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FLIGHTPATH TORONTO DESIGN DEVELOPMENT

Toronto - Nuit Blanche

'Flightpath' Project.

No1. Design development document.

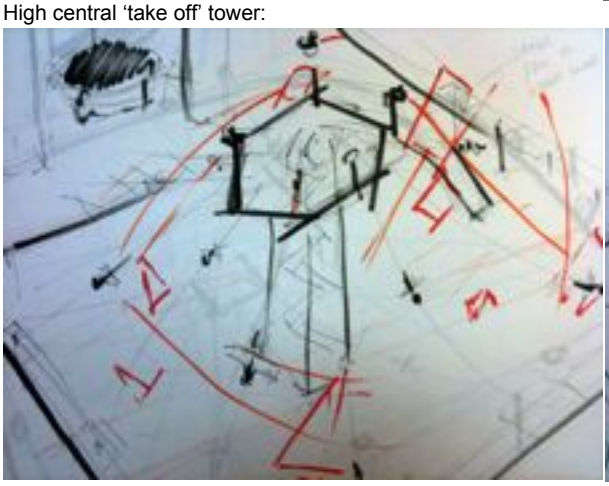
Overview of current design:

A few sketches detailing different ideas:

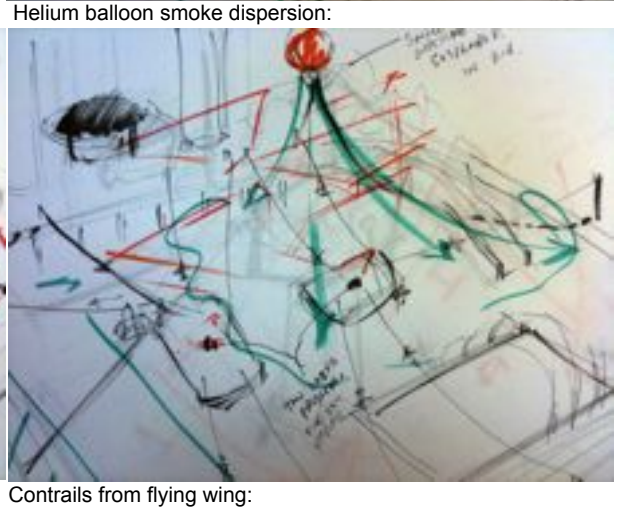
Flyers disperse the smoke as they fly though it :

Primal Source inspired smoke mass / takeoff platform:

High central 'take off' tower:

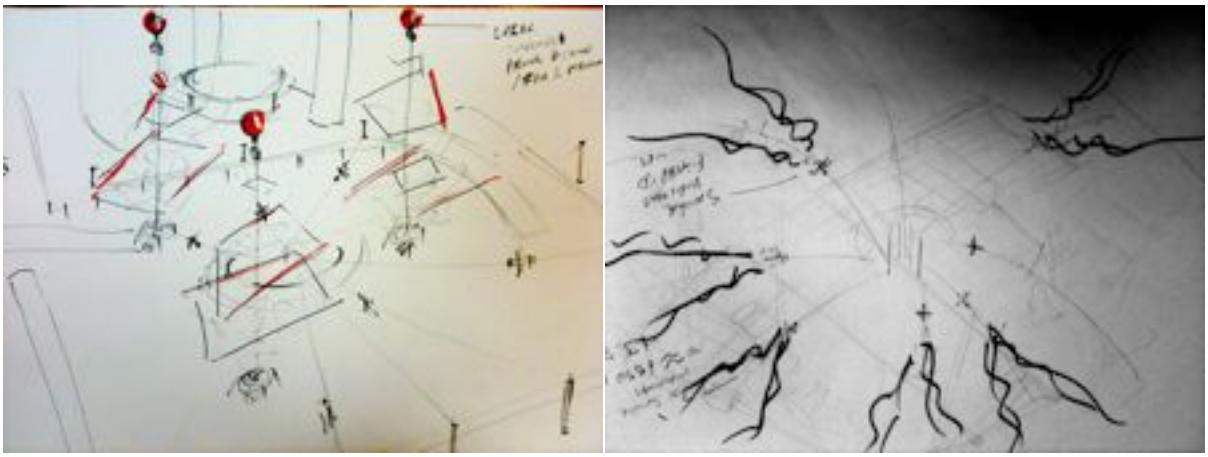


Helium balloon smoke dispersion:



