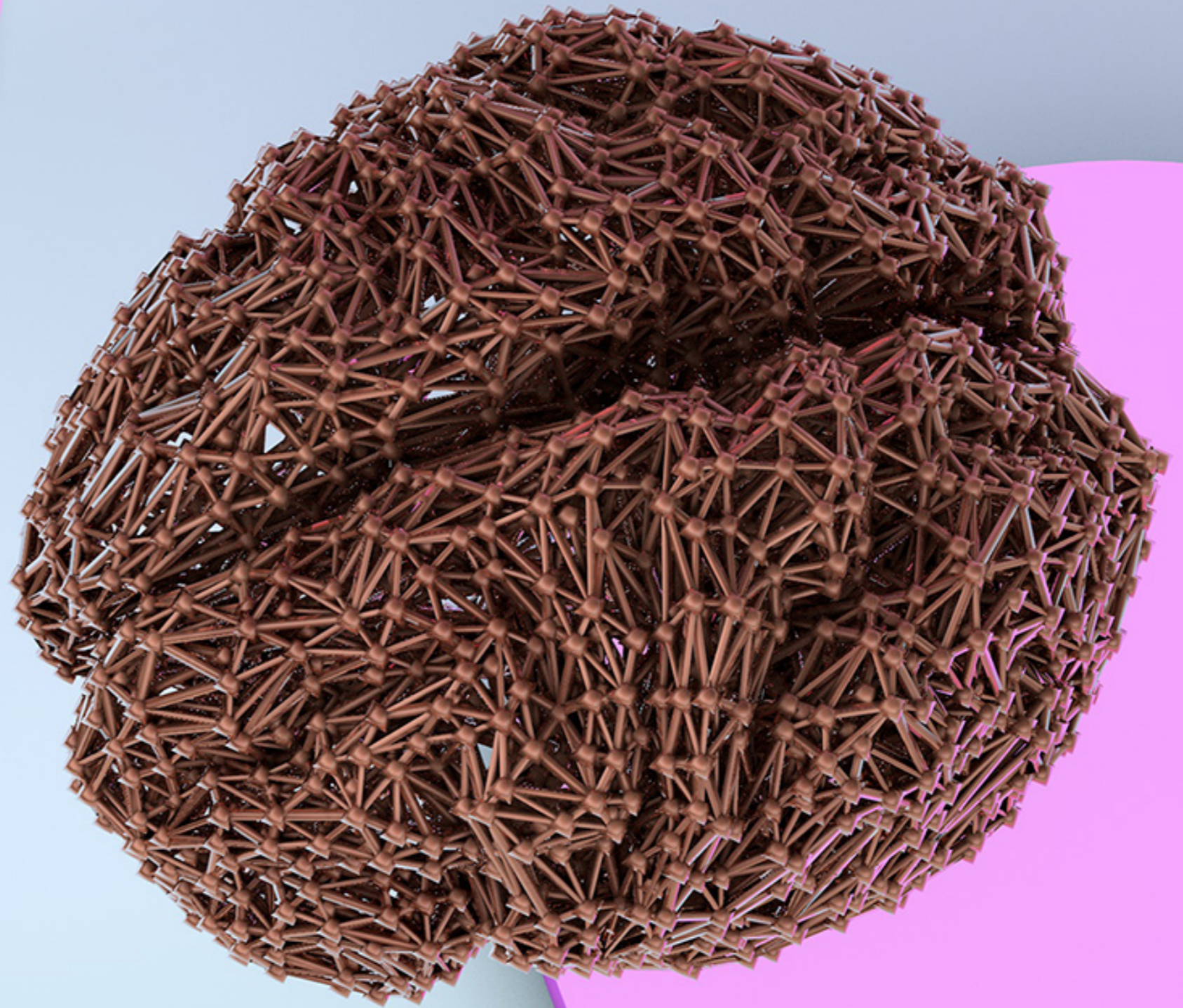


# BRAIN FOOD!

for Digital Creatives



**VOL.1**

AWWWARDS®

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## **AWWARDS®**

We have many faces. We are the recognition and prestige given to your website for your hard work and creativity, we are the expert jury that scores your projects, we are the blog featuring the latest on design and development, we are the inspiring conferences uniting the best of the digital industry in iconic cities all over the world. We are Awwwards. Never stop evolving. The following case studies are true stories. They reveal the secrets and steps taken by top digital agencies to create some of the most unique websites of the year. Be warned, what you are about to witness may severely inspire you.

**DO NOT READ  
ON IF YOU ARE  
EASILY SHOCKED  
BY EXTREME VR  
STORYTELLING,  
BIZARRE  
EXPERIMENTS  
OR DRAMATIC  
FACE & EMOTION  
RECOGNITION.**

# The Next Rembrandt



## The Next Rembrandt

**Superhero Cheesecake** is an award-winning creative digital production studio from Amsterdam consisting of UX designers, visual designers, developers and digital producers. We are damn proud of every line of code and every pixel we deliver. Our process is rock solid and enables us to deliver cutting-edge digital products with great satisfaction.

[superherocheesecake.com](https://superherocheesecake.com) 



## The Next Rembrandt

By SUPERHERO CHEESECAKE

**The Next Rembrandt is one of this year's most talked about artificial intelligence-meets -creativity projects. A group of art historians, material researchers, data scientists, and engineers (led by J. Walter Thompson Amsterdam for client ING and technical partner Microsoft), spent 18 months on a controversial challenge: to teach a machine to think, act and paint like Rembrandt.**

The result is The Next Rembrandt, a 3D printed painting made solely from data of Rembrandt's work. The painting consists of over 148 million pixels and was created using deep learning algorithms and facial recognition techniques based on 168.263 painting fragments from Rembrandt's oeuvre. Bringing back to life the Master of Light and Shadow to create one more painting, only this time the painter is data and technology the brush.

Blurring the boundaries between art and technology, this artwork is intended to fuel the conversation about the relationship between art and algorithms, between data and human design and between technology and emotion. The story behind this unique painting and its creation is revealed in full on the project website. The site is designed by J.Walter Thompson Amsterdam and developed and animated by Superhero Cheesecake.

### Design process

To present The Next Rembrandt as a rich high-end experience, the objective was to design a style that can visualise complex technical processes with a narrow coexistence of the classic style of Rembrandt. The focus here was to find the right balance in weight, prominence, strong compositions and simplicity. The outcome would be an emotionally engaging, elegant design enabling the viewer to understand the complex technical processes in creating the final painting.



THE NEXT REMBRANDT

**“THE PAINTING CONSISTS OF OVER 148 MILLION PIXELS & WAS CREATED USING DEEP LEARNING ALGORITHMS & FACIAL RECOGNITION TECHNIQUES”**

ING PRESENTS  
THE NEXT  
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THE NEXT REMBRANDT FILM



## The Next Rembrandt

By SUPERHERO CHEESECAKE

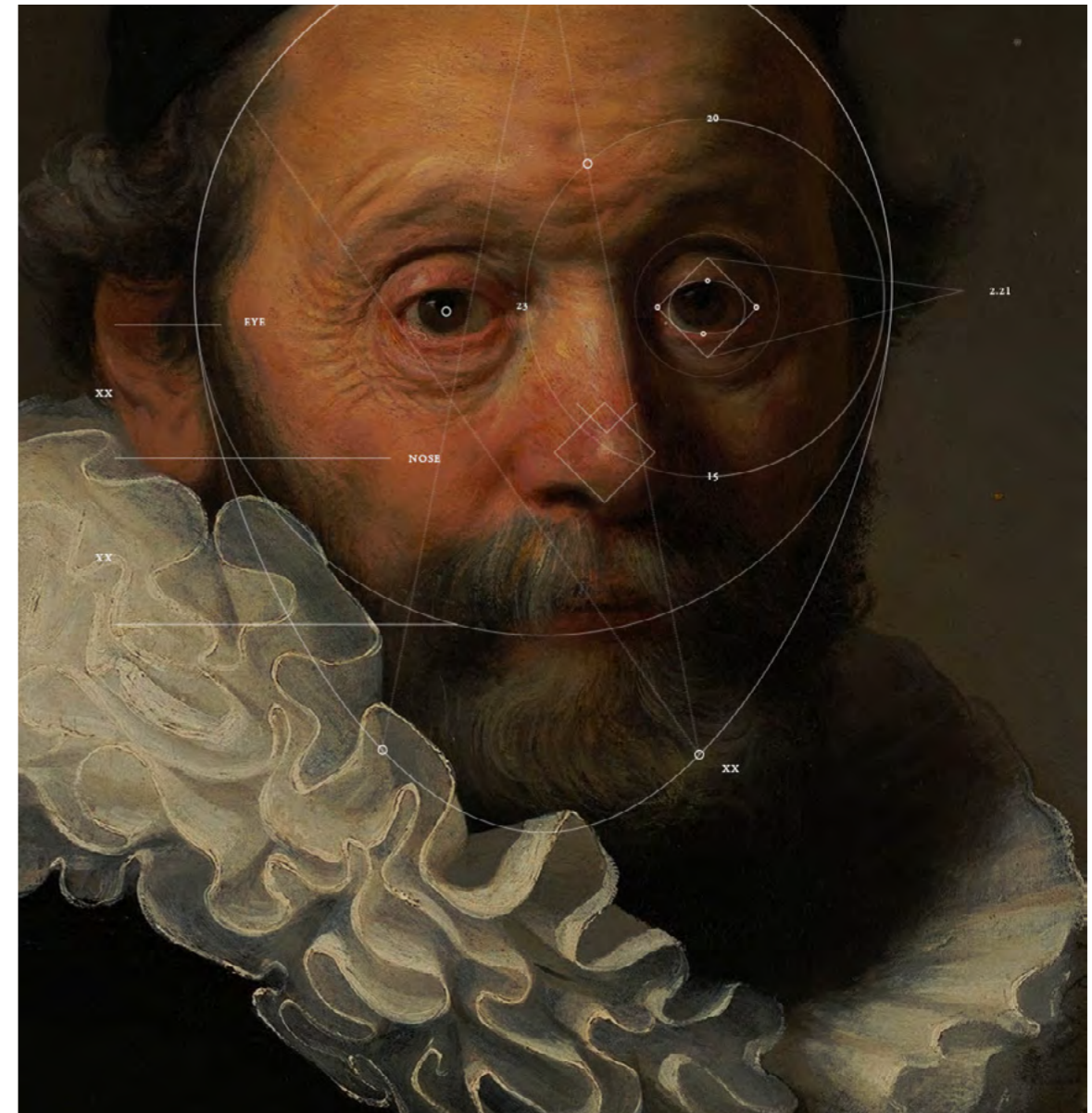
Quality in visuals, smooth animation, and performance were of high importance for the experience. The design concept was to display the artwork in high quality from close up and far away, so a modern, cross browser solution with high performance was key for load time and graphical performance. Additionally, seamless transitions and user initialized animation were implemented with rapid response to the user's scrolling and keyboard events.

