



BLENDING REALITY FOR LEARNING AND PLAY

IAN HUGHES/EPREDATOR
METAVERSE EVANGELIST

TAKING A BITE OUT OF TECHNOLOGY SO YOU DON'T
HAVE TO

WWW.FEEDINGEDGE.CO.UK

BCS ANIMATION AND GAMES DEVELOPMENT





THE
COOL
STUFF
COLLECTIVE



INTECH

VIDEO



Open Simulator

VIDEO



3D Display

VIDEO



Snowdome

VIDEO



3D Printer

VIDEO



Force Feedback

VIDEO



Smart Board

VIDEO



Pure Tech Racing

VIDEO



Kinect Hacking

VIDEO



Indoor Skydiving

VIDEO



Laser Scanner

VIDEO



Quadrocopter

VIDEO



Solar Flares

VIDEO



Holograms

VIDEO



Image Manipulation

VIDEO



Wikipedia

VIDEO



Cloud Computing

VIDEO



3D Gadgets

VIDEO



eReaders

VIDEO



Smart Table

VIDEO



Mind Flex



Xbox Kinect



Augmented Reality



LEGO Universe



FlushtheFashion Certified

United Kingdom, Norwich

Flush Magazine on Issuu.

Blog: <http://www.flushthefashion.com>

Website: www.flushmagazine.co.uk

Issuu: issuu.com/flushthefashion

FLUSHTHEFASHION'S SHELF



[FLUSH MAGAZINE ...](#)

Interviews, art, new music, fashion, gam...

By [FlushtheFashion](#)

Impressions: 61638



[FLUSH MAGAZINE ...](#)

Interviews, art, new music, fashion, gam...

By [FlushtheFashion](#)

Impressions: 265387



[FLUSH MAGAZINE ...](#)

Interviews, art, new music, fashion, gam...

By [flushthefashion](#)

Impressions: 682530



[FLUSH MAGAZINE ...](#)

Flush Magazine features the best in Musi...

By [flushthefashion](#)

Impressions: 108009



[FLUSH MAGAZINE ...](#)

Flush Magazine features the



[FLUSH MAGAZINE ...](#)

Flush Magazine features the



[FLUSH MAGAZINE](#)

Flush Magazine features the

<http://issuu.com/flushthefashion>



I always hear these virtual world
excuses.

I don't have time.

Why would anyone want to...

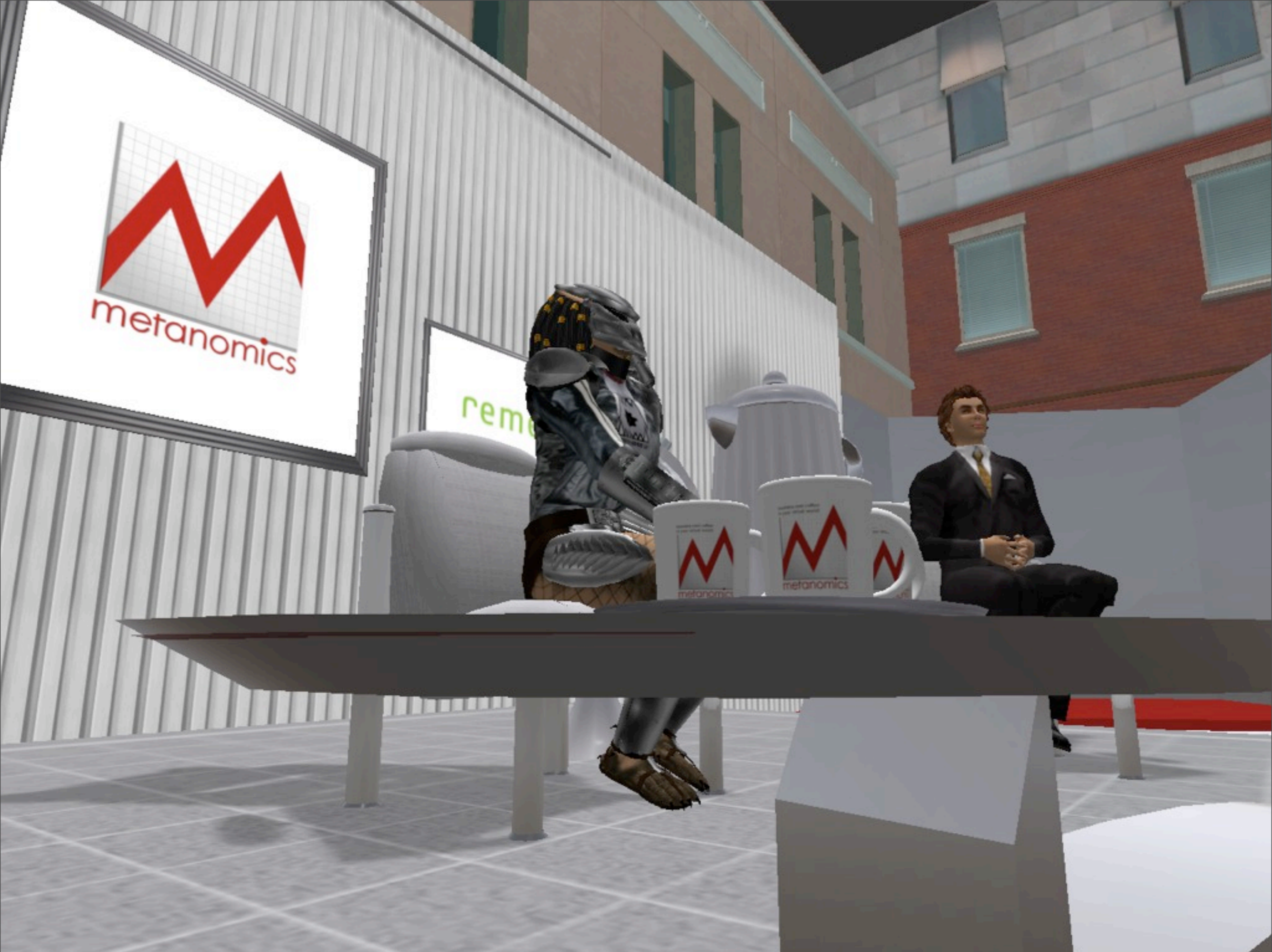
We already have telephone/
email/websites.

Whats the business use?

