and say, "We did this because we didn't have proper means of communications." They'll gain an understanding of today's business travel from reading history books that explain that we didn't have well-developed broadband or VR capabilities.

I'm not trying to discourage today's corporate or airline pilots and I don't believe their professions are under imminent threat. Today's business aircraft, and fractional ownership alternatives, are extremely valuable tools to the world business community in terms of inherent point-to-point travel benefits.

I see corporate aviation remaining relatively strong for a number of years. However, I'm not sure that investing in SSBJs is worthwhile today. If we do create such aircraft, we'll probably only use them for 20 years or so before VR alternatives become the preferred—and faster—means of doing business.

Burt Rutan, president and CEO of Scaled Composites, has been on the cutting edge of aerospace design for more than 3 decades. Based in Mojave CA, his company is now developing new manufacturing processes for general aviation, military aircraft and space launch platforms.