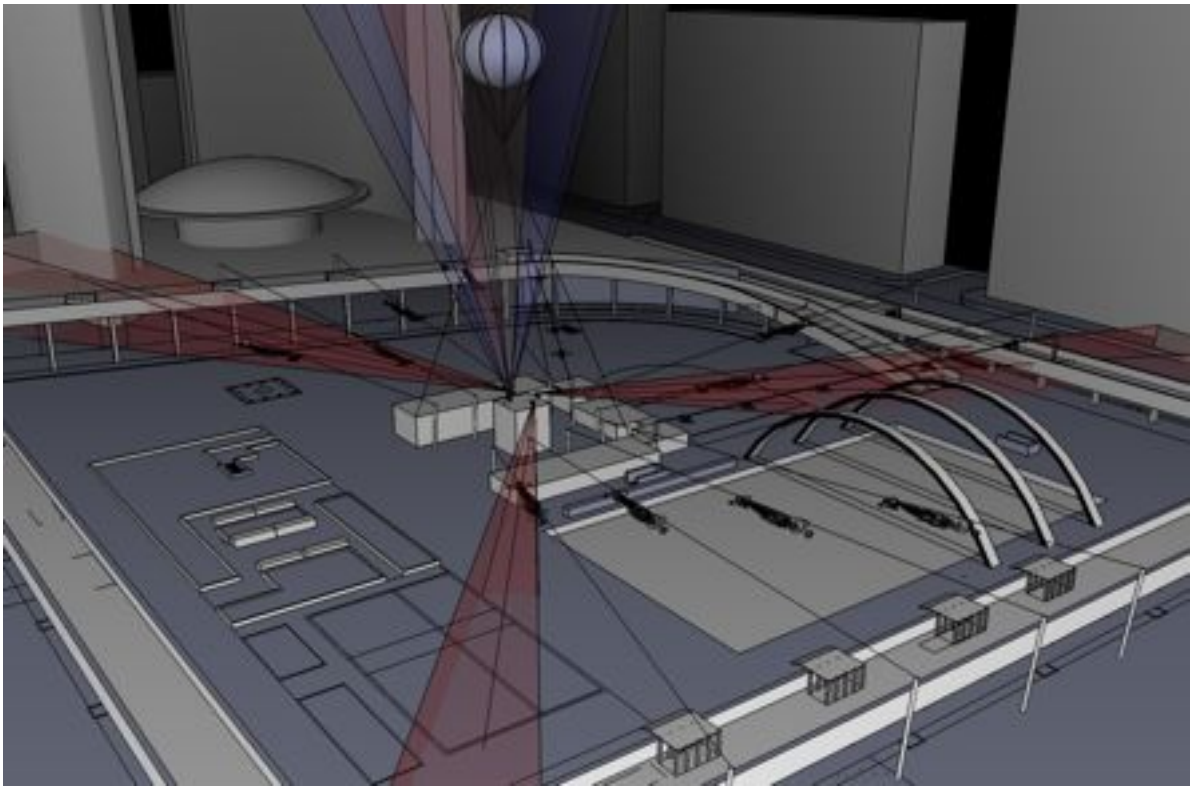
Lasers suspended with helium balloons above large fan:

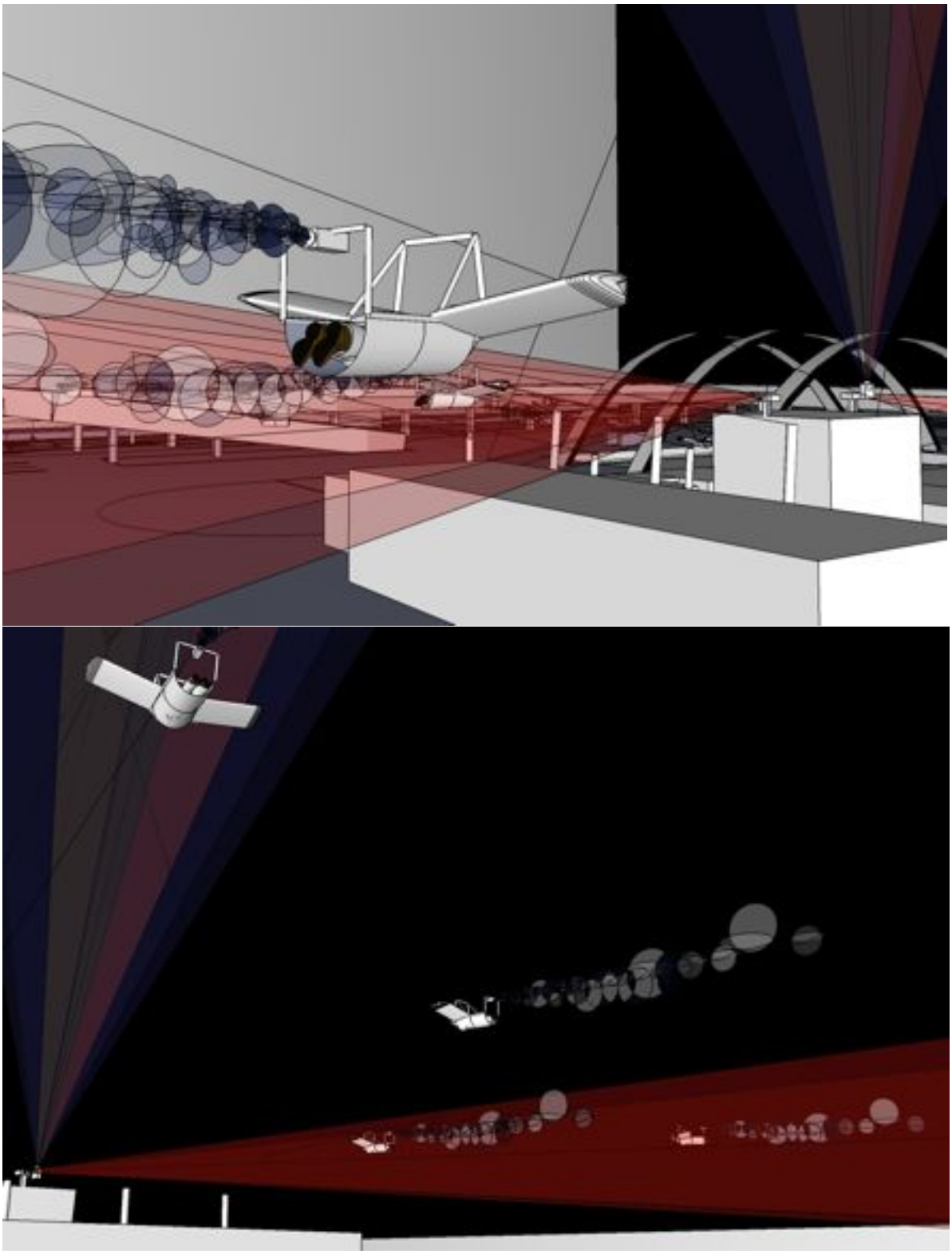
Contrails from flying wing:



Sketchup Layout of a selection of concepts:

The sketches and layout below are all based around one proposed design layout;
Incorporating new ideas for the wing, visual effects and management of the participants.
These ideas are obviously still in development, and future testing and technical consultation will be required in order to realise the concepts.