NOTE! Happy to answer these still









Messing with the metaphor



Why does this have impact? It *felt* strange

GAMES & GAME TECH

PLAYING



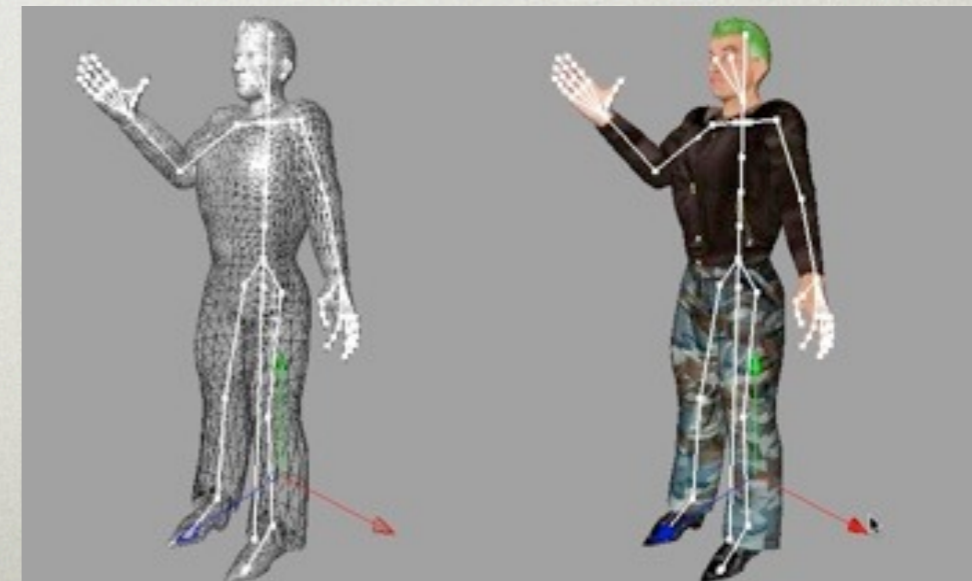
BUILDING



USING



ALTERING





PLAYING

NOT just Space
Invaders





Delivering to others





Playing, Using and Altering



<http://www.opensimulator.org>



<http://opensimulator.org>

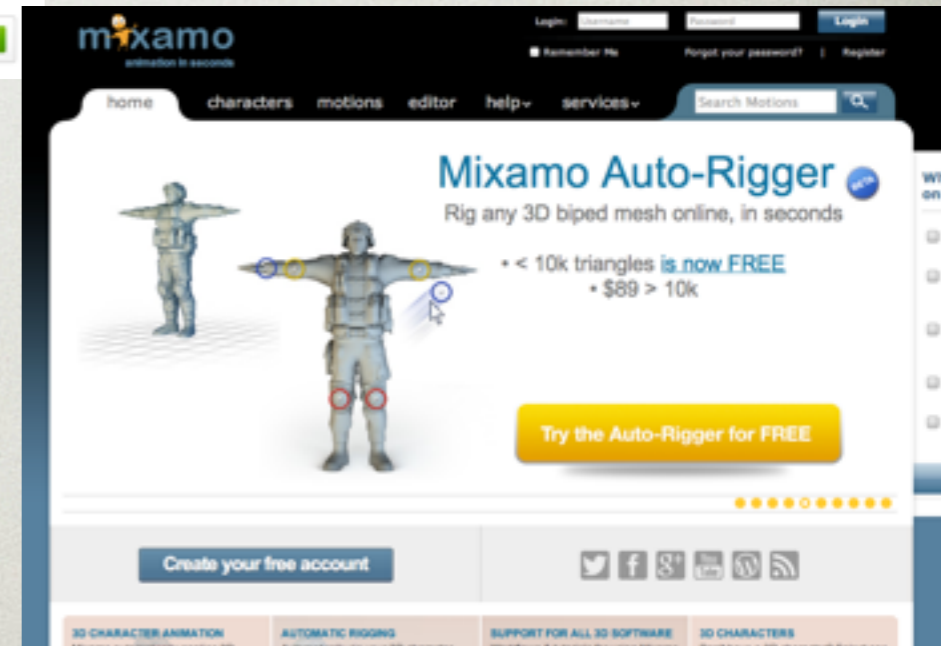


<http://cloud.exitgames.com>

<http://www.rackspace.co.uk>



<http://unity3d.com>



BUILDING Your Own. OSS / Free / Inexpensive



Major Incident Rehearsal

<http://www.feedingedge.co.uk/blog/2013/04/26/training-in-a-virtual-hospital-zombies/>