The design knows a visual style based on artisanally technical drawings. Using lightweight line drawings and strict rules in drawing these visuals (0°, 45°, 90° and arc shaped lines), we visualised the processes of the project. The visuals and information are gathered in an interactive, editorial layout, with carefully designed typography and animations to amplify the craft and classical style of Rembrandt throughout the entire experience.

### Interface & Navigation

In designing the UX, the initial emphasis was placed on the final painting itself. From this point we can branch into the different steps of how the painting was actually created, the story of creating The Next Rembrandt.

By first presenting the final painting and then showing the steps that brought us to the final result we created a user journey that sets gain-



CLOSE-UP OF THE DESIGN STYLE

## The Next Rembrandt

By SUPERHERO CHEESECAKE

ing interest and emotional engagement prior to offering deeper information behind each step. Both the experience and the absorption of detailed information are being optimised by this specific journey that includes rich visual stimulation and intuitive interactivity.

The main subject, the artwork, is used as the common thread while guiding the users through the story. Regions of interest of the artwork are used to present the steps, one by one. Upon scrolling (or using the keyboard), the experience dynamically zooms in on sections of the artwork and adjusts the camera position accordingly.

From these regions of interests, users can dive further into selected steps of the story of creating the final painting. The in-depth information shows rich visuals and animations correlating to the active chapters and are responsive to the user's scrolling behaviour.

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### Animation

In order to convey the complete story we used motion graphics as an essential element. The animations are used to express the tone and the high level of detail that has been applied in crafting The Next Rembrandt. The tone has



THE PORTRAIT IS THE STARTING POINT TO NAVIGATE



DIVING DEEPER INTO THE STORY

## The Next Rembrandt

By SUPERHERO CHEESECAKE

been set by strict, yet fluent, transformations on carefully designed, lightweight, technical line drawings in context with Rembrandt's art. At the same time, the level of detail is expressed by using the right balance in the complexity of motion graphics.

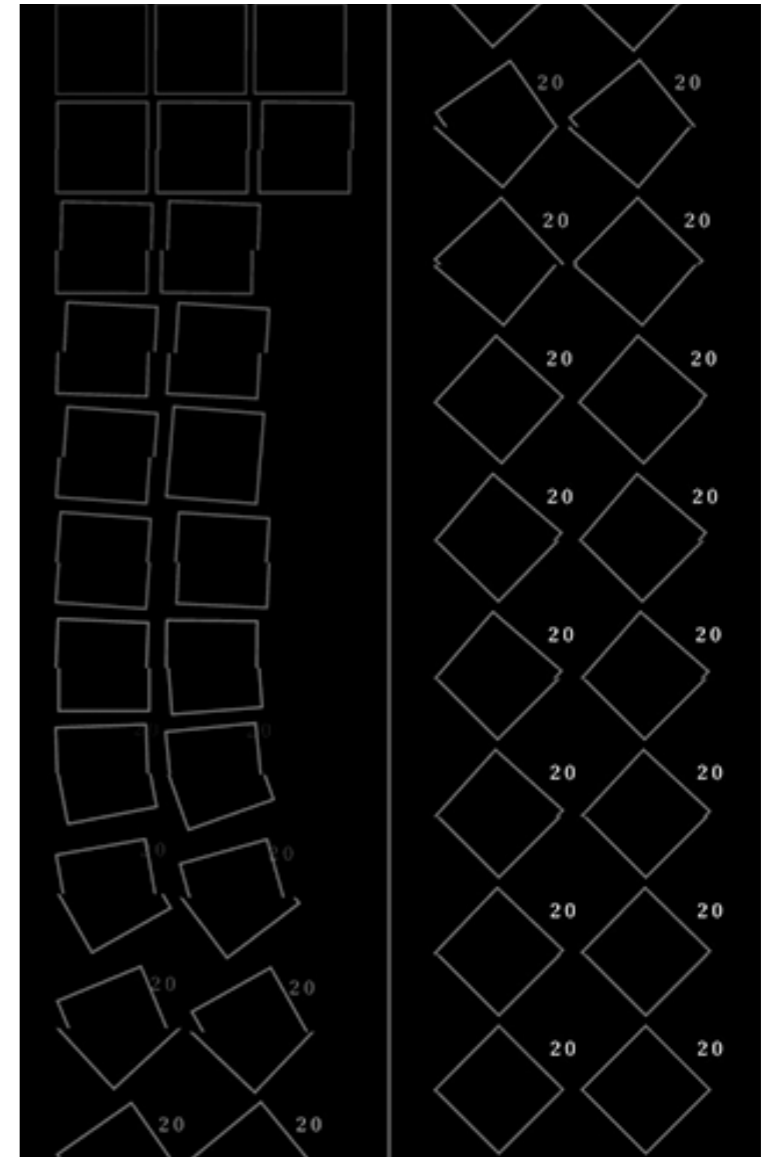
From the introduction to the last chapter, all animations are intended to be as unintrusive as possible and not just for the sole purpose of visual candy. Due to the subtleness in the animations they only add to the experience: sometimes guiding the user to certain functionalities and other times illustrating the steps that were taken during the creation of the painting.

### Technical process

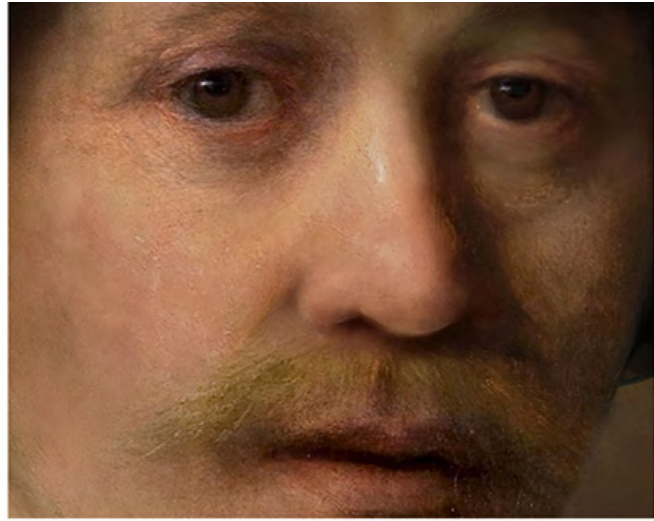
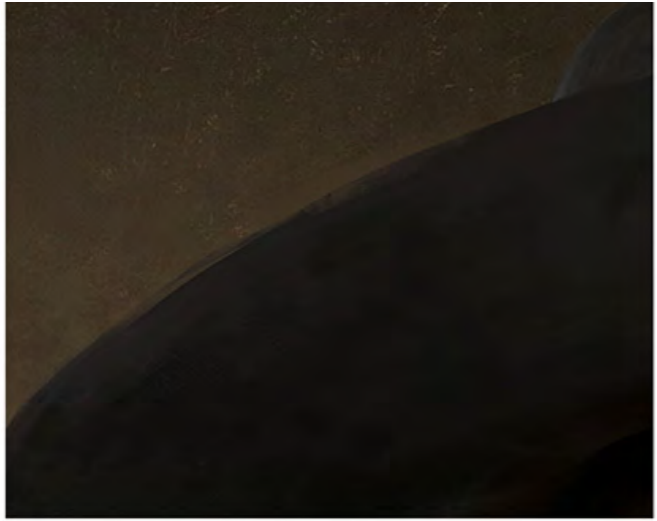
To convey a story that relies heavily on visual information, we needed to design a technical framework that could handle high resolution bitmap data, animations and video data with

minimum compression. At the same time, we needed to enrich the experience with matching tween physics to generate transitions upon user initiation (scroll and keyboard events).

The most challenging part of the build was the high resolution image of the painting which is the central point of the story. It begins with the painting full-screen, then you can zoom-in further into different sections of the painting, effectively traveling within the browser to different points of interest. To keep this as smooth as possible and to make sure transitions were seamless without extra loading hiccups the decision was made to cut the painting into tiles. The process and technique is identical to what larger map and routing SDKs, such as Google Maps, are using - albeit in our case on a smaller scale. Using one of these SDKs was a bit overkill for our project and would have resulted in too much overhead where a performance of 60 fps could not be guaranteed.



FRAME BY FRAME ANIMATION OF ONE OF THE MANY ANIMATED ELEMENTS



HIGH-RESOLUTION TILES OF THE PAINTING

## The Next Rembrandt

By SUPERHERO CHEESECAKE

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Using HTML5 hardware accelerated canvas elements to contain the tiles or segments of bitmap data, the full high quality image of the artwork could be reconstructed. This method has the advantages of an increase in control on loading data and, the ability to make use of smooth transitions when the need arises to zoom in and move over the full-screen, browser-generated image of the full artwork. We put the artwork and high resolution images on a CDN for faster delivery and to offload traffic from the main web server.

As the site contains an array of different animations we could never go for just one standard technical implementation. The approach for implementation can differ depending on the type of animation. After an extensive motion graphic prototyping stage, the graphics and interactive elements were animated using different techniques. In some cases crisp CSS3 and SVG animations were used for things

such as rollovers and shape animations. For other complex and detailed animations PNG image sprites rendered in After Effects were implemented.

In some cases, using sprites or spritesheets would result in a loss in performance or a heavy hit on loading time as these things can eat up a large amount bandwidth when used full-screen. This was solved by using video for some visual effects so we could take advantage of better compression techniques and hardware accelerated video playback performance.

All these techniques combined are part of a responsive framework that result in a cross-device, high-end experience.