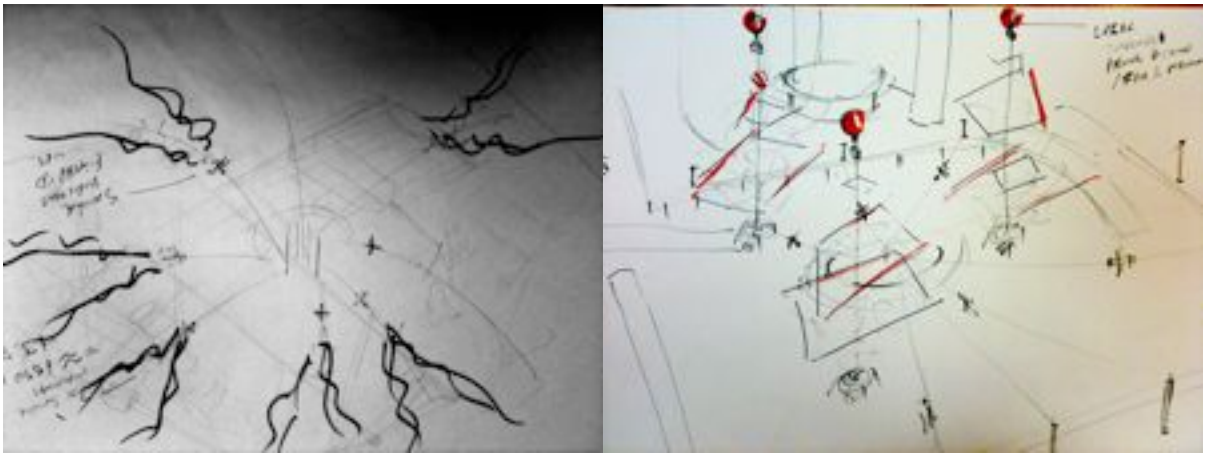




The above images are a combination of the two sketches below; the left drawing imagines each wing incorporating a battery powered smoke machine; which creates a similar effect to contrails normally

produced by jet exhausts.

The right drawing imagines large helium balloons used as a type of ‘air anchor’ to pump smoke high above the square; producing a towering canvas for the abstract laser projections... with the aim of creating a focal point within the square which will draw in the public.



In order to understand all aspects of the proposed idea, the separate elements have been split up into there component parts of :

Supports, Rigging and Ziplines:
Harness & Wing Design:
Visual Effects:
Participation:

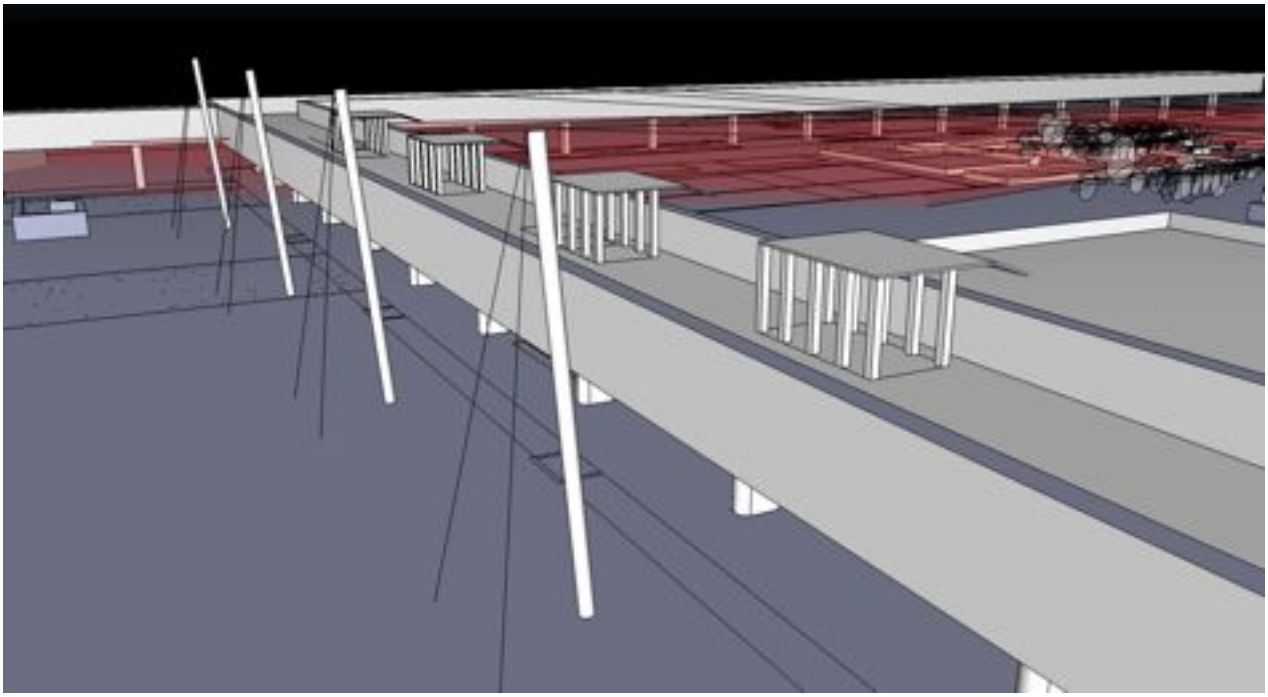
Supports, Rigging and Ziplines:

In terms of Rigging and supports; the design attempts to meet the restrictions of the current budget. It appears one of the major costs of the ‘Flightpath’ project is the rigging and specialised mechanisms used to simulate flight. Using ziplines will reduce the amount of mechanised equipment needed and therefore the overall cost of project.