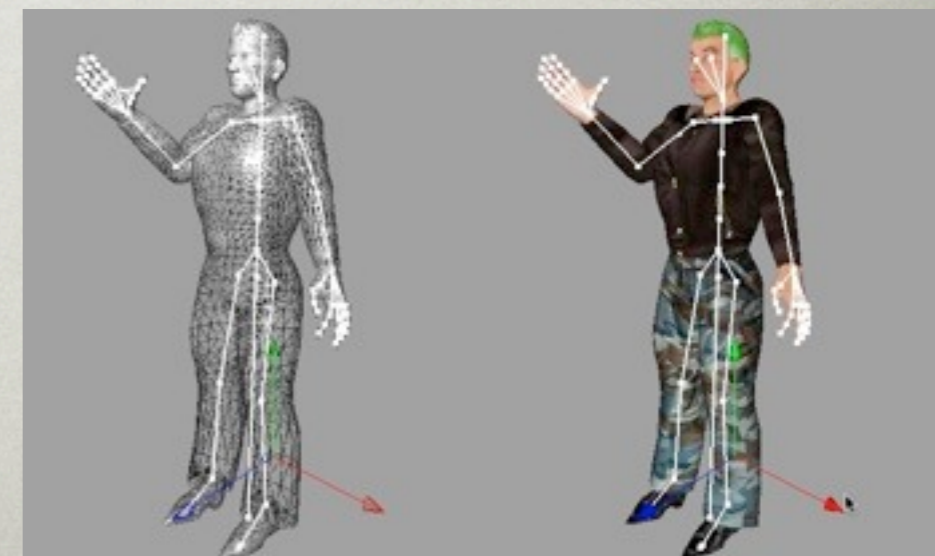


Imperial College IVOPS

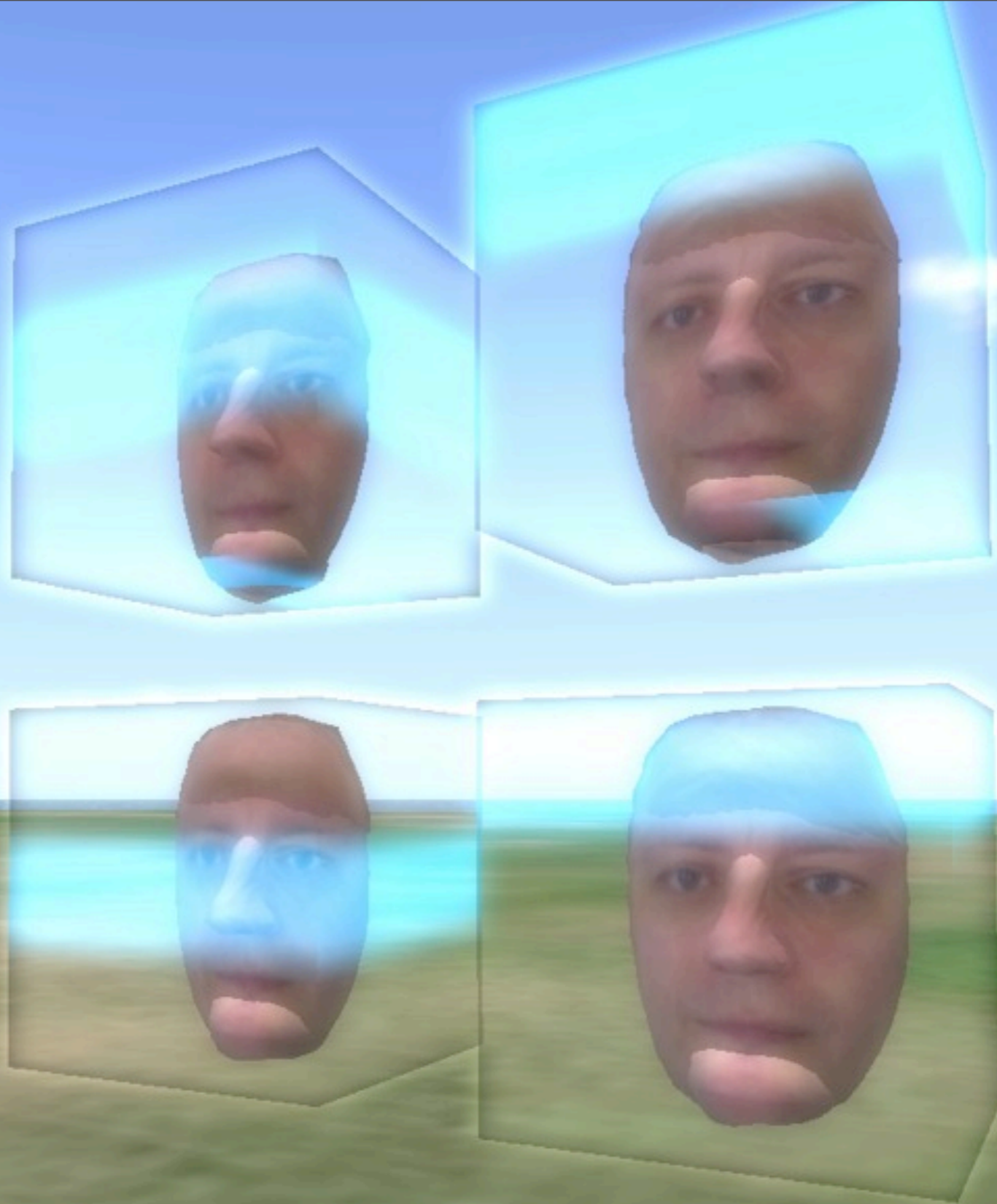
http://www1.imperial.ac.uk/surgeryandcancer/divisionofsurgery/research_themes/virtualworlds/virtualpatients/

Virtual Augmentation

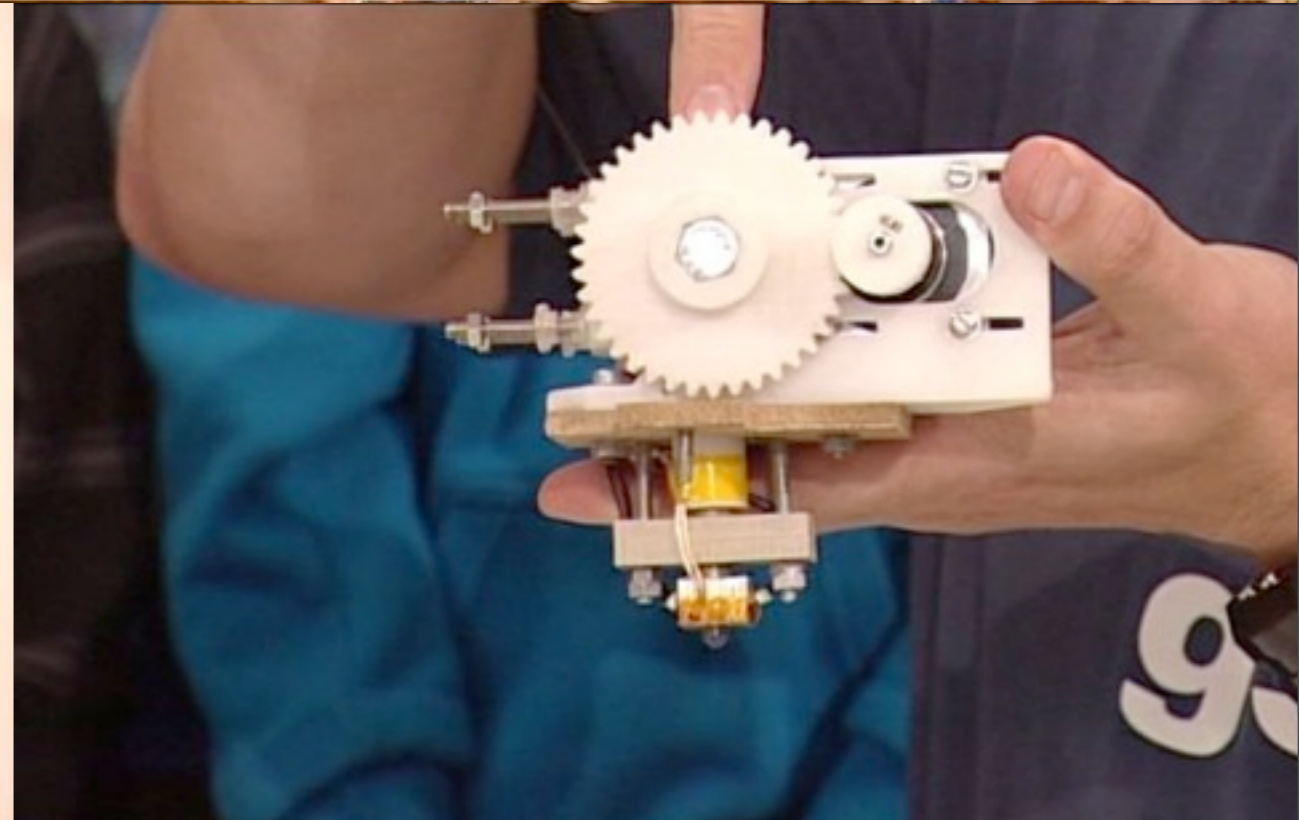
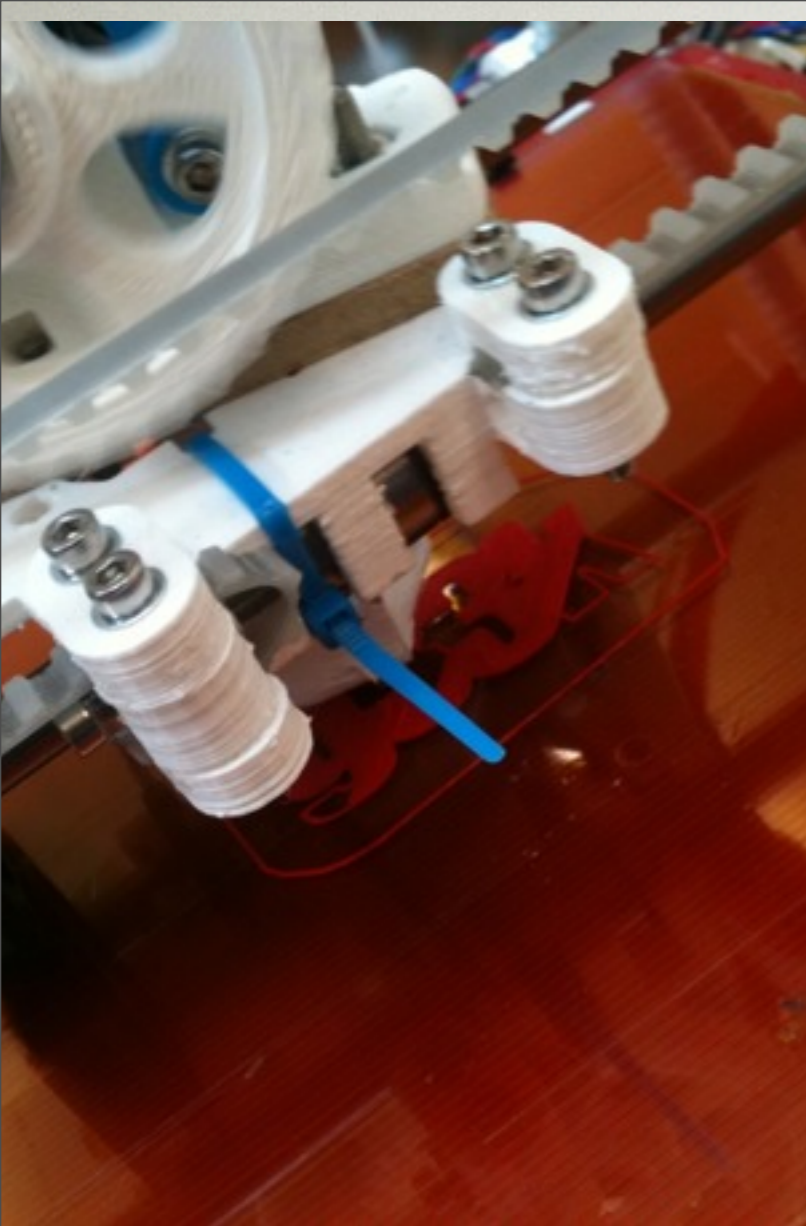
Things
from
other
places