### **List of technologies:**

HTML5, Javascript / backbone.js / GSAP, Canvas animations, SVG animations, CSS3 animations, PNG sprite animation.

“AFTER AN EXTENSIVE MOTION GRAPHIC PROTOTYPING STAGE, THE GRAPHICS AND INTERACTIVE ELEMENTS WERE ANIMATED USING DIFFERENT TECHNIQUES”

# Space Lamb

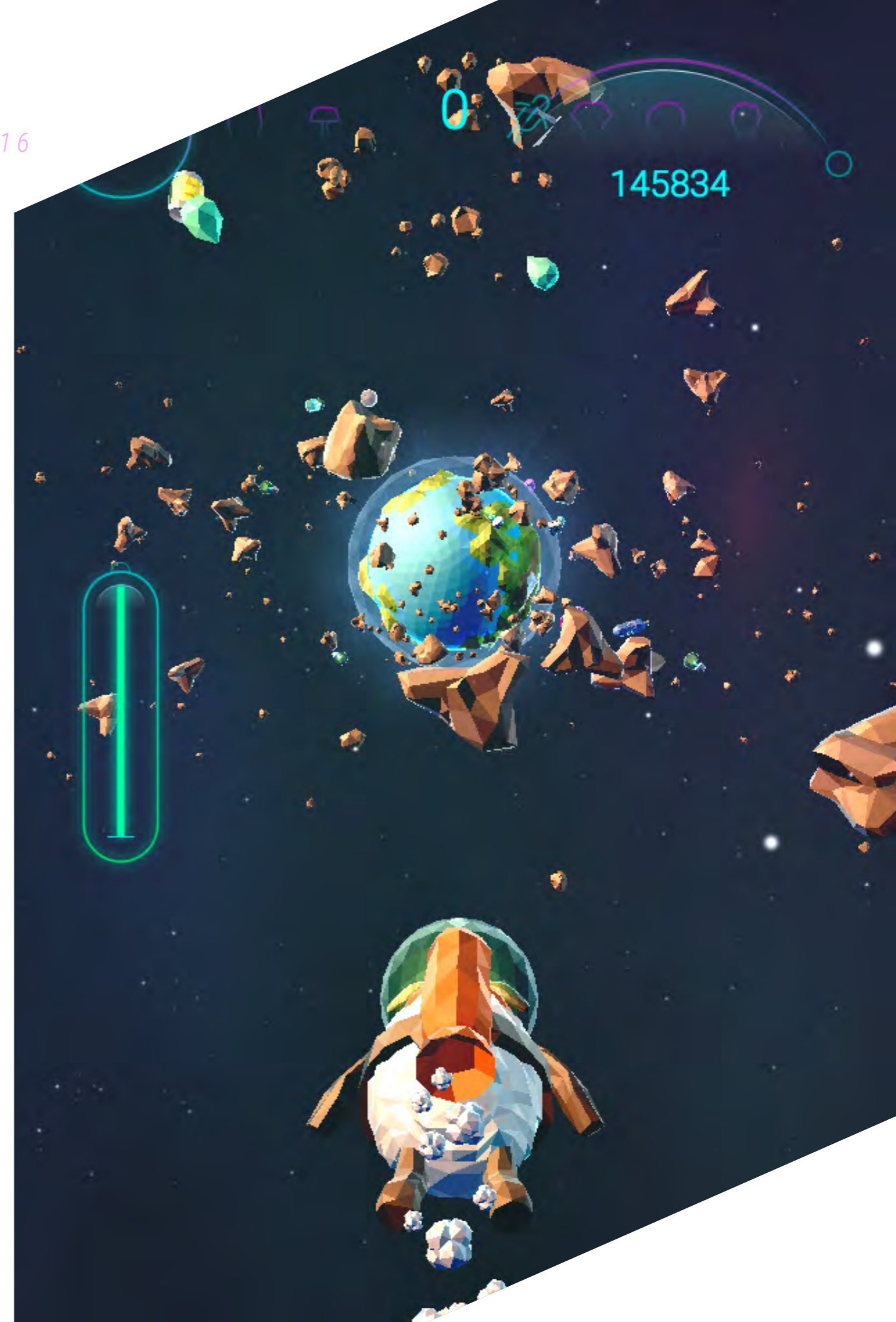
**12**  
WAVE

## Space Lamb

**12WAVE** is a studio which was founded in 2014 by Roman Yurlov.

«Before the studio, I was in charge of designing interactive sites on Flash. I appreciated that it was possible to jazz up the site and make it eye-catching, unusual and to present the content for the customers in a different way», Roman said. Our studio is specializing in creating extraordinary sites where different technologies are used, which can attract users and give them the opportunity to interact with the content and experience a lot of positive emotions.

[12wave.com](http://12wave.com) 







## SpaceLamb

By 12 WAVE PRODUCTION

**At 12Wave we believe that our products should be available for everyone, so they can obtain the information, play with it, and feel the emotions that can facilitate the memorization of information. Therefore, we have focused on things most people have, in addition to a keyboard and a mouse – a webcam and a mobile phone.**

In real life, we use a variety of objects to interact with other people and devices. To use the elevator, you press the button. Our smile can demonstrate that we are happy and satisfied and with the help of language, we are able to express our desires verbally, ensuring effective communication between people. In some countries “thumbs-up” is a sign meaning that everything is well – this is communication too.

When we use a computer, we interact with applications with the help of a keyboard and a mouse. We are currently living in a wonderful time when all kinds of futuristic things from ‘80s and ‘90s movies have become a reality. A few years ago we used to control sites and web-games using a keyboard and a mouse, now there are many more interaction devices available: webcams, microphones, mobile devices, leap motion, oculus rift and google cardboard.

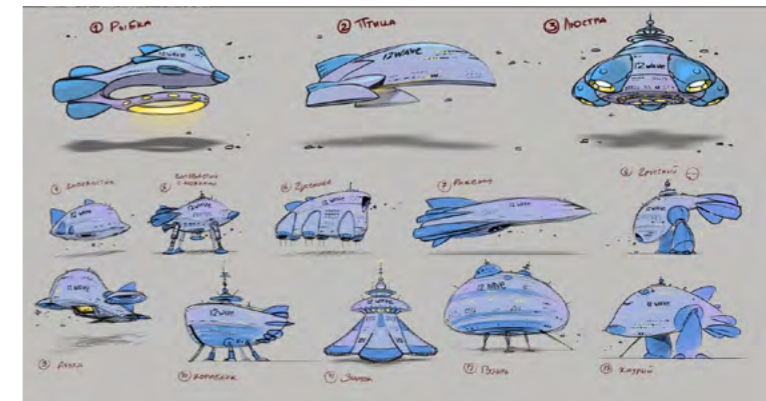
With the help of a webcam, you can interact with a site or a game. Today, it can be used to recognize a human face, its outline, eyebrows, eyes, nose and lips. In addition, it is possible to recognize hands and various markers, used for augmented reality.

### The Use of Camera in the SpaceLamb Game

We have implemented all these character control methods in the game – the lamb in



A SUMMARY OF WHAT THE LAMB DID, WHAT HAPPENED TO HIM AND WHAT HE IS GOING TO DO IN THE GAME



SHIP SKETCH

## SpaceLamb

By 12 WAVE PRODUCTION

outer space, which is flying home, dodging asteroids. Control over the character with the help of a webcam turned out to be very unusual, vivid and memorable. We've received a lot of positive feedback on it. Game available at: [spacelamb.12wave.com](http://spacelamb.12wave.com)

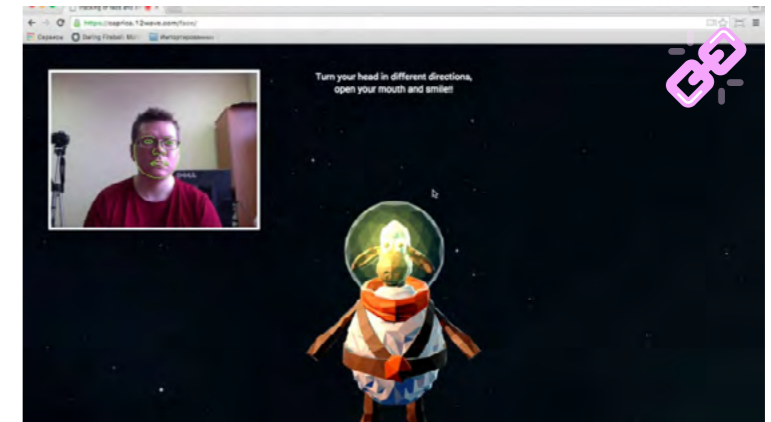
The monitor represents a porthole for the person controlling the flight with the help of their head. In this case, we used the Headtrackr library. Using this library, you can recognize the head position, if it's getting closer or further from the camera. It works the following way – the video from the camera is transferred to the page, this video is then rendered into the image, which is transferred to the library for processing. The head position is determined in relation to this picture or video. The starting point is the upper-left corner of the video image. This enables us to keep track of the head inclination as compared with the center of the camera, and control the lamb, guiding it

in different directions: left, right, up and down. Thanks to this effect, we have managed to create an interesting and fun gameplay.