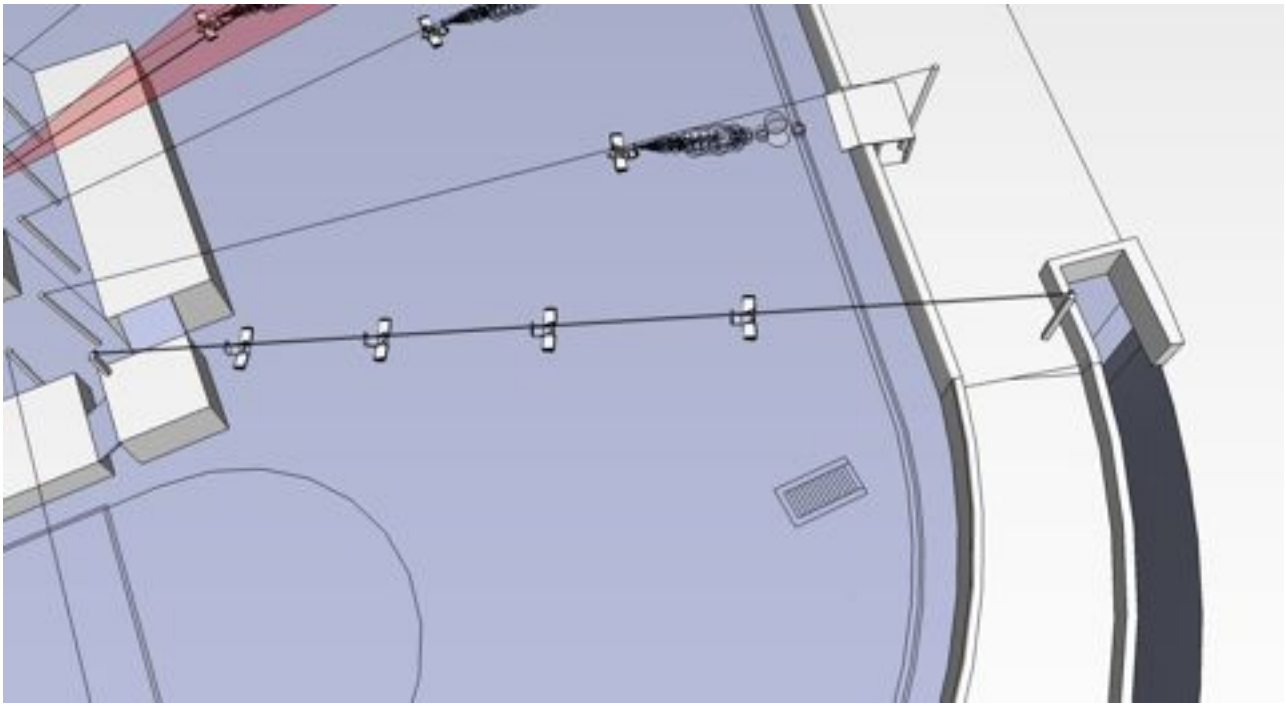
Other elements of the design include:

Launching the participants from the walkway which surrounds the square;
1. helps organise the flyers within an area which can be easily managed in terms of public access and preparations for the participants.
2. Reduces the cost of scaffolding and rigging required.

A single telegraph pole for the support:
The single telegraph pole can be used to support each end of the zipline, and was proven to work within the Xairport project.

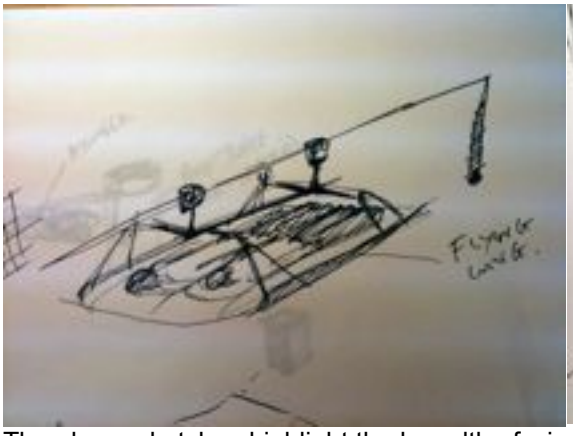


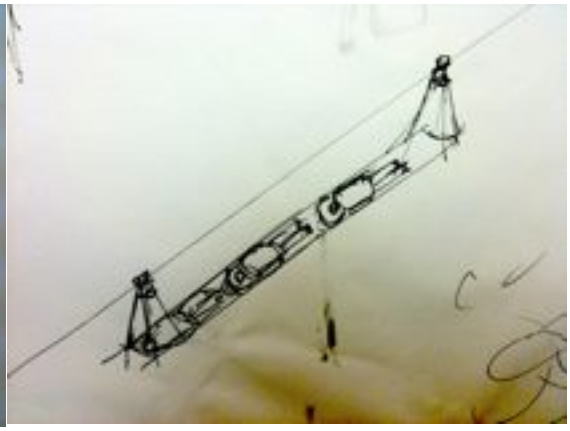
Two pulley systems designed to take the wings back to the starting position:
Using a similar concept to the Zfx flying system, a mechanised line will run the used wings and harnesses back to the walkway ready for another participant.



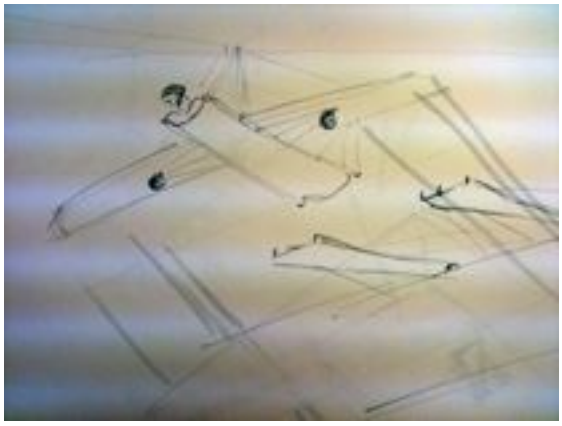
Harness & Wing Design:

Alternative Wing arrangements:





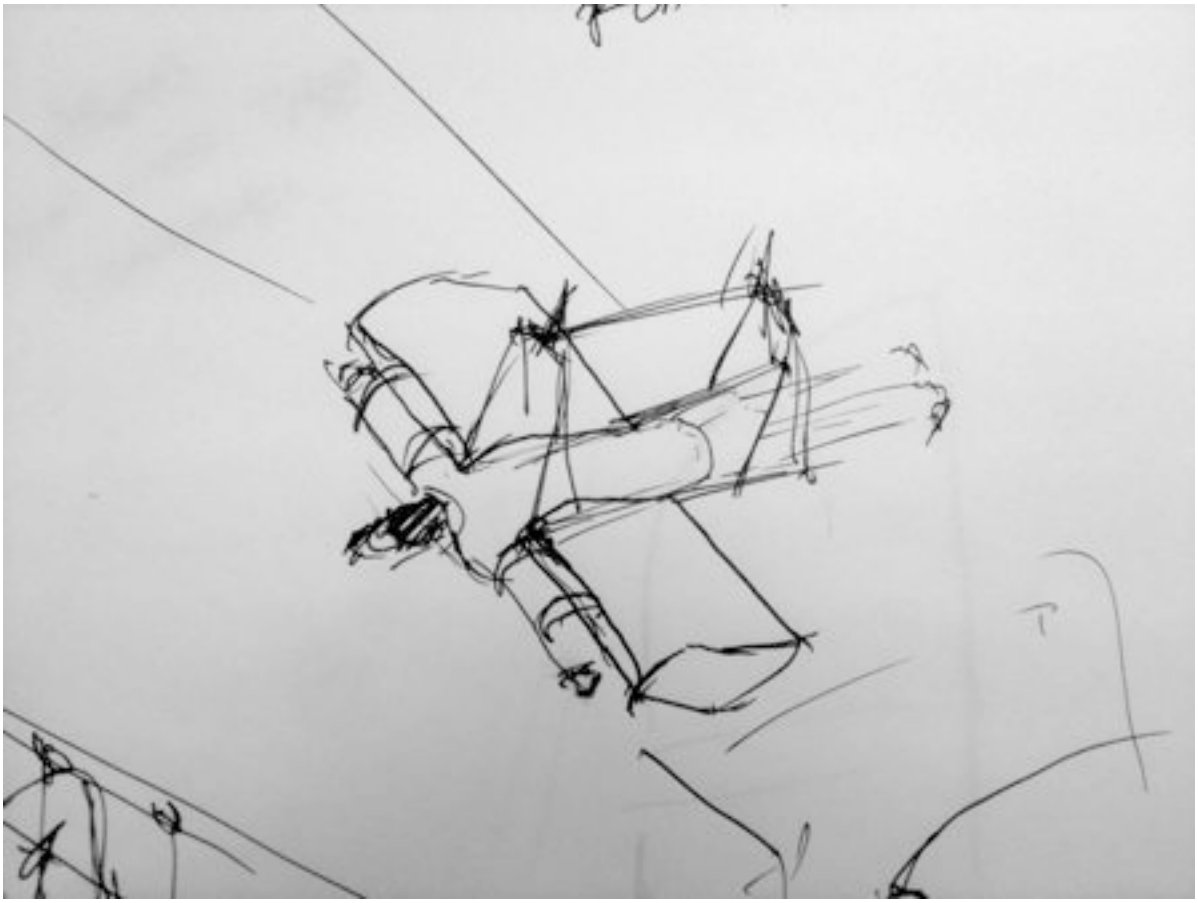
The above sketches highlight the breadth of wing and harness arrangements we have been imagining.