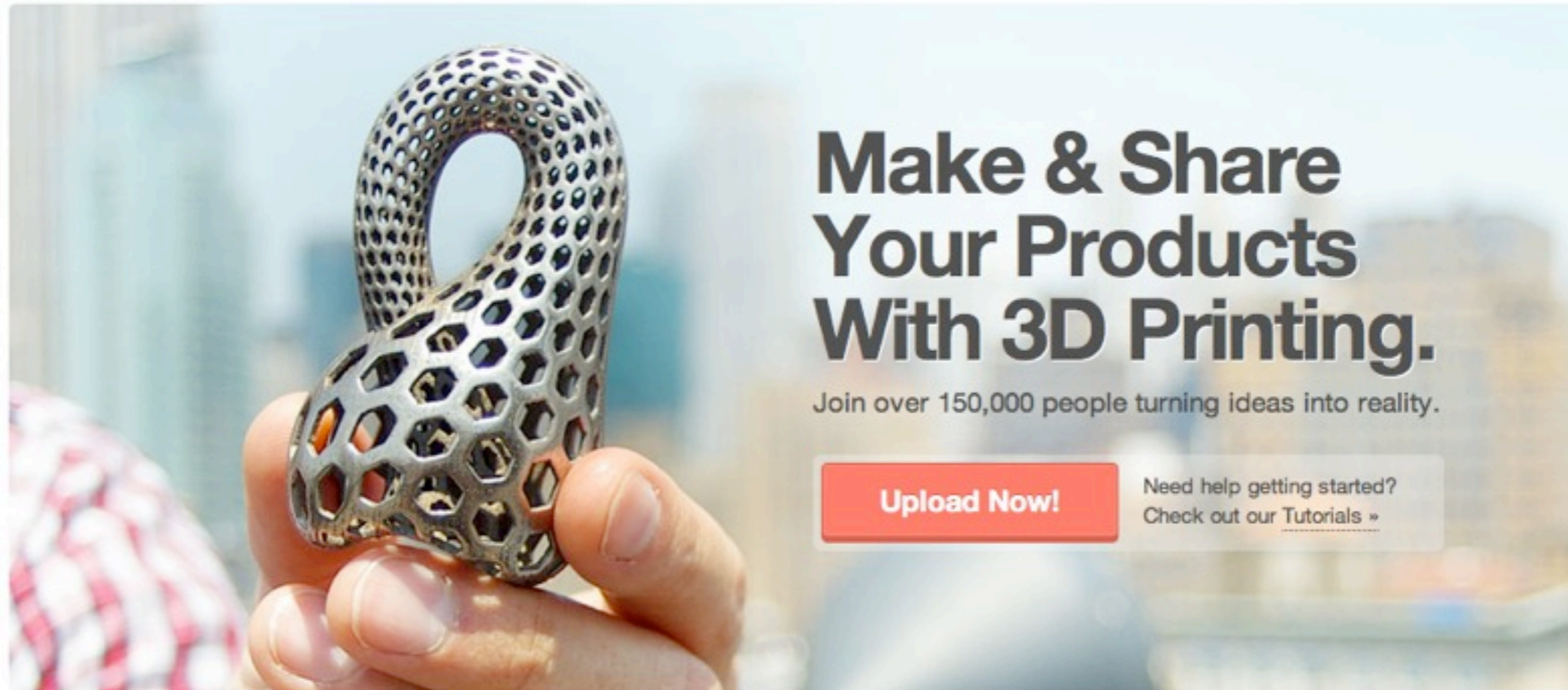


Design
Duplicate
Distribute
Digitally



Whatever you are want to do :- code,
graphics, sound, stories, level design, learn,
teach, fun, serious.....