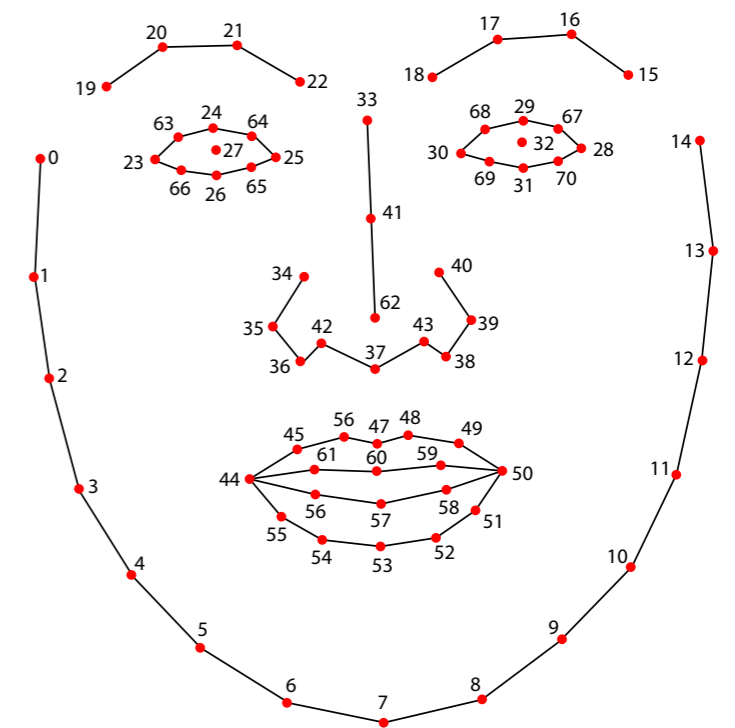
### Face & Emotion Recognition by the Camera

The author of Headtrackr has one more library for webcam interaction – the multipurpose library clmtrackr. You can use it to recognize human facial features: eyes, nose, lips, eye-brows and face contour. Using this, we can see whether a person is smiling or not, if they have turned their head to the side or bent it down. You can see how it works in the following experiment: [go.12wave.com/1Tza66Y](http://go.12wave.com/1Tza66Y)

Turn your head in different directions, open your mouth, smile. The lamb will copy your head movements: turning or inclining it. If you open your mouth, you'll see the lamb opening its mouth, too. Smile. The wider the smile, the higher the lamb raises its ears. It happens due to the fact that we are getting the data from the camera – 70 points of the face.



FACE TRACKING



## SpaceLamb

By 12 WAVE PRODUCTION

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This library provides 70 points of the face, with the help of which we determine what a person does. In this experiment, we went the simple way. For the head turn, we took the horizontal points and compared the distance between the outer and the middle points of the face (nose point). If the distance from the point of the nose to one side of the face is less than to the other side, it means that the person has turned their head to the side, and the lamb turns its head to the same side too. To tilt the head, we used the same extreme points of the face and the nose point and checked the deviation of the nose point vertically, and so we understood that the head was inclined forward or backward. The library also allows you to define several emotions: joy, anger, surprise and sadness. The output is the result from 0 to 1. With the help of this data, we can determine the degree of happiness of a person.

### Camera Interaction with the VR Helmet

JSARToolKit – is a library used for augmented reality. In this experiment, we decided to combine this library and WebVR. For WebVR, you can use your mobile phone + helmet (Cardboard Google or equivalent). You can look at the lamb from different angles in 3D, moving away or getting closer to it. For the experiment, you must download and stick the marker ([link](#)) on the helmet (Cardboard Google or equivalent). Follow the instructions on the page ([link](#)). Use Firefox or Chrome browser to view on a computer.

To track the distance from the helmet to the camera, we used the JSARToolKit library. It allows you to keep track of the marker, so at the output, we get 4 points with respect to the camera image. Using this data, we get a square area. The bigger the area, the closer the helmet to the camera, the smaller, the fur-

“WITH THE HELP OF A WEB CAMERA, IT IS POSSIBLE TO PROVIDE A NEW, EMOTIONAL INTERACTION WITH WEBSITES AND GAMES ON THE INTERNET”

## SpaceLamb

By 12 WAVE PRODUCTION

ther away from the camera. Using the same technique, we were able to determine the displacement of the helmet as compared to the camera center. With the help of this data, we could move the lamb up and down, left and right, with respect to the viewer. This effect provides good immersion in 3D, and the ability to look at the object from various angles, to move closer to it or to get further away.

As we needed to reduce the size of the marker to stick it on the helmet, we had to increase the size of the video image to 640x480px, so that the library could detect the marker better.

### Conclusion

With the help of a web camera, it is possible to provide a new, emotional interaction with websites and games on the internet. This kind of interaction can be used to demonstrate various products: fitting glasses, makeup, contact lenses, wigs, hats, etc., as well as for introducing unusual interactive content and more interesting ways of character control in games.

### Technologies

The following libraries were used for the experiments:

[Three.js](#) – to create 3D

[JSARToolKit](#) – to keep track of the marker and the distance between the camera and the helmet

[clmtrackr](#) – to track the face parts

[headtrackr](#) – to track the head position

[socket.io](#) – data exchange between the computer and the helmet

[webvr-boilerplate](#) – to create VR



PROCEDURAL SKELETAL ANIMATION



THE LAMB'S PSYCHEDELIC JOURNEY



# Le Bureau des Légendes 360°



## Le Bureau des Légendes 360°

**EXZEB** creates impactful experiences in Virtual Reality. With the vision of an agency and the intimacy of a studio, we ideate, design, produce and help distribute groundbreaking 360° content. We have the creative spark and the tech expertise to push the boundaries of VR storytelling, the strategic mindset to bring in measurable success and a global network of VR gamechangers to make it all happen.

Let's un-frame your world and let people step in.

[exzeb.com](http://exzeb.com) 



LE BUREAU  
DES  
LÉGENDES

## Le Bureau des Légendes 360°

By EXZEB

### Background

For the launch of Season 2 of award-winning spy TV series Le Bureau des Légendes, Canal+ was looking to offer something truly extraordinary to its fans.

### Concept

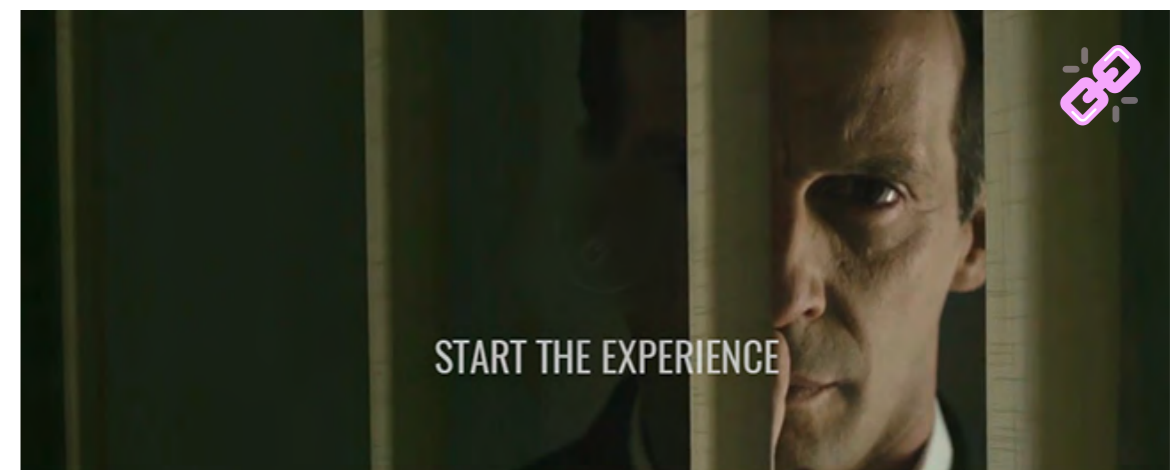
Exzeb partnered with cinema production house Bridges and film director Julien Bittner to bring to life the dream of any TV series fan: Becoming The Hero of the show!

The result is a 6-minute Virtual Reality (VR) spin-off of the series putting users in the shoes of an aspiring counter-terrorism agent about to go on his final test mission for French external security state service, the DGSE. Through his eyes, you will be meeting your new boss, hitting the streets of Paris, escaping surveillance and placing a bug in a room of a Parisian palace.

As we were dealing with questions about “embodiment” as a visual storytelling tool and bringing together large teams of traditional filmmakers and VR specialists and juggling with the technical implications of filming and directing inPOV, the project was not short of serious yet exciting challenges.



LBDL - THE VR FILM



DERNIÈRE MISSION AVANT DÉPART : A 360° EXPERIENCE (Microsite)



## Le Bureau des Légendes 360°

By EXZEB

### The Scenario

The first, and maybe the most crucial challenge was to push the narrow boundaries of 360° storytelling and explore how we could redefine narrative rules for Virtual Reality.

How do you make someone really feel like a character of a show? What does it mean, cognitively, emotionally and physically to see and act through someone else's eyes? How do you create a story that makes sense to be told in 360° without taking away the authenticity of the show? How do you ensure users look where you want them to, when you want them to?

It was essential to work hand-in-hand with film screenwriter Julien Capron and director Julien Bittner as both the storytelling and technical opportunities and constraints of VR were new to their cinema vocabulary. Writing the script therefore required weeks of back and forth to meticulously revamp what was initially a 16:9

story into a 360° one that was compelling, while making sure not to overwhelm the user with action happening all around at all times.

Meanwhile, the team was lucky enough to be supported by series production company The Oligarchs Productions, who helped keeping dialogs and style coherent with the series'.

The result is a fully immersive narrative, in which the protagonist – you! – follows in the actor's footsteps on the actual set of the series and goes on his first risky mission for Le Bureau.

### The Immersion

The key was to genuinely feel like you are this new recruit coming in for your final interview with Le Bureau's bosses. The very first few seconds of the experience set the scene and aim to give you a purpose and a sense of presence as the office manager shakes your hand and greets you – Hey, how are you?



ENVIRONMENTS OF THE FILM - THE WESTIN HOTEL

## Le Bureau des Légendes 360°

By EXZEB



IN THE "BUREAU" WITH YOUR BOSSES

## Le Bureau des Légendes 360°

By EXZEB

Don't worry, the meeting will go fine, and you will soon be leaving for your mission.

To which you answer...nothing! Indeed, in agreement with the director and screenwriter, the character was not given a voice or a gender, as early tests showed that it may break the illusion of being that person.

Later on, while accomplishing your mission, the voice of your boss giving you instructions is playing back in your head as a way to induce a state of paranoia, making you glance around while remaining focussed on where you are going. It is worth noting that this inner voice was not part of the initial scenario and was scripted, recorded and added late in the post-production process.

Finally, the 360° soundscape was quintessential to build up tension and deepen immersion. While usually exploiting sound to give users clues of where to look, here we also used it

to point directions in which not to look. Examples include the door knock of the cleaning lady behind your back, urging you to hide, or a man addressing you in the hotel lobby that the voice in your head simultaneously tells you to ignore.

### The Discovery Phase

While the scenario was taking shape, as for any innovative venture, we had to make sure what we had in mind was feasible while keeping high quality standards. That called for countless recces and 360° shooting tests, on the actual set of the show and at the hotel, to identify potential issues. Were the spaces wide enough to enable clean stitching? Was the motion aspect in these narrow spaces a post-prod obstacle that could be overcome? How would the lighting impact the image? Where would the camera (actress) be placed? In what fashion would the action happen and the actors move around to avoid image distortion and parallax issues?