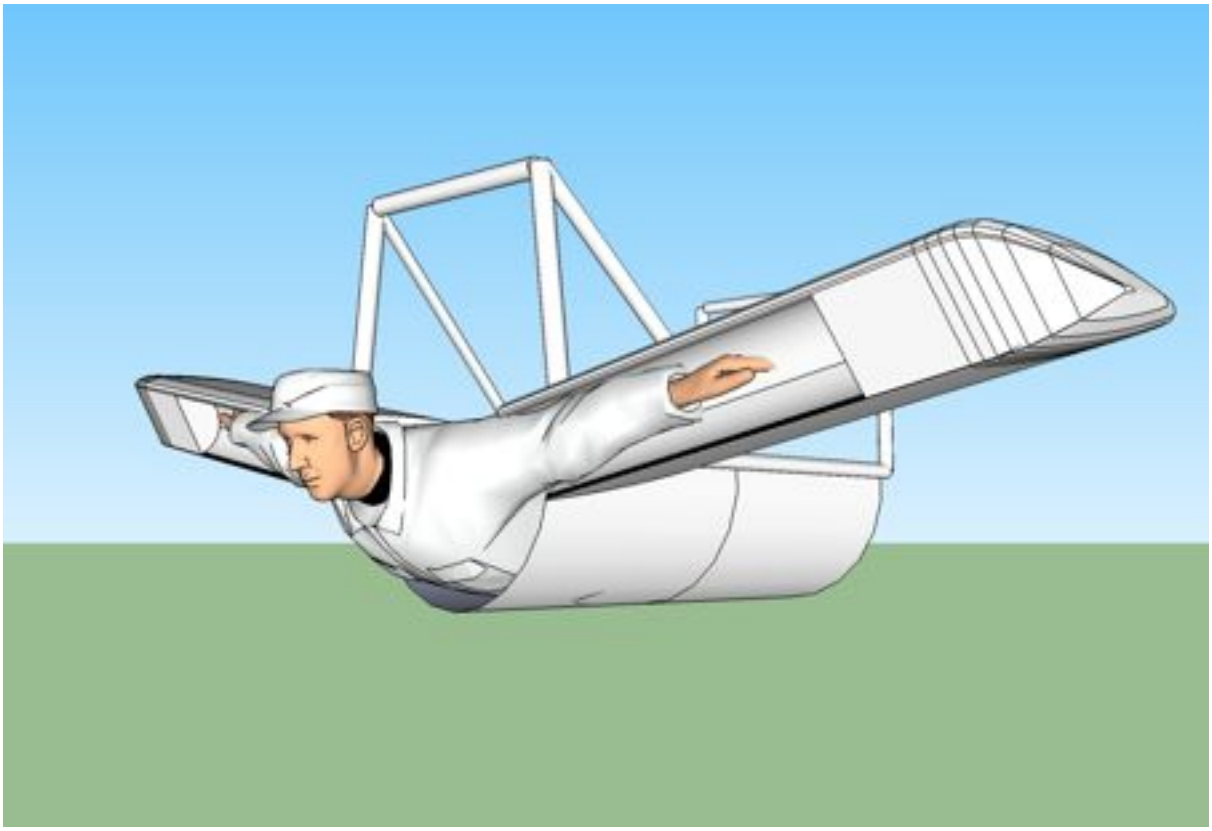


Another potential option is the incorporation of runners from the takeoff platforms... this would integrate the wing / platform and perhaps create a more cohesive design and in-turn a more believable future mode of transport.

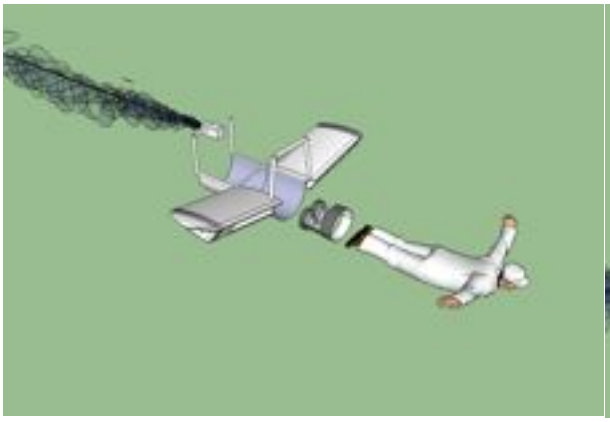
arms in front of harness:

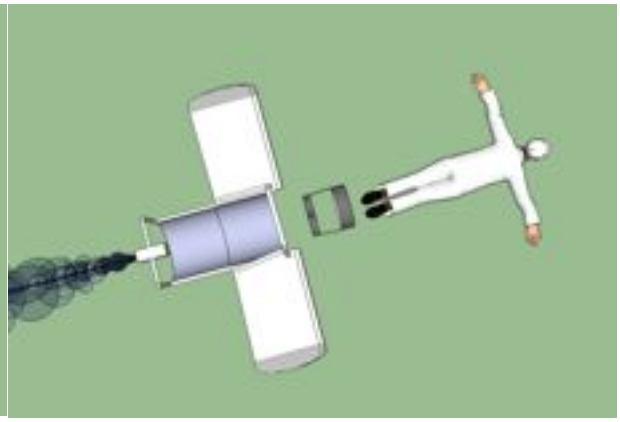
The following harness allows the 'flyer' to stretch there arms outwards into a wing position... within the fixed wings of the harness. Allowing them to feel the air flow over their arms and experience the lift from the wing.





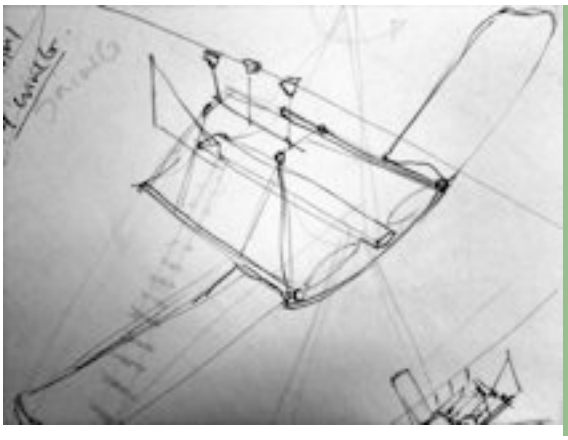
The exploded view below show two separate parts. The wing will be attached to the zipline via a couple of trolleys. The harness will be fitted to the participant before the flight; this harness is then secured onto the wing via a number of carabinas.

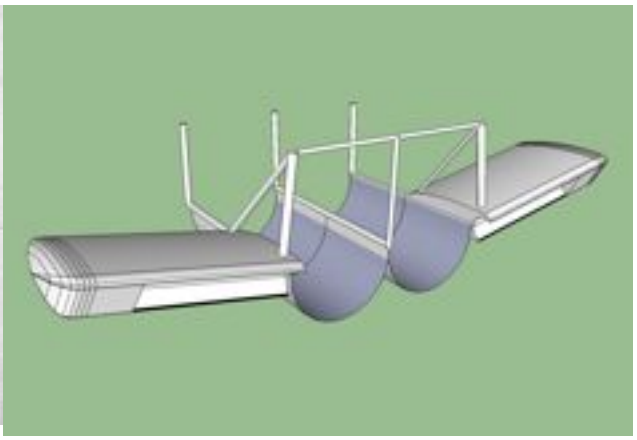




Two man harness:

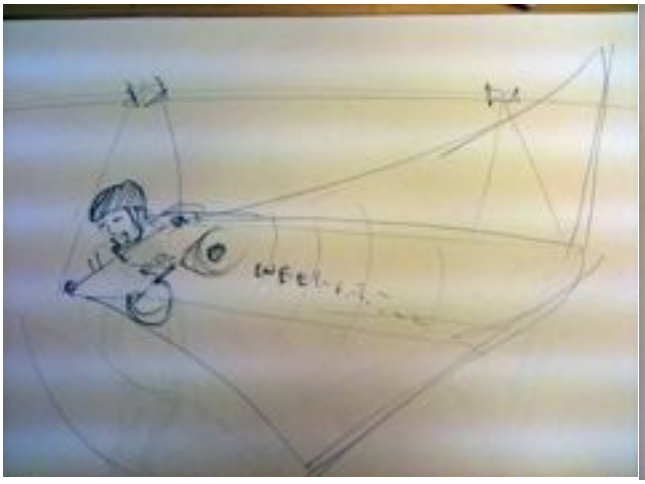
Adding extra room within some harnesses will allow couples or friends to experience ‘flightpath’ together and also increase the amount of participants... without significantly increasing the costs.