Make & Share Your Products With 3D Printing.

Join over 150,000 people turning ideas into reality.

Upload Now!

Need help getting started?
Check out our [Tutorials »](#)

Discover 3D Printed Products

[See More Products »](#)



H6K Mavis
by miniatures



Bennys Bonsai - S01001
by Benny's Bonsai



[Mini] Slime 20mm
by DeltaEdge



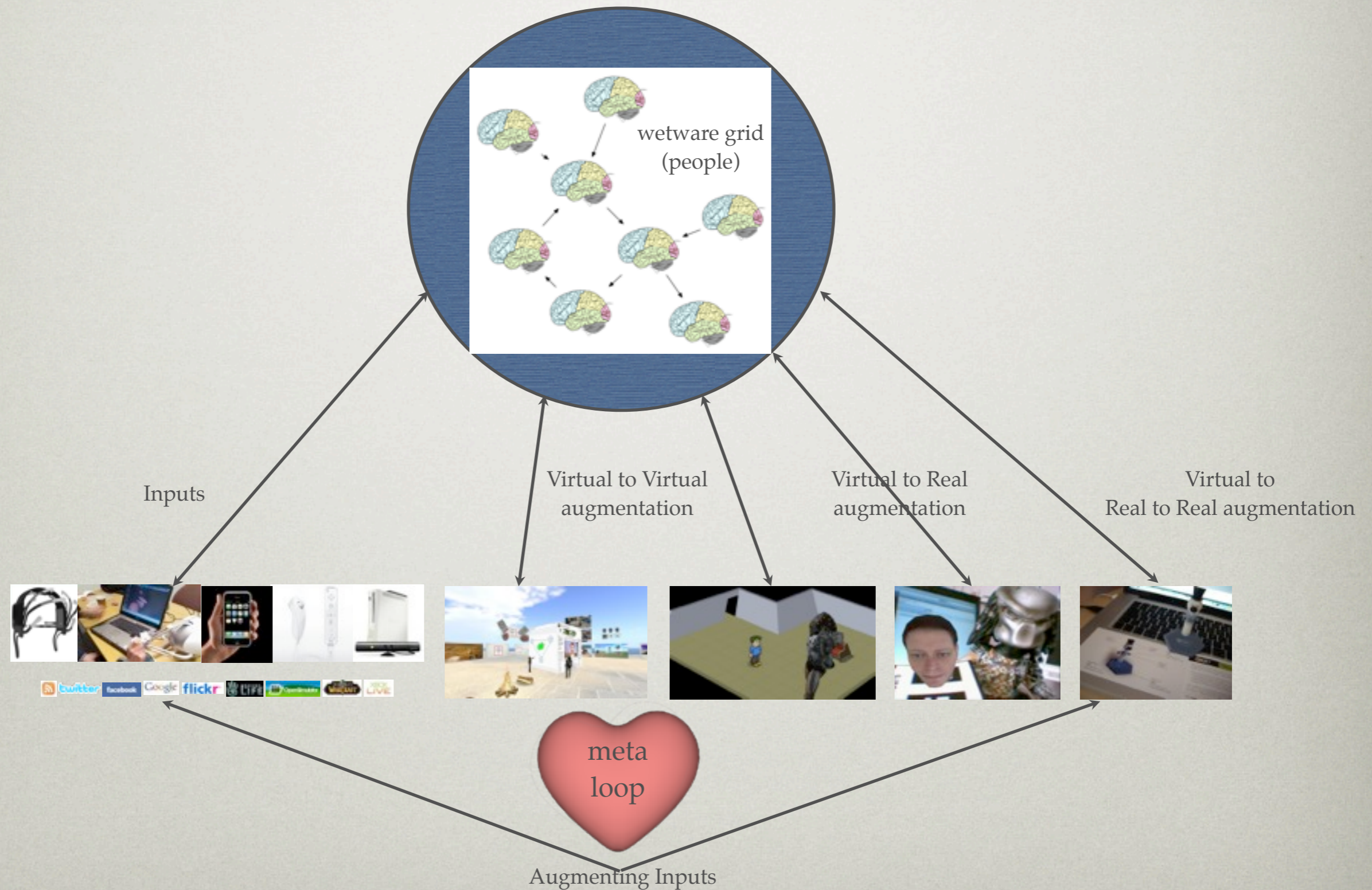
Flower Medium
by Jinga Buttons

<http://www.shapeways.com>



<http://www.makie.me>

Even better than a holodeck?



