# THE SCIENCE & ART OF DESIGNING EXPERIENCES : VR 101

"Logic will get you from A to B. Imagination will take you everywhere." —Albert Einstein

What if you could do a tightrope walk, dissect a human heart, and jump out of a plane at 10,000 feet – all in one afternoon?

VR or Virtual Reality makes this possible.



When we think of the word VR, the first things that come to mind are games and 3D movies. However, VR is much more. VR's applications are now endless ... As endless as the human mind's imagination.

You experience anything in VR. You can swim with dolphins or walk on Mars or watch a Madonna concert, all without leaving your home.

Only training pilots, surgeons and scientists earlier used VR. However the smartphone (which has become the main VR engine), a cardboard box and easily available VR content has made it accessible to almost everyone for nearly everything.

# Goldman Sachs predicts that VR will become a \$80 billion (yes eighty billion) industry by 2025.

So what exactly *is* Virtual Reality? What are its applications? And how is it affecting architecture, interiors & retail? Lets investigate.

## The Fundamentals first:

Virtual reality means experiencing things through our computers that don't really exist. A more precise workable definition is :

• Exploring a believable, interactive 3D computer created world where you feel you are actually there, both mentally and physically.

For a medium to be termed as true VR, it has to meet 5 criteria:

- <u>It has to be Believable</u>: You should feel you are actually there and that the VR world is real.
- <u>It has to be Interactive</u>: As you move around, the VR world has to move with you.
- <u>Computer Generated</u>: Only powerful graphic computers are capable of producing realistic VR images in real time.
- <u>Explorable</u>: A VR world must be big and detailed enough for you to explore. It needs to show countless perspectives.
- <u>Immersive</u>: VR needs to engage the body and mind.



#### What does VR need:

VR needs 3 things: content, a gadget to experience that content and an environment where that gadget is used ...

**The Gadget: HMDs:** In VR, you need a 3D image that changes smoothly, in real time as you move your head. Secondly, you also need something to sense your body's movements so that the image moves with you. <u>Head Mounted Detectors or HMDs</u> make the first part possible.

HMDs look like giant motorbike helmets. Strapping on the visor feels like wrapping an Imax screen around your head. You have endless field of vision that responds continuously to your every move. HMDs have built in accelerometers that adjust the picture according to the movement of your head and body.



HMDs used to be very costly. However, recent viewing glasses like Oculus Rift (bought by Facebook now), HTC Hive, Samsung Gear VR and the dirt-cheap Google cardboard have made them affordable. An Oculus Rift, the granddaddy of VR headsets, costs USD 1000 per unit. HTC Hive costs USD 1600. On the lower end, Samsung Gear VR costs USD 100 while the Google Cardboard is USD 20 (Rs. 1500!!). <u>A couple</u> of decades back, an HMD costed USD 50000 or Rs. 35 Lakhs!!! Google Cardboard is is simply a cardboard box with two lenses. It's what's known as an "untethered" device, which basically means there are no wires attached to the unit. You stream the virtual experience through your mobile phone by simply sliding it into the cardboard box and viewing the mobile screen through the box lens. It's that easy and convenient.



The second technology to make VR more immersive is <u>haptic</u> <u>technology or tactile feedback</u>. It recreates the sense of touch by applying forces, vibrations or motions to the user. Data gloves, wands & sticks are some examples of haptic touch devices.



VR sometimes requires rooms and sometimes it doesn't. If projection and physical interaction is required, space is needed to flail around. Since a lot of VR is experienced while standing or walking, experts suggest working with standing desks and anti-fatigue mats. Intense activity should be done in a sturdy and spacious place. Oculus is not joking in the guidelines accompanying its Rift headset when it warns users to "remember that the objects you see in the virtual environment do not exist in the real environment, so don't sit or stand on them or use them for support."

## VR's Endless Applications:

**Medical:** VR has long been used in surgical training -- which means surgeons training other surgeons from distant places. A logical extension of this has a surgeon in one location hooked up to a VR control panel and a robot in another location (maybe an entire continent away) wielding the knife on a patient. This is also part of telemedicine – which means monitoring, examining or operating on patients remotely. So the best surgeons can collaborate successfully across the globe on a difficult procedure.

VR is becoming an invaluable tool for saving lives !



**Education:** Difficult and dangerous jobs are hard to train for. How can you safely practice taking a space trip, landing a jumbo jet or making a parachute jump? All these things are obvious candidates for VR.

- Immersive learning allows students to better experience things that take a lot of time and money to learn. At things which are high stakes. They can experience something that no longer exists (dinosaurs) or they don't have easy access to (foreign countries).
- Its improving distance learning where you can have the world's best teachers teaching you skills you want to learn.
- Using meditative and calming VR apps, education experts are hopeful in helping kids get rid of autism, anxiety and stress.