ON THE SHOOT – CUSTOMISED 360° CAMERA RIG AND DIRECTOR JULIEN BITTNER WITH ACTORS JEAN-PIERRE DARROUSSIN AND MATHIEU KASSOVITZ

## Le Bureau des Légendes 360°

By EXZEB

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The tests we performed caused further amendments to the script, but the process actually resulted in much smoother production and post-production.

### **The Material**

Uniquely, the film was entirely shot in first-person POV, and mostly in movement. The Discovery Phase confirmed our initial thoughts: shooting with a basic 6 GoPro cameras rig attached to a helmet worn by the actress while walking would cause major post-production headaches to stabilise the image.

Besides, stitching the images gets trickier when an animated object or person passes from one camera field of view to another, especially when this animated object is close to the cameras.

To work around these obstacles, we partnered with leader in dynamic VR video systems David Crone, who has built patented custom-

ised 360° steadicam camera rigs that can be mounted on actors. We used a helmet mounted rig in scenes when the actress was sitting or walking, and a backpack mounted rig when she was driving a scooter – as she had to wear a proper motorcycle helmet.

**“ABOVE ALL, WE’VE SHAPED A NEW FORMAT COMBINING MAINSTREAM TV CONTENT & VIRTUAL REALITY”**

The cameras were improved with custom wide lenses capturing at 180 degrees which helped reduce the number of times an animated object transitioned from one camera’s field of view to another.

This state-of-art material provided us with much smoother and more flexible rushes that made our post-production process significantly simpler and shorter.

Sound-wise, it was really important to be able to best reproduce the actual sound environment. We used an ambisonic microphone to capture background noise as well as several tiny wireless microphones placed within the set to capture individual sounds such as the voices of the actors. These individual sounds can then be placed accurately within the 360° soundscape in post-production, enabling users to hear noises or voices where they actually come from. Examples include the moment Malotru comes back in the room on your right, you hear him speaking on your right.

### **The Shoot**

We approached it as a proper cinema shoot. It took place over 3 days on the actual set of the show, throughout Paris and at the Westin Hotel with the series’ cast fully involved. Working

## Le Bureau des Légendes 360°

By EXZEB

with a cinema production house was of great benefit as they had taken extra care of the daily call sheets, the cast and other organisational practicalities.

While this made everyone's life easier, other challenges lay ahead. First of which being fitting 40 people on the set – or should we say “in the room next to the set”, as no one can obviously be in the 360° field of view. At the hotel, this resulted in these 40 people quietly packed together in room 3032 while a scene was being shot in room 3031.

As the Film Director himself also had to be out of the field of the view, it was extremely important for him to be able to monitor what was being shot in real time, as well as to have a look at what had just been shot to ensure the whole scene was valid. To enable real-time monitoring, we used a custom-built app that was live streaming the 6 images on an iPad. Right after the shot, a technician was in charge of roughly stitching the images together in just a few minutes, thereby enabling the Director to validate the scene, or redo it if necessary. Note that when shooting with high-profile actors who have directed and played in award-winning feature films, you really want to get it right the first time!

It is also worth pointing that the main challenge for actors on a first person POV VR shoot, unlike on a typical feature film shoot, is to get used to looking straight at the camera – since the camera is You.



MULTIPLATFORM 360° EXPERIENCE – SAMSUNG GEAR VR



MULTIPLATFORM 360° EXPERIENCE – SOCIAL

## Le Bureau des Légendes 360°

By EXZEB

Last but not least, it is vital to save, sort and back up on a regular basis the huge amount of data recorded. One file misplaced, lost or erased can ruin several days of work!

### The Post-Production

Even more than for traditional film, the VR post-production process is a long and laborious one.

We started off by roughly stitching the 45 shots that were taken – 4 to 5 per scene listed on the daily call sheets – and sent them to the director so that he could make an initial edit that would be used to get Canal+'s approval. After a pleasingly swift back and forth we received the final edit and concentrated our efforts on the 9 sequence-shots that had been kept.

While we had done our utmost to work around the potential stitching headaches, shooting in motion in confined spaces, and having the

character you embody interacting with other actors inevitably causes significant stitching challenges. As a case in point, after your boss gives you a bug to be placed in the hotel room, he walks past you to leave the room. In doing so he passes from one camera field of view to another, at less than 50 cm from the rig, which at 30 frames per second makes it almost impossible to stitch perfectly.

We therefore spent long weeks stitching the images, and as we were completing the process, some scenes were passed onto a VFX specialist as we needed to erase the camera rig showing above the head of the actress in her shadow, as well as in her reflection in hotel and car windows.

For the colour grading Bridges put forward their preferred partners, Shaman-Labs and Commune Image, who are used to working for TV series and feature films and using cutting edge material and techniques.



MULTIPLATFORM 360° EXPERIENCE – MOBILE

## Le Bureau des Légendes 360°

By EXZEB



LE BUREAU DES LÉGENDES' CAST

In parallel we performed the spatialisation of the sound – background noise, music, voice-over and individual sounds. This required mixing 8 versions as there were 4 possible endings (Canal+ had not confirmed yet the launch date of Season 2) and 2 versions for each ending (binaural and 5.1) tailored to various platforms.

Last but not least final files had to be compressed significantly. The latest export was 116 Go, and it was compressed to 1.2 Go to be viewed through VR headsets and even further to be uploaded on and streamed from various platforms such as YouTube, Facebook or the MyCanal app.

### The Result

The end result is a uniquely cinematic experience that lends itself perfectly to Virtual Reality and paves the way for a lot of new great content to come!

Above all, we've shaped a new format combining mainstream TV Content and Virtual

Reality, which enables showrunners to elicit stronger visceral reactions and build unprecedented levels of emotional connection with their audience.

So far the VR film has

- 550,000+ views on social (YouTube + Facebook)
- Been mentioned in specialised and mainstream media
- Been shown as a 360° TVC during Canal Group's Direct 8 360° live show La Nouvelle Star
- Been recognised as Europe's first VR spin-off of a TV series
- Won a Silver ID Award at the Grand Prix de l'Innovation Digitale

Useful Links:

Canal+ Microsite, MyCanal App (iOS&Android), YouTube Video, Exzeb's Project Page

# Dim Sum

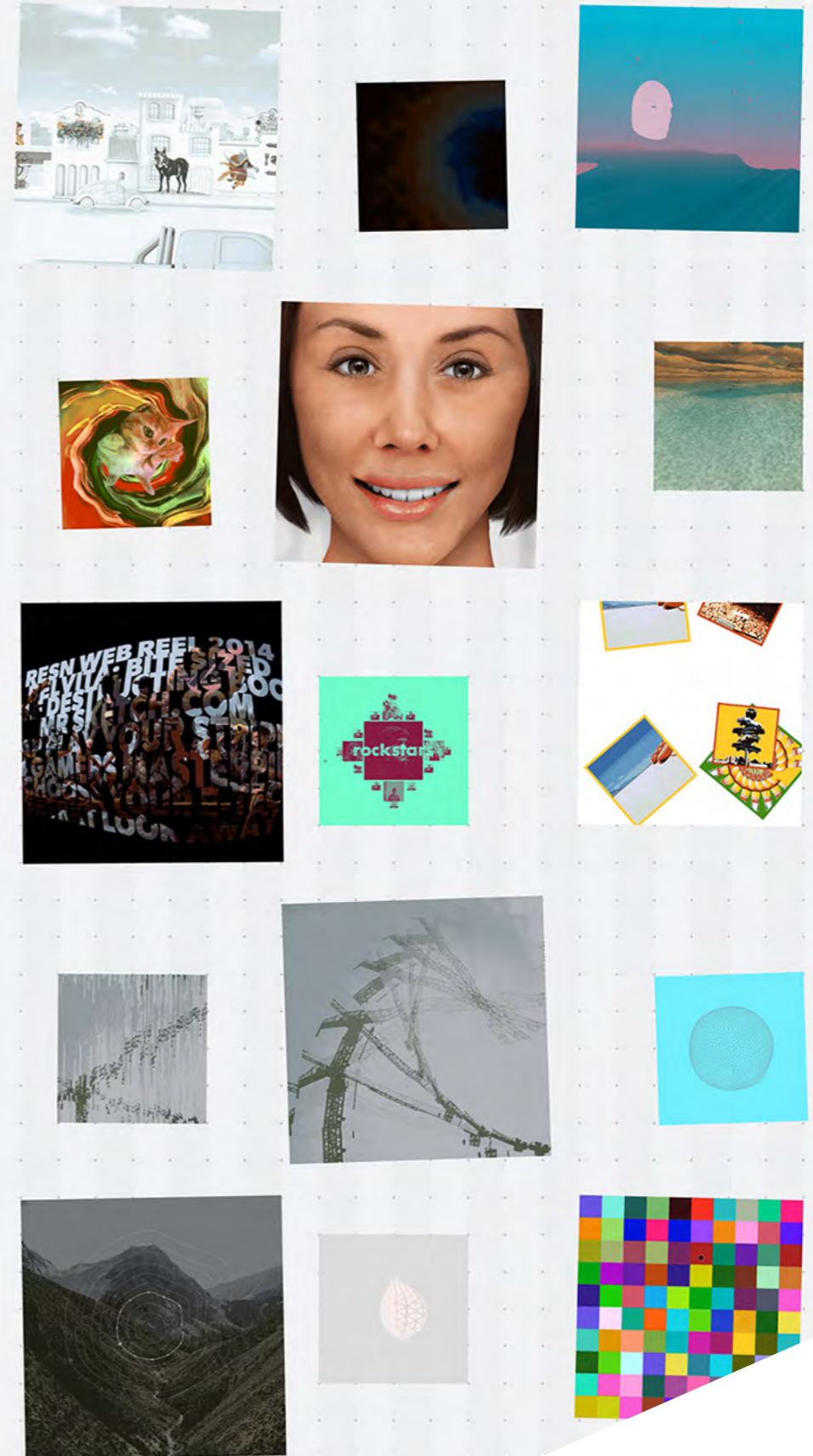
**Resn.**



## Dim Sum

**RESN** has been working at the frontier of interactive development and design since 2004. Our highly-skilled team has the expertise to take on complex technical challenges and fulfill creative dreams. From early insights and strategy to premium design and development, we collaborate with our clients at every stage, to deliver valuable engagement with their brand. We call this the Resn Effect.