Threaded by: events, narrative, timings, context, needs

Blended Reality Toy Interaction



Skylanders
Life of George Lego
Disney AppMate



Kinect

Wii

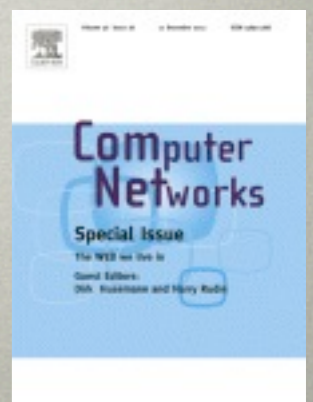
PS3 Move

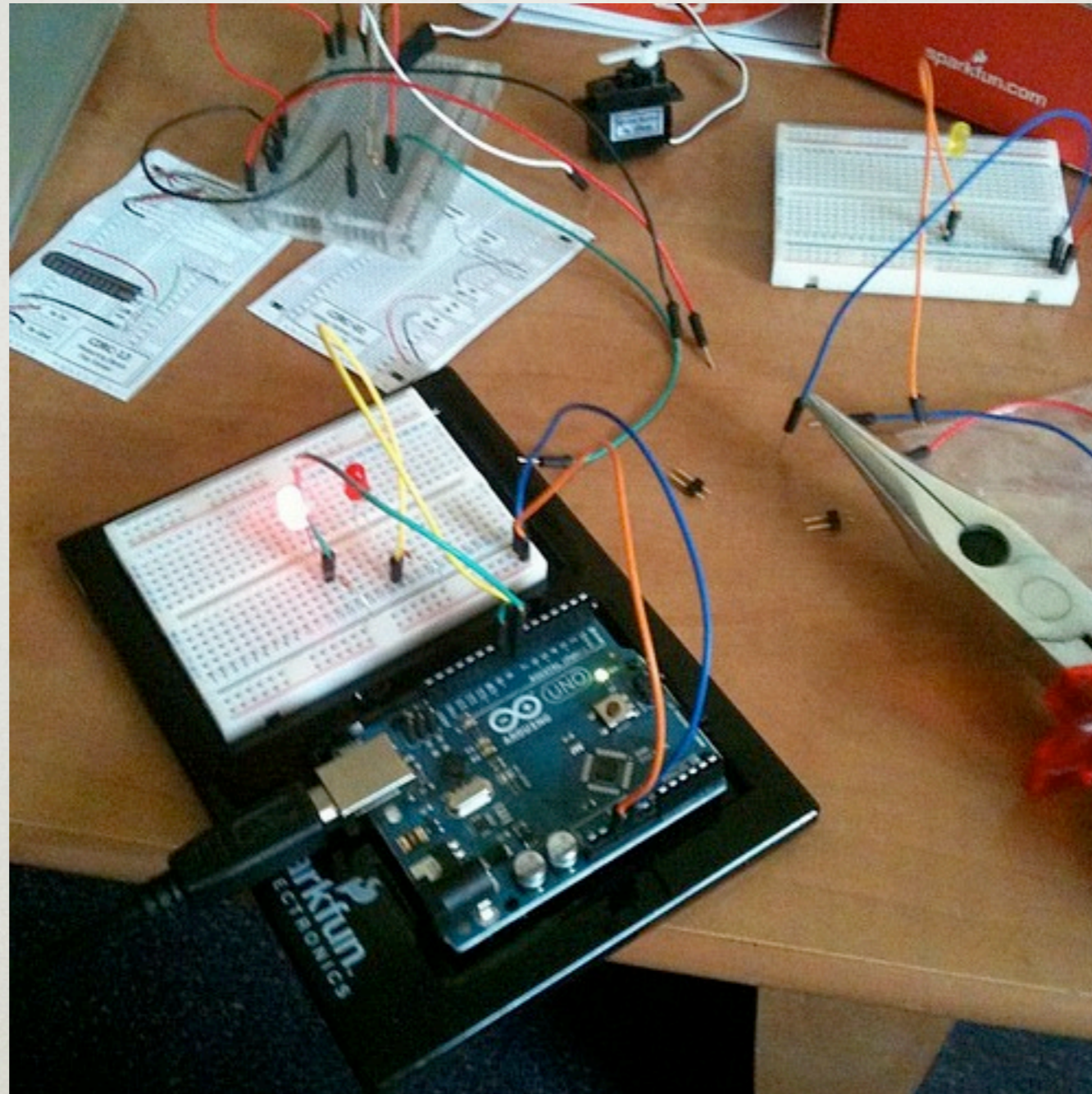
Blobo



SKYLANDERS SWAPFORCE

<http://www.sciencedirect.com/science/article/pii/S1389128612003477>





**ARDUINO, OPEN SOURCE
MAKER CULTURE (BUILDING) ->>
STEMNET**



1994



2005

Rock and Roll FTW



2010





EVOLVING CONTROLLER



Blended guitar learning Rocksmith



So Rock and roll my guitar
smashed itself

A Journey - Prompted by game tech



From exercise video tape to martial arts
assistant instructor via a kinect game



<http://issuu.com/flushthefashion/docs/issue4>

WITH THE LONDON 2012 OLYMPIC GAMES AND PARALYMPICS HAPPENING THE PAST FEW MONTHS HAVE BEEN MASSIVE FOR SPORT. BEHIND THE SCENES ALL THESE EVENTS HAVE FEATURED ELEMENTS OF ELITE SPORTS SCIENCE AND TECHNOLOGY.

BY IAN HUGHES / EPREDATOR / FEEDING EDGE LTD

VIRTUAL ATHLETES

For example, the marginal gains team for the TeamGB cycling applied a technical focus to the equipment used, and discussions raged regarding the technical advantage (and risk) around the carbon fibre blades used by track legends like 'Blade Runner' Oscar Pistorius.

Such inspiring occasions will inevitably lead to more people trying sports out, and for the home athlete there are some very accessible technology trends that add motivational and even game based features to physical exercise.

It's interesting for me as technology actually led me into a very active pastime, which in turn led me to yet more interesting technology. It may be a journey that other people also realise is worth taking. It also shows the evolution, and removal of many barriers to a rich and healthy life. Oh yes, let's not forget levelling up and scoring points too!

FLASHBACK

I would never have considered myself overly sporty, no great surprise for a gaming-tech-geek stereotype. I've had moments of applying myself to physical workouts though. Back in the mid '90s I decided my desk bound office job (constantly programming), was not going to help me enjoy my first skiing holiday. I also knew that going to a gym wasn't going to be the sort of experience that I would particularly enjoy.

So I got hold of a VHS video tape (google it, if you are under 15) of Al-American fitness guru, Tony Little (left) and started following this programme. Being on analogue video tape it was always a bit annoying having to rewind to the right point in the tape each time. The tape gave a reminder of technique, which is important in weight training, but was really a pace counter. A little bar ran across to show you 15, 30 and 45 seconds. Although it lacked variety, it was actually very enjoyable.

It became part of my daily routine. It was very low tech, but it was a start. I also decided to go cycling and this is where the tech involvement started to ramp up. The early web helped me discover a heart rate exercise formula. How could I read something that would let me use technology when out riding a bike?

The formula (The Karvonen Method) is to measure your resting heart rate, then to calculate your maximum heart rate which is 220 minus your age. This gives you a heart rate range. Within that, percentage bands indicate the sort of affect you are having on your body, and when and where you are either over, or under performing. So I popped into a local shop and purchased a heart rate monitor. This was an elasticated chest band containing the sensor which was paired with an LCD watch that showed the current heart rate.

I didn't stop there. A further addition to

the whole tech mix was not a simple speed distance bike computer, but a GPS tracker that measured all sorts of things including elevation. So I huffed around country dirttracks maintaining my heart rate at the scientific optimum, whilst logging lots of GPS data. Yet I still did not consider myself sporty! This was a science project. It helped me a lot with those first skiing holidays, though I found I hated skiing and was not well suited to it mentally. I didn't totally give up though and took to snowboarding instead, which is much better.

The VHS weights routine gradually faded away after a couple of years as work and family life changed. The cycling also became a bit more infrequent.

BACK TO THE FUTURE - ZOOMING FORWARD NEARER TO NOW

A few years ago I swapped my corporate barmitze for my own home consulting business. It meant I could adjust my working day and times to fit whatever I needed to do. It took a little while to mentally adjust and realise that it should include some physical activity. I knew I wanted to do something, but I needed to be using some technology so that I could explore the experience and benefits of it whilst also working out. Killing two birds with one stone, so to speak.

Then along came Xbox Kinect! I got early access to it on the second series of The Cool Stuff Collective. In case you have been under



is the Nike+ training application for Xbox using Kinect. Lots of training and tracking, as with UFC and Fitness Evolved, but with the scoring of the activities as, you guessed it, NikeFuel. Smartphones are loaded with sensors and also tend to have GPS. This has led to some clever developments around exercise and in particular running. Endomondo is used by millions of people worldwide (see our App of the Month) and Zombies, Run! <http://www.zombiesrungame.com> is a story based training app. It uses the principle of knowing how far and fast you run relative to your current position. This is used to trigger story elements and mini challenges for you via your headphones. So rather than just running with some tunes your run is interspersed with narrative. You learn more about the story by running, you reach certain targets in certain times to impact that story.