Incorporated speaker and mics:

We are considering the incorporation of small speakers onto the wings of the harness;
these will either project the riders reactions of the experience or alternatively amplifying the whizzing sound of the zip-lines trolley... hopefully exaggerating the speed of the flight by creating a doppler effect that the spectators would instinctively recognise as a fast moving object.



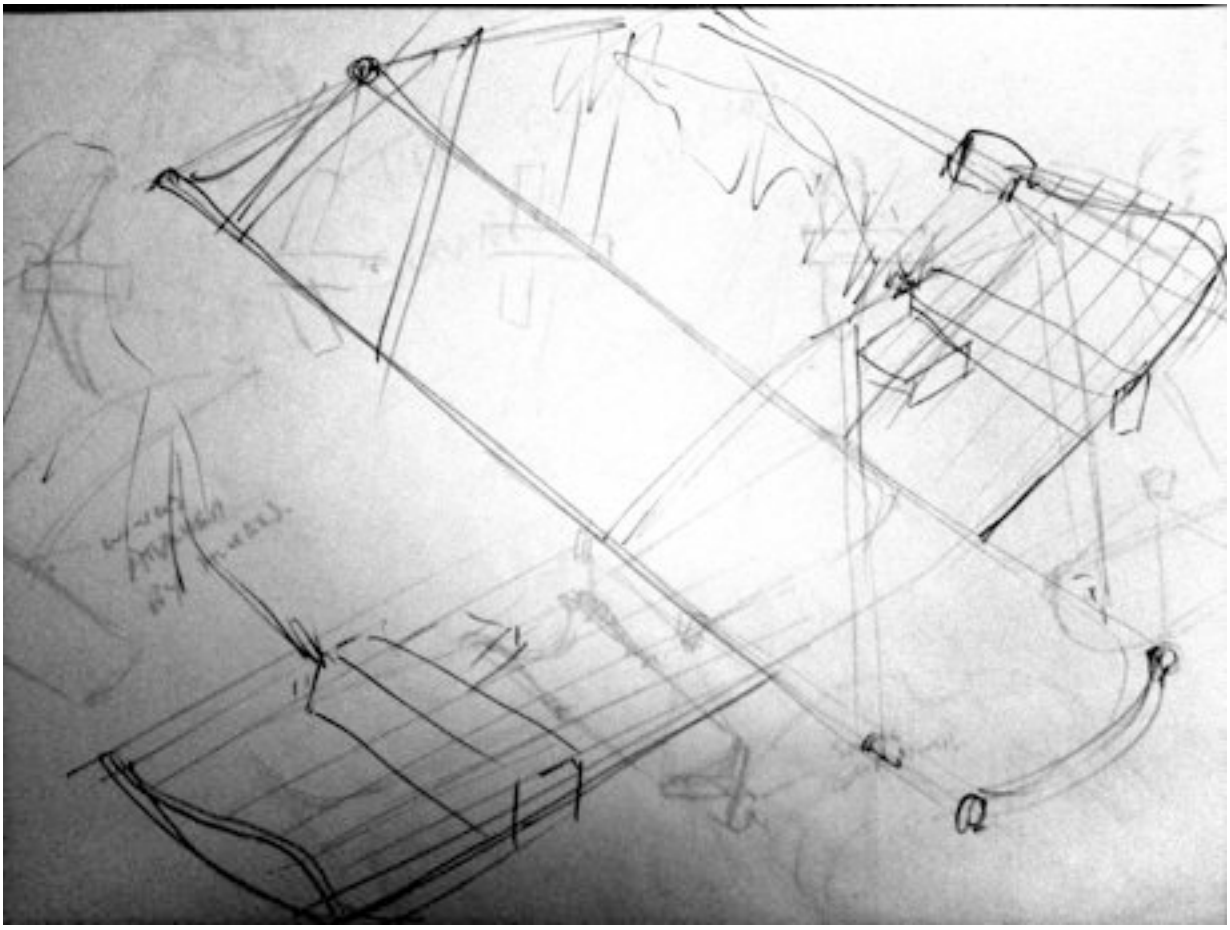
Visual Effects:

Contrails:

Contrails within aviation are a consequence of water vapour and condensation forming from cooling jet engine exhausts. These unintentional clouds serve no practical purpose to the planes functionality yet arguably are the most aesthetically interesting part of a modern jet.

Hanging in mid air, they are an airplanes equivalent of a wake, a temporary visible disturbance that communicates the planes direction and rough time of travel. Taking the shape of a linear cloud formation they dissipate slowly into the atmosphere.

The below sketch imagines small battery powered smoke machines being attached to the wings suspended from the zip-line;