[resn.co.nz](http://resn.co.nz) 



## Dim Sum

By RESN

**What’s the best way to house all of Resn’s experimental work that has no place to call home? And... how best do we showcase the gorgeous development and design bites that would not normally see the light of day? Our answer was to create Resn Dim Sum: “Tasty digital nibbles with piping hot centres.”**

Dim Sum began as a response to all the interactive experiments that have been built throughout the years, these included rapid prototypes for pitches (won and lost), not so rapid prototypes for internal R&D, culture pieces, and for just having a laugh! All of the experiments are very different from one another in terms of interaction, design, execution, even technology. We wanted to support this content of diversity with an equally schizophrenic and surprising repository, distorting the ‘what’ and the ‘how’ of a traditional online experimental portfolio.

Dim Sum, specifically the container itself, can also be perceived as an experiment. The surprise factor is ever present, from the design, to interactions, to the animations, even the UI.

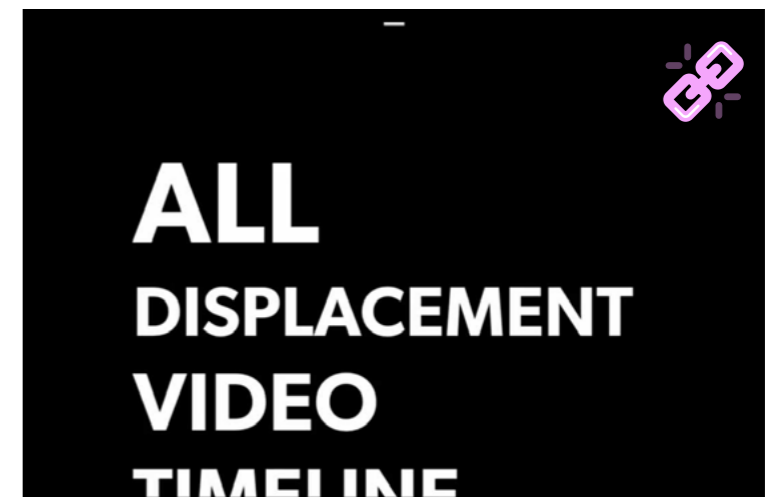
### **A menu is a menu... right?**

We started off this menu with a simple idea: Let’s make something that appears ironically simple, at least until you interact... we’ll throw in that hamburger icon too, ‘cos everyone knows what it means.

As with any blog, categories and tags play an important role in filtering content. Let’s strip out what’s unnecessary and allow users to simply filter by tag.

### **Make it weirder**

We’ll make it more interesting by making the whole thing turn and scroll on a tilt. Oh, and we should make it cycle so that you can scroll indefinitely.



SURPRISE SCROLLING

**“THE EXPERIMENTS ARE DIFFERENT IN TERMS OF INTERACTION, DESIGN, EXECUTION, EVEN TECHNOLOGY”**

## Dim Sum

By RESN

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### Scrolling forever

A tricky thing with making things repeat indefinitely is making it seamless. It should never appear to reset or hit a boundary, we should just be able to scroll forever.

This is where Modulo comes in: Modulo returns the amount remaining after division of 2 numbers, for example:

$$5 \% 4 = 1$$

$$5 \% 2 = 1$$

$$350 \% 100 = 50$$

$$14558 \% 7160 = 238$$

Get it?

As we scroll we're smoothly animating the whole list of filters vertically. Using the modulo of the scrolled height and the list height, we can tell how far through the list we've scrolled, and reset the scroll position the moment we get back to the first item (i.e. `scrolledHeight % listHeight === 0`).

The problem with this is that there's still a clear start and end to the list, where there's nothing above the first or below the last. We duplicate the list of items and place it below the first list.

Then we switch this duplicate list's position to either be above or below the original list, depending on which direction we're scrolling.

When all hooked up correctly you get the effect of an infinite smooth scroll, where the scroll bar and 2 lists instantly reposition once the reset point is passed.

Theoretically, you never scroll further than a few thousand pixels, but visually the pain never seems to end.

### Turn it up to eleven

Achieving this also exposes many other values to us, like the speed we're scrolling, the theoretical 'total' scroll position (i.e. how many loops, and how high each loop is). By normal-

izing all of these values then multiplying them together we can start having loads of fun with different effects.

We included 3 of our favourite effects which randomize each time you open the menu. We rotate each list item on the Z axis, then multiply that by our scroll speed to give the whole list a bending effect, or our personal favourite, rotate each item on its X axis to create a spinning waterfall of list items.

The technology used for these transformations is CSS 3D matrix transforms, applied through JavaScript. Using a matrix transform allows us to combine translation, rotation and scale values simultaneously to achieve the desired effect in 3D space.

With this seamless infinite scroll and addictive tweaking of effects, we found ourselves scrolling for what must be many millions of pixels through the page in a day. Wouldn't it be great to know who had scrolled the furthest?

## Dim Sum

By RESN



SCROLLING SCOREBOARD

### Gamification to keep people scrolling

To round out the ridiculousness we added a score keeping system, complete with leaderboards stored in a database and a big congratulations if you're determined enough to make it to number 1.

While we hoped people would get a kick out of it, we never expected people to reach the high scores that they have, we even capped the maximum score increase speed to make things fair between different mouse wheels.

What's really interesting for us to realise is that something that is perceived as negative - a long and tedious scroll, can also be an engaging mechanic if the approach is right. The top score is currently 324,744,555, which would've taken more than an hour of constant scrolling to achieve. That takes dedication! Pointless dedication but dedication nonetheless.

### DESIGN WAS A CAREFUL BALANCING ACT, RASMUS ELABORATES:

#### Defining the style

In the initial approach for the design, we had a clear goal of giving our experiments the centre stage. The challenge was to achieve this goal in a surprising way.

Our solution was to create a site that was built up of its own little experiments whilst showcasing the 'hero' experiments. The design challenge then turned into catering for a concept where general design rules don't apply. For exam-

ple, we used a different execution of hover states on almost every button and image.

There is also a tonne of different transitions and styles of animation going on all over the site, not to mention that the experiments themselves are equally diverse. The result, we hope is a surprise around every corner... Digitally speaking.

We embraced all these differences, while also keeping the shell simple and clean.

Stylewise it needed to be this careful balance between clear and simple, and as surprising and experimental as the content it's presenting.

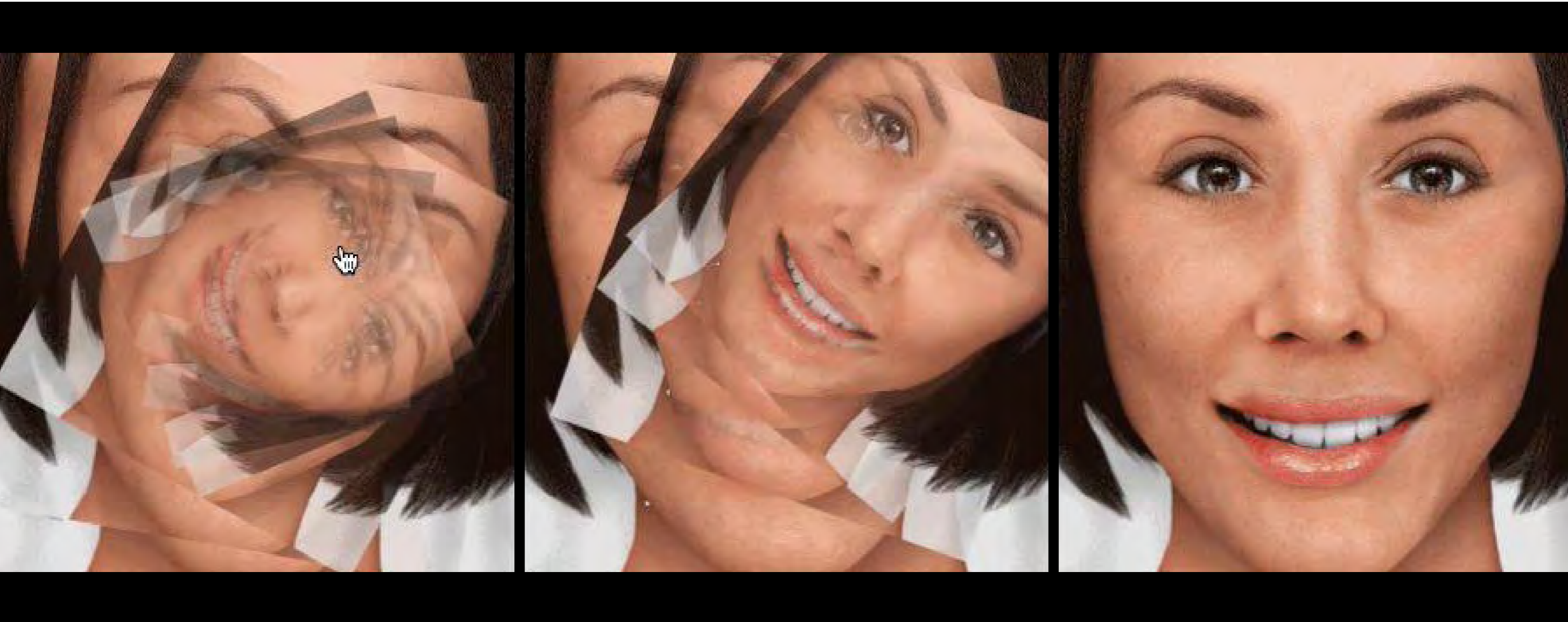
#### Designing for surprise & disruption

We designed the site from common components such as the grid and the hamburger menu, which we then distorted into something much more uncommon, more perverted ;)

In the grid the thumbnails are rotated, but in the background there's a subtle pixel grid to enhance the feeling of distortion.

## Dim Sum

By RESN



## Dim Sum

By RESN

The menu starts off looking like just a large text menu, but as you begin to scroll down it skews into 3D space. These are some of the ways we used design to enhance the experiments and surprise the visitor.