I LIKE TO MOVE IT MOVE IT

At a virtual worlds conference I was introduced to an unusual gaming controller called Blobo www.bloboapp.com. This small coloured ball is connected via Bluetooth to some mini games on a PC or Mac. The Blobo has accelerometers in it, so it knows what is happening to it. It is thrown up in the air (it is spinning!) it senses pressure so it can be squeezed, it also, as it turns out, acts as a stepper counter.

The dynamic this brings to a game activity is subtly different from a PS3 Move, Wii Remote or Kinect. If you play the basketball game, you have to throw the Blobo straight up in the air and catch it again. Real world physics is involved. The controller leaves your hand. My Blobo came from a Finnish company, but I discovered, via some serendipitous crossing of information streams on my blog, the core of it was developed by a company local to me. Quarterion technology had developed the Blobo. They have another more sports focused product called the BPMPro <http://www.quarterion-tech.com/quarterion-projects/bpmpro/>.

BPMPro is a low cost consumer technology

VIRTUAL ATHLETES

but also threw in some more aggressive combat moves, kicks, knees and punches. I had always pondered taking up some form of martial art, and this seemed a good start. I bought the game, did the first exercise evaluation and realised I was way more overweight and unfit than I had ever been.

I probably already knew this, but now my Xbox was telling me! It was a physical shock to the system. This was certainly not a 'game' the routines were a mix of stamina, strength and speed. I stuck with it every morning for over 9 months. No matter how much you do, there is always more. It becomes difficult for anyone to work without a goal. Getting fit can mean a lot of things. I wasn't actually getting bored, but I felt I needed more to focus on.

THIS IS WHERE VIRTUAL MEETS REAL

In January 2012 I saw a leaflet for a martial art, one that was modern, non competitive and suitable for both adults and kids. This was Choi Kwang Do <http://choikwangdo.com> and in particular South Coast CKD <http://www.southcoastckd.co.uk>. So I went along, with my five year old son and met Sabunim Webster. I knew that whatever we did I was fit enough, and having practised punches, kicks and knees for months with UFC Trainer I might have a chance not to feel inadequate.

As it turned out that would not have been an issue as Choi Kwang Do is a martial art that is about self improvement, rather than

aggressive comparisons to fellow students. It is an ever evolving art. It's only 25 years old, not afraid to include new techniques and is very focused on the science, physical and psychological, of self-defence. The school owners and instructors use technology to analyse their own techniques. This includes using video and software originally designed to analyse golf swings.

Given some of the easily accessible technology that got me into the art in the first place, this has got me even more interested in what we can do. Now both our kids are enjoying our shared tips to the Dojang.

WALK (OR RUN) THIS WAY

One of the simplest pieces of technology around is the step counter. Step counters have typically been small devices with LCD screens, now however, the step counter has evolved into a much more connected device.

The Nintendo 3DS, as well as being a dedicated handheld gaming system actually counts all your physical activity, as it includes a stepper based on its accelerometers. The motivation for using a stepper is usually only for exercise. Nintendo turn that concept on its head a little. The more steps you do the more coins you get to use in some of the games. This actually encourages you to take the 3DS with you in your pocket, when you would otherwise just leave it at home. Each day when I walk the kids to school I pick up

the 3DS on the way out of the door.

Another interesting move has been by Nike. They've been making trainers with steps in them. The rise of internet connectivity and social media led to the sharing of individual performance data and activity. Of course people don't wear trainers all the time so they have developed a functional fashion item called the <http://nikeplusnike.com/plusped.uct/fuelband>. This active device is worn as a bio-ole watch and tracks all your activity. It has coloured LED indicators telling you to your target and a matrix display to show time and text. The Fuelband connects to smartphones and computers to send activity, which then hits the social web. The aim is to measure whatever sporting or motion activity occurs. Individuals can set their own targets based on their sport.

An offshoot of the Nike measurement system is the definition of NikeFuel. This is an attempt at a standard measurement of any activity in any sport. After all, steps only apply to running or walking. NikeFuel lets people compare activity with friends across different sports. Really it's just another motivational tool, the psychology of effort is often harder than the actual effort itself. Game elements like NikeFuel, when also shared with like minded friends, give an extra element to focus on.

Nike have not restricted themselves to physical devices though. Coming very soon

FLUSH

VIRTUAL ATHLETES

based motion sensor. It is designed to be attached to the body, usually more than one is applied. It then uses precise measurement of acceleration and movement during a technique. When put in context of a particular set of motions it then can use software to feedback to the user the qualitative elements of the move. One example is of a forehand swing with a tennis racquet. The rotation of the body from the hip, the following movement of the arm have BPMPro sensors and also a sensor can be placed in the racquet. This can be mapped to the ideal torsion model of the human body to maximise the technique. The technology is also aimed at physiotherapy, helping people to perform the right movements at the right pace. As you can see instrumentation and feedback of the data, either for scientific purposes or for fun and motivational reasons is very powerful. Activities are physical, but the data is creating virtual representations.

These representations are starting to be shared, typically as scores. However there is a natural link to virtual worlds and virtual environments. If we are honing a sports technique with someone else or with a group and we can't all be in the same place at the same time, yet we have lots of instrumentation data, then naturally we should use live virtual world technology as part of the mix.

HEY COACH!

A project well on the road to this sort of interaction is The Coaches Centre <http://thecoachescentre.com/>. I have been involved in this as an advisor for a while as I think the principles of combining sports and virtual worlds is an ideal platform for people to understand the power of virtual worlds in communication. Sports are games, but not really regarded as games. The technology is game technology, but not really for playing.

The Coaches Centre is a Unity3d web based experience. It provides a shared virtual environment. It is initially aimed at sport coach education. All sports coaches at all levels take certain classes, and certifications. Often they have to travel and spend time away of shared education sessions. This takes coaches away from their athletes and clubs. If instead the coaches can gather in shared virtual spaces, discuss and participate in the course then more time can be spent on the sport and less on travel.

Once people start to interact online in virtual environments, around a subject they are passionate about (as sports coaches are, many are volunteers) new models emerge. The Coaches Centre provides virtual offices for coaches, they can personalise and invite people into their office. In the environment it is possible to place posters, videos and information on boards with the room. Your avatar can be adorned with

clothes related to your sport. Likewise larger convention centres provide bigger gathering spaces online.