<u>**Travel</u>**: VR is being used to advertise tourist locations and unique travel experiences.</u>

- Samsung recently announced a partnership with Carnival and AT&T to let potential customers use HMDs to explore cruises.
- Thomas Cook have been trying a virtual reality holiday app at Bluewater Shopping Centre in the UK. You could take a helicopter tour of Manhattan, a trip to the pool at a Sentido resort in Rhodes or a visit to the restaurant in a SunConnect resort in Cyprus.
- Virgin Atlantic in partnership with Microsoft, are using HMDs to get flyers to 'try' their upper class. While someone is watching the five-minute demo, a flight attendant waves different scents under a viewer's nose and a Microsoft Band bracelet would track a viewer's heart rate. It's way better than a simple Youtube video.
- Theme parks are looking to maximize VR. In March, Six Flags announced plans for VR roller coasters, where visitors wear VR devices while riding on the attraction.

## Architecture & Interior Design:

In Architecture & ID, VR is primarily used as a pre-visualisation tool. You experience a space before it's built.



Architects and designers know that computer generated 3D drawings can go only so far in creating an accurate feel of a building or space. VR takes this way forward by allowing the user to walk through and see and touch every detail. It allows the user or designer to get a scale of the project – one major aspect which can never be understood via a 3D render or sketch.

VR helps reduce costs. VR simulations help identify mistakes and design inconsistencies. It skips rounds of reworking – when a client is able to experience a project in such stunning detail before its even started, they get a better feel for what they want and don't want. It takes less time to rework and give feedback. Walls can be moved easily. Lighting levels can be checked. You can study all the sight lines – inside and outside the site.

#### VR greatly reduces the time it takes to get familiar with a space.

- Real estate agents are using 3D goggles to show potential clients houses without having to physically visit the site. This saves enormous time and money and is highly convenient for all involved.
- Interior design firms can help clients experience different theme options with a simple click of a mouse. Ikea's app makes it easier to set furniture and select appropriate furnishings as per room sizes and theme.



Haptic technology can make you feel the textures on walls, ceilings and roofs. So its not just about the look. You can feel the space before its built – saving loads of money in alterations and travel time to factories.

• Engineering firms like Arup have taken VR to another level. They are testing emergency exit design using VR. For example, you can place someone in a building and see how quickly they exit using the existing signage. But they wont reveal people's reaction to a fire vis a vis emergency exit signs. Arup used VR to visualize such a scenario.

Arup used VR in planning the way finding signs for Hong Kong's Admirality Underground Station – one of the busiest stations in the world. 235 potential issues were identified and 145 signs were replaced.

Such innovations will make buildings safer and more user friendly. Not just fire, such simulations are being used to study how people can move in airports quickly safely and easily.

VR is having a huge impact on our home life. Be it space planning, services, landscape etc. Its easier for VR to impact architecture and interiors since it uses the same apps that are used in creating gaming environments – where VR has been used for ages.

Goldman Sachs predicts that the use of VR in property is already USD 1 Billion globally. It will tripple by 2020.

• The world's first VR theatre opened in Amsterdam a couple of months ago. The theater allows patrons to experience the world of VR cinema in chairs that spin 360 degrees.



• While its easy to imagine VR's benefits for improving architecture, using ONLY our hands to design is more difficult to visualize. Gestural modeling tools are similar to a sculptor at work – you use your hands to craft shapes, forms and places.

This has big benefits. It becomes easy to understand the scale of a space. In a way, you become one with the model. You do not simply draw a line to make a surface. It becomes the surface itself. Design becomes a personalized one to one experience between the product and the designer.

• In actual practice, architects/designers can 'tag' drawings so that contractors can understand details three-dimensionally in full scale, leading to better construction quality.

### **Retail's Next Frontier:**

VR is the next big thing in shopping. All types of retailers are adopting different aspects of "experiential retail".

Big brands like Ikea, Lowe's, Topshop, Samsung and North Face are turning to VR to sell products, boost their brands and make shopping more fun. <u>There is more shopper engagement, which leads to repeat</u> <u>business and profitability</u>.

• Samsung has even stepped it up a few notches with its New York flagship store that carries no products, but pushes experiences. The store—called Samsung 837, for its address is created to host events. There are giant interactive screens, a kitchen, theater and a multimedia studio. It's a facility set up to celebrate experiences, specifically the experiences created and viewed on Samsung products. VR is a big part of that.



- Home Improvement stores like Home Depot and Lowe's are set to benefit as customers get an opportunity to visualize home remodels in a tangible way while sporting goods stores will be able to let shoppers test out athletic gear is something very close to the actual environment its meant to be used in.
- eBay is trying to take your spending addiction to the next level. Say hello to the world's first virtual reality department store,

which allows customers to browse through collections like clothing, electronics, and home goods as though you they were actually in a store. The brand new VR store boasts more than 12,500 products from Myer, which buyers check out using eBay's Sight Search technology.

Now, all that users have to do is put on their "shoptacles" and they start shopping. To select a product, the customer has to hold their gaze on an item for a few seconds to select it. Its then added to the shopping basket. In the meantime, Sight Seach learns what you like and shows you more products as per your preferences.