As mentioned before, we also used a vast number of hover effects, transitions and styles of animation to keep the user surprised.

### **PACKAGING EVERYTHING TOGETHER, PARTICULARLY WHEN ELEMENTS ARE SO DISPARATE, WAS A CHALLENGE. WELCOME TO BEN'S NIGHTMARE!**

#### **Overall**

Two words to describe the overall animation concept: flashing and engaging. We tried to apply these principles to all of the individual components, keeping in mind what their func-

tion is but not having any part feel more boring than the others.

With having such a diversity of interactives, the challenge for the wrapper was to not to distract too much from the actual experiments, but also to keep the exploration fun.

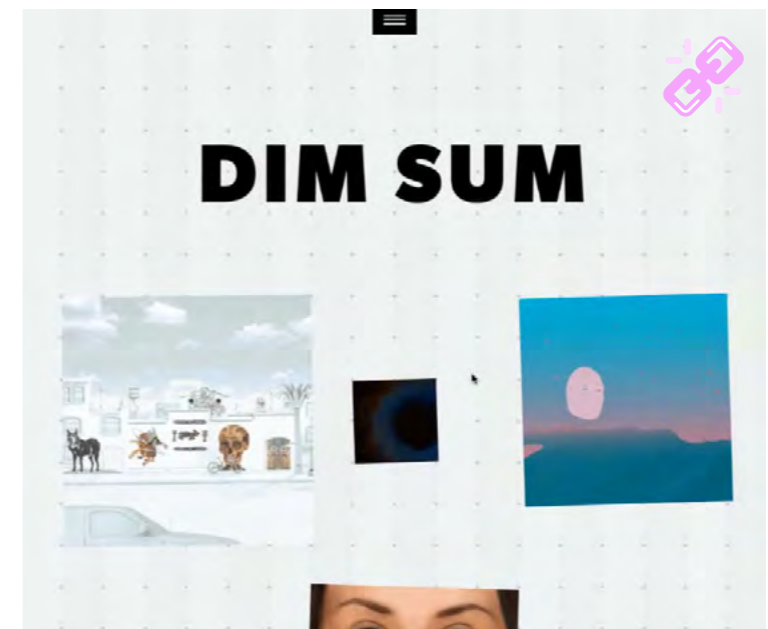
#### **Grid / Detail**

The grid is probably the most straightforward part. New elements get added while scrolling down, the motion gives the impression that they're thrown from above. Elements get different sizes, rotations and positions, which are different every time you visit. The variations follow certain rules to keep the overall composition feeling right.

To give it a special touch, we created 3 roll-over variations for the grid which are changed throughout time. Doing this the visitor is con-



DISRUPTION



IMAGETWIRL: ANIMATION WITH A TWIST

## Dim Sum

By RESN



# NO. 29



City scroll and zoom

[TRANSFORM3D](#)

P  
R  
E  
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N  
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T



## Dim Sum

By RESN

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stantly surprised and keeps discovering. An interesting rollover we want to point out is the “imagetwirl”.

By duplicating and rotating a gif, we’re remixing the original animation and giving it a twist. This creates really interesting and unpredictable effects depending on the source.

To keep you in the flow, we open each experiment at your scroll position. When you close it, you’re taken back to the scroll position you came from.

Emphasizing the “divingin” an experiment we came up with a tunnel effect, that brings the detail image up with a staggered zoom and makes this step more engaging.

### Type Animations

For the main type we got inspired by analog old tv effects. We created a system that splits

any given type into slices and moves them individually and draws them on canvas. The sinmotion makes it feel rather more analog than digital.

The system we created lets you have full control over letterspacing and further type settings that are usually not available for the regular drawText function of an HTML5 canvas.

On other parts of the page, like the loader or the detail page heading, we used fast switching of color, scaling and flipping of the text to create surprising and dynamically generated effects. It was possible to achieve this using regular HTML elements and changing the css properties, having certain rules figured out.

### That’s a wrap!

Perhaps one of the most critical reasonings behind Dim Sum is also a more abstract one: to reach out and touch fellow artists, creators, developers, and bespoke artisans in the hope

it may inspire future collaborations or dare we say it , paid work!

Dim Sum was a unique project, terms like ‘usability’ and ‘consistency’ took a back seat in place of ‘surprise’ and ‘disruption’.

As always it was a balancing act, but ultimately, Dim Sum is something that represents what we strive for in our work.

### Here we go:

Server infrastructure: Tumblr

### Technologies:

HTML5, LESS, CSS matrix transformations, Canvas, Javascript

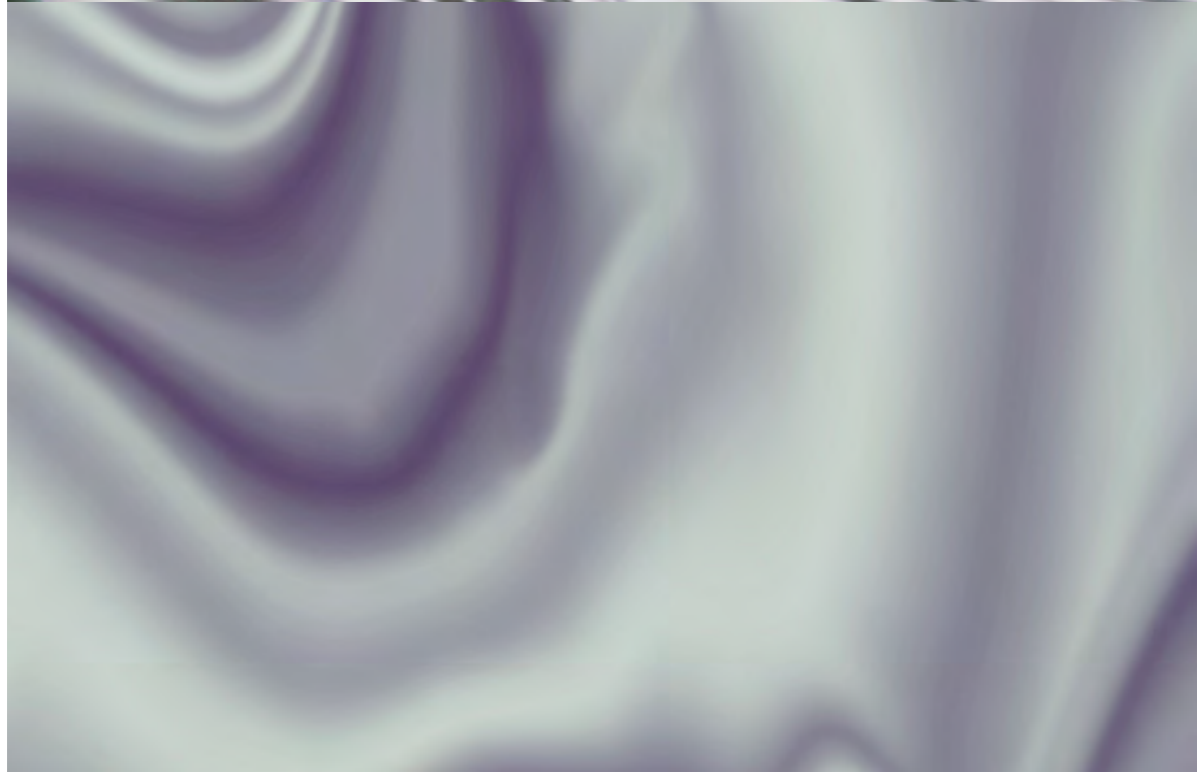
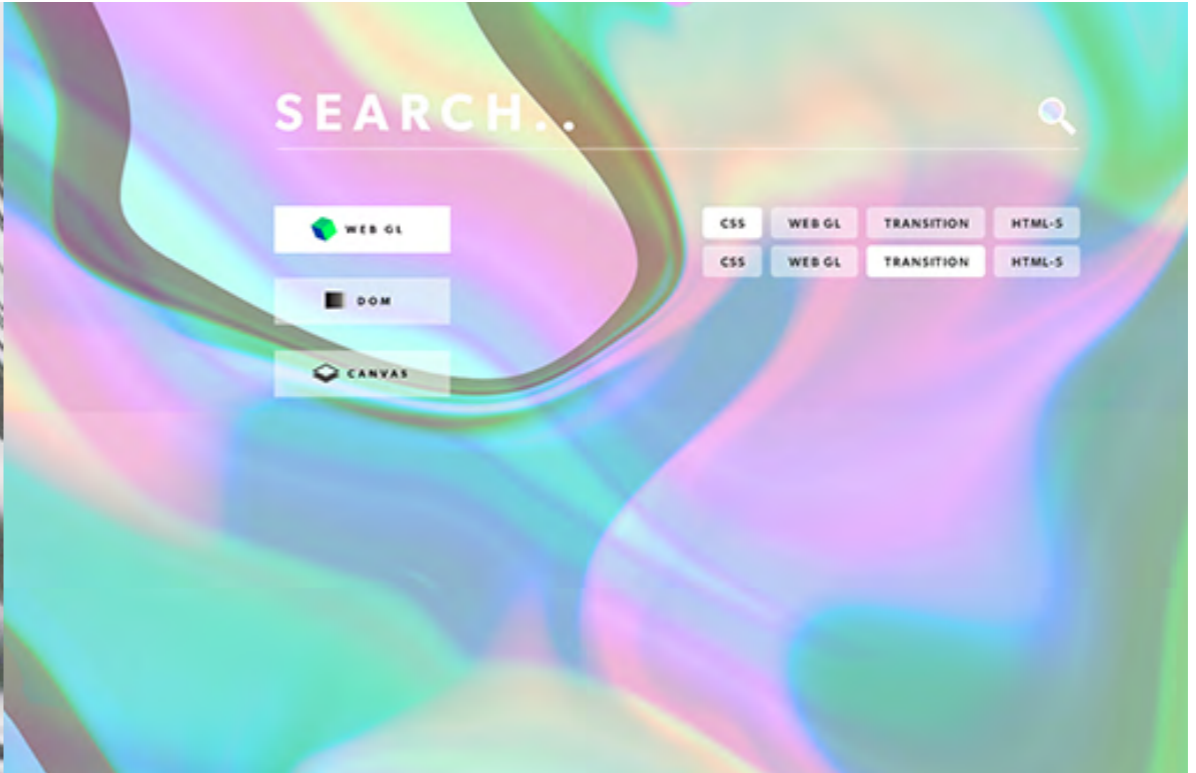
### Libraries:

GSAP (GreenSock Animation Platform), Sylvester (Matrix transformation math), jQuery, Backbone.js

### Contributors:

Ben Wegscheider, Kelly Milligan & Rasmus Stenbergh





MENU & TEXTURES EXPERIMENTS

# Catch the Dragon



## Catch the Dragon

**DPDK** is an award winning creative digital agency with a strong focus on digital interactions and is responsible for the creation, strategy, technology and production of interactive experiences and creative digital platforms. DPDK now works for International clients such as Peugeot, Ikea, Citroen and Grolsch. With the work DPDK challenges brands and pushes the boundaries of current mobile browser capabilities, and creates innovative VR experiences where they for example combine Leap motion with the Oculus Rift.