A virtual environment can allow visualisation of data as a shared experience. In the future feeding in all live physical performance data into the environment would let a coach the other side of the world offer their guidance to an athlete. I would let a physiotherapist offer live feedback to someone recuperating at home without the need for travel. NikeFuel is removed, or replaces the need to be physical, to meet and work together instead it augments that. It adds a beneficial set of tools to the mix.

For me, going to a Choi Kwang Do session at my Dojang, with the family collaborative atmosphere is important. Training with different people teaches you different things every time. Choi Kwang Do allows for us to go and train at any Dojang anywhere in the world. Imagine it, with advances in easily accessible technology, I am able to get expert human feedback on my techniques from places I can't get to visit physically. Where the data is also able to be analysed to provide some automated feedback too. Measuring acceleration of a punch, counting the number of kicks performed. Each of these can enhance on individuals improvement without making it competitive, yet still have the offer the scoring numbers that something like NikeFuel provides for additional motivation.

EXPERIMENTATION AND MOVING UPWARDS AND ONWARDS.

This could seem a little way off, but in reality we have all the pieces. I decided to try a little experiment. Initially I tinkered with an Arduino based accelerometer hit counter that could be embedded in a punchbag. Then I decided to try something more advanced. I used the freely available I2SPEX toolkit <http://code.google.com/p/i2splex/> for the Mac's quartz composer and the Synapse open source Kinect Interface <http://synapsekinect.tumblr.com>. This let me plug my Xbox Kinect into the Mac and try out some Choi Kwang Do moves getting live feedback on this screen, seeing myself as a waveform with individual joints highlighted. I then fed that (in this case as a youtube video) into my office in The Coaches Centre. I also used the whiteboard to put up some Korean terminology for the moves as text. If you were logged in and invited to my office we would all be able to see the same content, discuss and adjust and swap moves.

At a time when everyone is so inspired by the Olympics and Paralympic heroic sporting endeavours at London 2012, I think it is fair to use the Choi Kwang Do motto, "Pi Seungji" (Celtic Victory) to apply to the benefits this easily accessible technology is going to have on society in the future.

Roll on Brazil!!



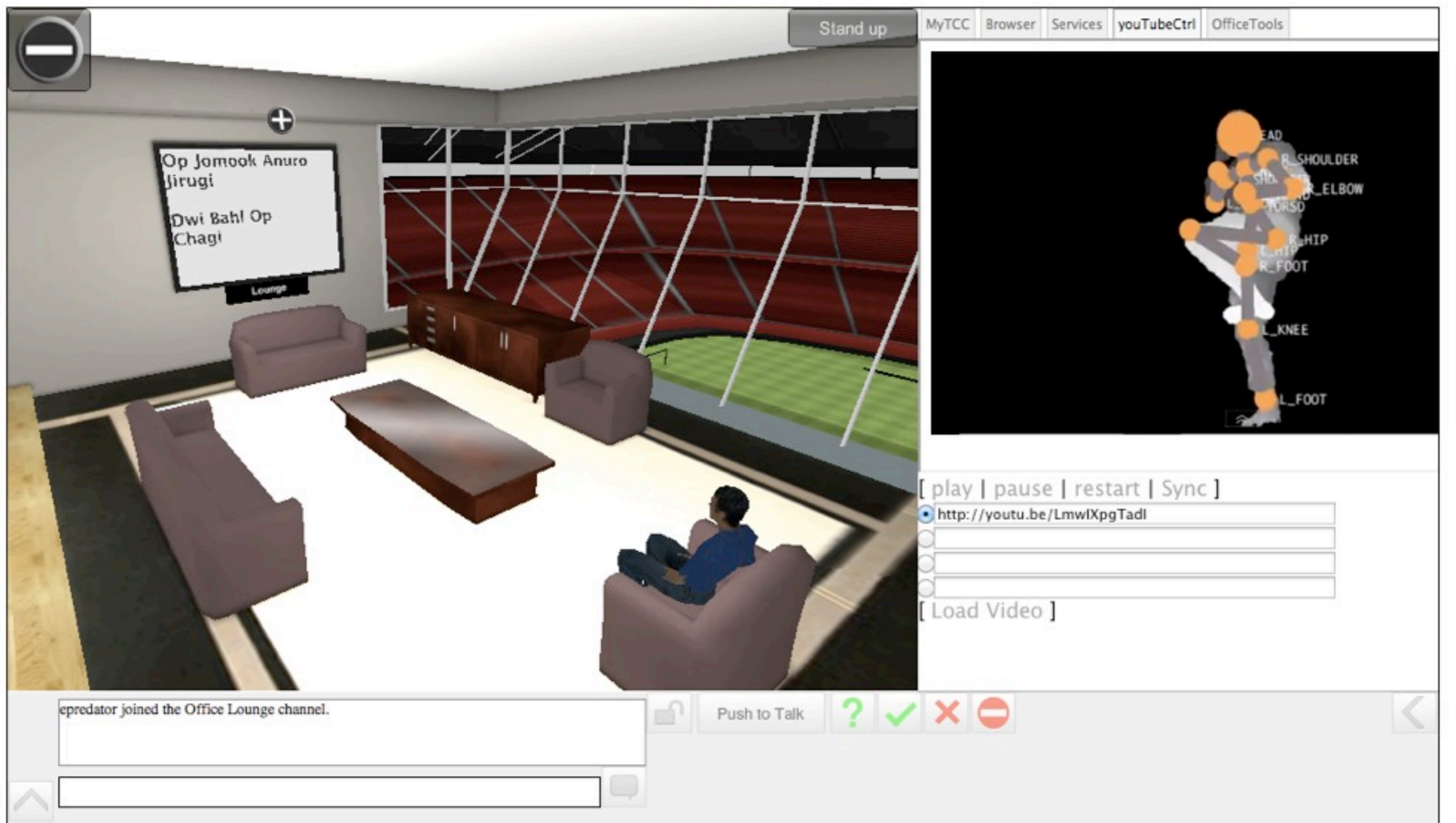
<http://www.youtube.com/watch?v=LmwIXpgTadI&feature=share&list=UUzggIACzASKJWRqd-gbqnXA>

Kinect and Choi Kwang-Do

<http://code.google.com/p/tryplex/>



Kinect and Choi Kwang Do Second Life (recorded animations)



<http://www.thecoachescenter.com>

A future that could offer blended reality teaching

Pil Seung!!!



필승



Photo from Helen Storey

<http://www.basingstokeckd.co.uk>

<http://www.southcoastckd.co.uk>



BLENDING REALITY FOR LEARNING AND PLAY

IAN HUGHES/EPREDATOR
METAVERSE EVANGELIST

TAKING A BITE OUT OF TECHNOLOGY SO YOU DON'T
HAVE TO

WWW.FEEDINGEDGE.CO.UK

BCS ANIMATION AND GAMES DEVELOPMENT