- McDonald's has been giving away HMDs in some of their Swedish restaurants. The HMD allows the customers to play a game called "Slope Stars" – a 360 degree ski experience which teaches you how to stay safe in ski slopes. The game is endorsed by the Swedish National Ski Team.
- Canadian Tire, the Canadian retailer which sells a wide range of automotive, sports/leisure and home products have opened a 140,000-square-foot in Edmonton which includes more than 100 digital screens including many interactive ones. The automotive department includes a car simulator, allowing customers to have the opportunity to test drive tyres in different weather conditions.
- Fashion retailers like Tommy Hilfiger, Topshop and River Island are using VRs to show their season catwalks. So you could watch supermodels from close range via ramp side seats while sitting at home. Backstage moments are included.
- To coincide with the launch of the new Audi TT, customers can use a HMD to test drive the new car on both highways and crowded streets.



Many retailers are using a combination of VR and AR (or augmented reality) – where data is displayed on a viewing screen as you travel through a space.

- Japanese retailer Ikebukuro have trialled a virtual dressing room, which uses a camera to scan the customer's body and browse Urban Research clothes and try them on virtually in the store using augmented reality. The screen in the virtual fitting room responds to the user's movements in real time and simulates how the clothing moves and fits.
- UK department store retailer House of Fraser have introduced a shoppable window. Launched on Black Friday, customers can unlock shoppable content through it's 'Scan to Explore' feature on the mobile app. It allows customers to shop the best Black Friday deals in just a few clicks, avoiding the queues inside the store. People want to look at product information such as sizes and product composition without actually going into the store.

Virtual Reality Is the Next Frontier for Retail. But will VR save retail? Perhaps not but at the very least, it could get consumers out of their homes and into stores.

#### VR : A SWOT Analysis:

The most obvious pro of VR is the immersion aspect. It emphasizes and amplifies the human element and engages the consumer like no other. Practical concerns regard reports of motion sickness and feeling of dizziness. Many participants were unable to overcome a sense of vertigo as they tried to walk across a beam hanging between two buildings—even though people knew they were in a room with a proper floor and not actually on a beam many feet up in the air. A fan blowing wind in their face didn't help. This highlights one of the most fascinating aspects of virtual reality – how easily the mind can be fooled by your senses.

Experts do not recommend the interactive goggle experience for more than a few minutes because the 'roller coaster effect' can make you dizzy.

The biggest downside of VR is that it's still an emerging technology. The majority of software available is either in beta-stage or still being developed. Another major issue is the computing power required to run full VR walk-throughs. Standard PCs and Laptops do not have the required minimum specs to support an Oculus Rift or HTC Vive.

In the meantime, Tech firms and retailers are realizing that VR will be driven less by the hardware than the content that gets written for it.

#### What your organization needs to learn about VR

For your brand, experimentation with VR is extremely important. The challenges are numerous:

## 1. Storytelling Expertise & Shooting for VR

For one, you have to develop an expertise in VR storytelling . When you produce a "360" experience you have to rethink the design process. There are no hidden spots, no "behind the camera" places. The design, the setting, the scripting; all needs to be thought out in a 360 environment. In addition, the video requires fast processors, with VR cameras shooting one giga pixel per frame. That's just the visual part.

## 2.360 Sound

Then there's the 360 surround sound, which truly completes this immersive experience. That too, needs to be well though out, as sound is what adds the greatest layer of total immersion. Add a sound of something behind the user – they will likely spin around...

The VR medium's great capacity also poses a limitation as an experience designer. As opposed to 2D video, where the director can pinpoint a user's attention to something that is critical, here, the user can explore anything they want, at any point in time. The user has absolute freedom to look "wherever!"

## 3. Stitching

Some of the challenges of VR in the last couple of years are getting solved – and fast. For example, the problem of "stitching" – splicing together a 3D environment from several different cameras (usually 6 to 12) has been a challenge, but there are more and more solutions coming out to make this easier. It simplifies the Director and technical crew's workload in this delicate post-production step.



# How to implement VR in 3 simple steps:

**1. Start playing and testing**: To capitalize on the impending boom, companies should begin planning, developing and testing their VR strategy NOW.

**2. Focus on mobile-enabled VR**: Nearly every smartphone manufactured today is VR-enabled by virtue of its screen resolution and processing power. Every smartphone owner has a set of virtual worlds, literally at their fingertips. As smartphone resolution and processors continue to improve, VR experiences will become more and more robust. While tethered experiences (wired devices), like Oculus, will also evolve, broader consumer adoption will be through mobile devices. **3. Integrate technology.** The introduction of VR will raise many technological challenges that surfaced years earlier with the emergence of mobile and web. The good news is that many companies now understand the need to integrate back-end technology in order to create a truly seamless experience. Facebook and YouTube, for example, have opened their platforms to allow 360-degree video.

#### In conclusion:

For VR, the game has just begun. The aim is to make it as common as the computer mouse. The challenge is to make it as convincing as the real thing. It should be achievable in the next 5 years.

With lots of Indian vendors providing VR hardware and apps – vendors like Livspace, Homespace, Nestopia, Foyr and Furdo -- its inevitable that we will be seeing a lot of 3D devices in the near future. As the number of devices goes up, so will the applications. As supply meets demand, prices will reduce and will allow VR to spread to the masses and reach its full potential.

We are no more in the age of designing environments. We are in the age of designing memorable experiences. Let the VR ideavirus spread.



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