[dpdk.com](http://dpdk.com) 

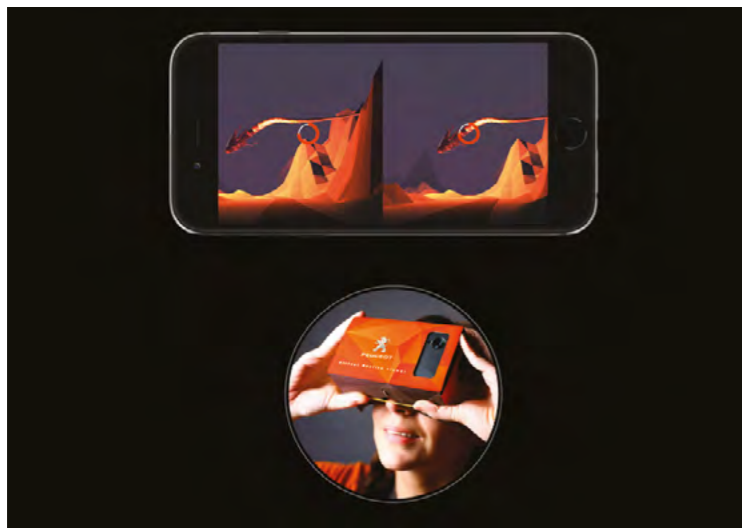


## Catch the Dragon

By DPDK



FOR THE CAMPAIGN, THE 3D DRAGON FROM THE TV COMMERCIAL WAS COMPLETELY REBUILT IN WEBGL



CATCH THE DRAGON CAN BE VIEWED IN VR FROM YOUR MOBILE BROWSER, NO APP IS NEEDED

**For the introduction of their new 208 model, Peugeot challenged us to come up with a digital follow-up to their TV commercial featuring nothing more than an orange dragon. We came up with the idea for an interactive VR film in which you set out to catch the dragon.**

To create this interactive film, we started with a 'storyboard prototype' with all chronological elements throughout the experience. This gave us the opportunity to define all the obstacles we had to clear. First and foremost: a unifying design approach that would connect all the different scenes and pieces to each other. We started out by creating a single image that would reflect the complete style.

Second, there was a lot of 3D work. We had to create an interactive VR version of the dragon

as well as the environment you would drive through. Using a workflow combining Photoshop, Blender 3D and WebGL we recreated the TV dragon as a dragon that could fly anywhere we wanted it to, as well as appear and disappear.

After obtaining the original 3D model from the Dragon in the TV commercial, we re-engineered it to be small enough for usage on the web. We lowered the amount of polygons drastically and started to work on the bone structure. Because of our previous experience converting 3D models of people into WebGL, this seemed to be the most logical way forward.

However, after several attempts, the dragon wasn't flying smoothly through the air, so we decided to take a different approach - splitting up the body in various body sections into sized pieces. After several rounds of tweaking and optimizing, we only had 3 body sections left:

# Catch the Dragon

By DPDK



## Catch the Dragon

By DPK

the head, a rib section and the tail. The reason for this is that the dragon animates over a path. The 3D objects inherit their position and orientation from this path. By using the rib section as a separate element, we could duplicate it time and again to create a 'bead string' of ribs that get smaller every time. The more sections you add, the more resolution the dragon gets, giving it a more fluent 'flight behavior'. Add too much, and the 3D structure disappears, causing you to see less detail.

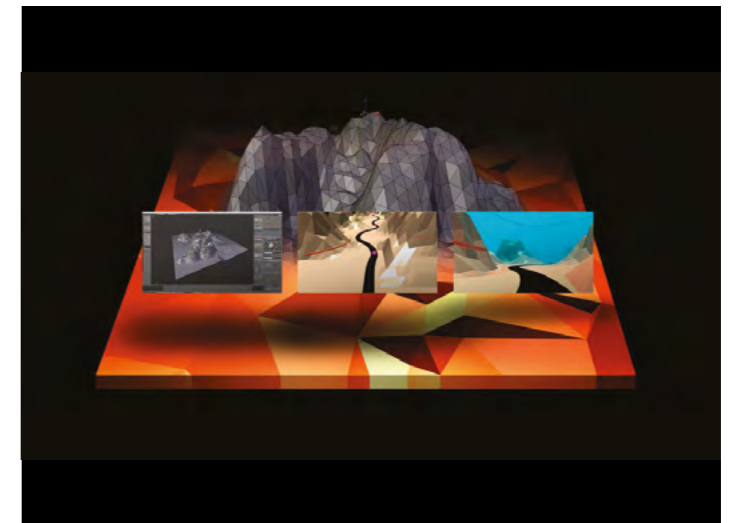
To set it loose, we created the terrain in 3D step-by-step. Looking at the video footage we shot, we recreated eye-catching landmarks such as the stone arc you drive underneath. To keep you going endlessly, we split up the world into tiles that can seamlessly connect, with start and end position of the road being identical. In the website a new tile is loaded randomly, and at the same time the one behind you is 'deleted' to save processor power. The only unique tile is the first one where you come

out of the tunnel. All 3D models were made in Blender, we then used an exporter to convert the 3D data to a file that can be read by the Three.js library.

The paths that are flown are also 3D: we added Bezier curves throughout the terrain, with multiple options per tile. The system randomly chooses a path per tile to avoid the gameplay getting predictable. The figuring out of what worked and what did not was a process of trial and error: how sharp should turns be, where paths should start or stop, how high or low they should go etc.

The camera also moves along a 3D path over the road that has been added tile by tile. As with the road sections, the start and end position of the path line up perfectly to ensure a smooth transition.

To create the right light and atmosphere, dozens of environmental variables were tweaked endlessly. We wanted to create a world with



DIFFERENT STAGES OF THE WEBGL 3D WORLD



3D ORB IN WIRE WORLD

## Catch the Dragon

By dpdk



A TUNNEL PROVED THE PERFECT TRANSITION POINT: USERS ENTER THE TUNNEL IN VIDEO, AND COME OUT IN 3D

the right lighting, texturing and colors. The last of the challenges in the 3D environment was the light: we wanted to go from daylight, as in the video footage, to night as seen in the TV commercial. So we built in a fade that takes you from day to night in about 15 seconds while you're in the 3D environment. The beauty is that you're so busy catching the dragon that most people don't even notice.

To create one clear storyline, the website starts with a re-edit from the original commercial footage into a short, mood-setting clip that shows where the dragon comes from. We wanted to create a seamless transition from video to landing page, instead of the video just stopping.

Since our idea for the landing page was to have the dragon flying around in a world of particles, we chose to have the dragon in the video burst out in particles too. Using After Effects, we mixed Pixel Polly in combination with

a particle system that simulates the colors used in the last shot of the video. By loading the landing page underneath that video and slowly fading out the video, our seamless transition from video particles to WebGL particles was complete.

After entering the experience, you find yourself inside a Peugeot, driving down a French mountain road. You can look around in VR, and will start noticing orange particles flying around the car. Then a tunnel emerges: the perfect transition point from video to 3D. As you enter the tunnel, we overexpose the video, causing you to see a bright light 'at the end of the tunnel'. Coming out of the flash, you're suddenly in our 3D environment. How this works: the video is projected in an orb placed inside the WebGL environment from the start of the video. So while you seem to be looking at video, you're actually in a 3D world already. We end the video with a white flash, fade out the orb in the 3D world and voila: a seamless transition.

## Catch the Dragon

By dpdk

On top of all the technology used to create the dragon and the world, we placed a custom built 360° panoramic viewer inside a 3D scene that's connected to your mobile's accelerometer. A whole mouth full. Simply put; it enables you to look around in 360° using your mobile device. On desktop the camera is connected to your mouse to look around. When the camera and dragon exactly line up, you catch the dragon.

What's a great film without a soundtrack? We composed a unique soundtrack that captures the mystique of the dragon and the energy of the 208. Different speeds and moods were added to support the different sections of the film from 'wait-mode' on the landing page to 'energy-mode' during the Catch sequence.

After catching the dragon, you end up on a small website where you discover the USPs of the Peugeot 208. To have the 3D scene blend into this 2D environment, we used the burst

effect from the introduction: when you have caught the dragon it bursts into polygons, then the screen fades out into the 2D scene. Polygons fly in and create the 208: the dragon is the car and vice versa. To have the car built up instead of burst we reversed the burst sequence. At the same time the video effect plays, a .PNG of the car is masked over it, to have the sharpness of a still at the end of the video. The vista in the background was originally a still, but it caused the motion to halt completely after the video had ended. So we masked several videos of cityscapes by night over the still so there's still a sense of life when you're looking at the page.

All in all, we're really proud of this project. It was a great team effort. We loved working on it and coming up with possibilities to make it go smoother, more seamless and up the wow factor. We hope you enjoy it just as much as we do.

**WE PLACED A CUSTOM BUILT 360° PANORAMIC VIEWER INSIDE A 3D SCENE THAT'S CONNECTED TO YOUR MOBILE'S ACCELEROMETER. SIMPLY PUT; IT ENABLES YOU TO LOOK AROUND IN 360° USING YOUR MOBILE DEVICE.**







**A special thanks to all the agencies for their collaboration on this project.**  
Still hungry for more? Coming up, juicy themes such as; interaction in VR,  
WebGL Best Practices, Big Data, Web Performance Optimization and more.  
Volume 2 - coming soon!