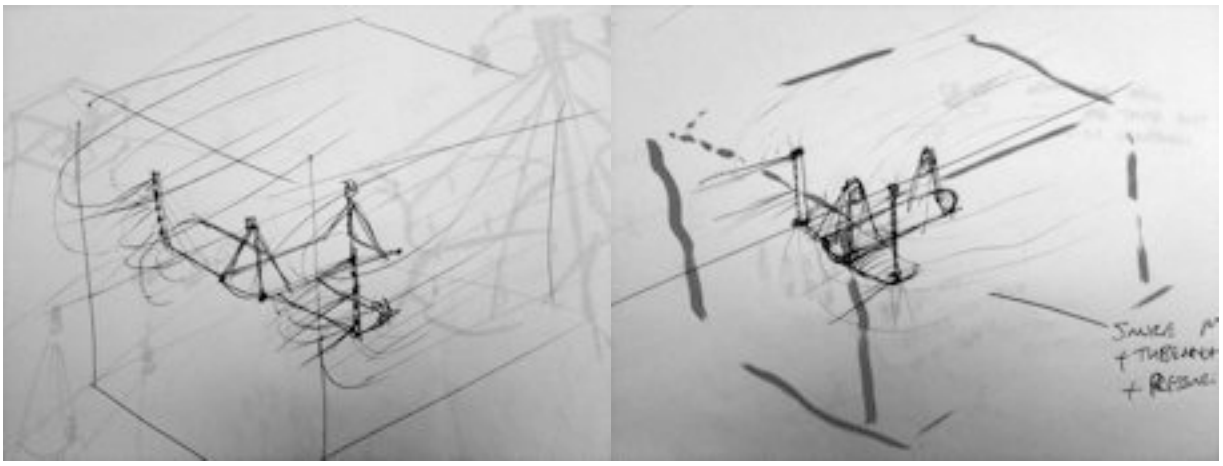


Contrails ‘Smoke can’ test:

The above images show the first contrails test;
combining three high intensity LED lights with a tin of ‘smoke in a can.’
Placed within a simple jig, the nozzle is press down via an adjustable bolt and place on a makeshift zipline.
(unfortunately the amount of smoke expressed from the can is somewhat limited)

Alternative contrail design: (smoke box):

An extension of the ‘contrails’ idea is shown below.
the smoke is pumped along the wings and through tubes on the wing tips... the aim is to create a thin layer of smoke which surrounds the wing and creates a temporary moving canvas that can then be projected onto by the lasers.

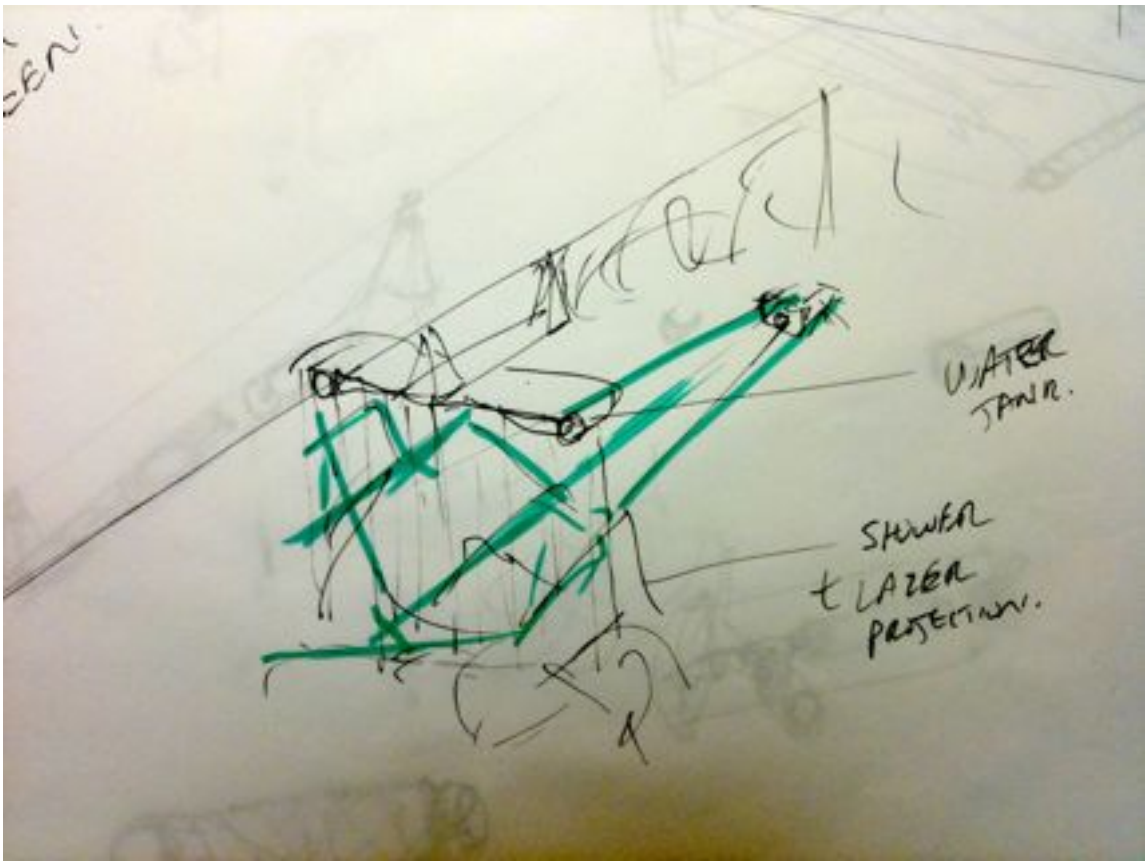


Potential Battery Powder smoke machines:

http://www.smokemachines.net/buy-battery-powered-smoke-machine.shtml

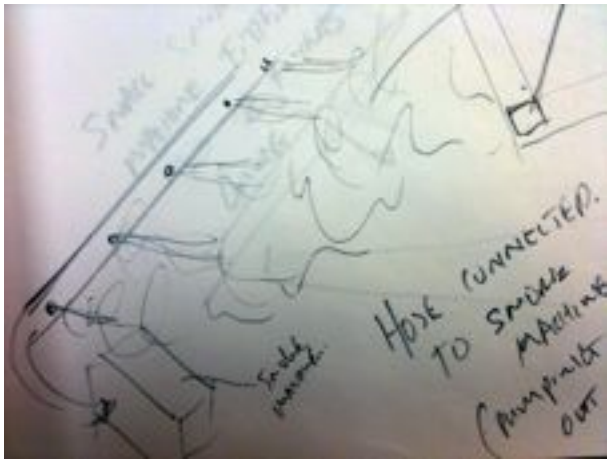
CO2 Smoke fall projection:

Attaching CO2 smoke machines to the wings of the harnesses, would create a moving canvas wall for the lazers to project against:



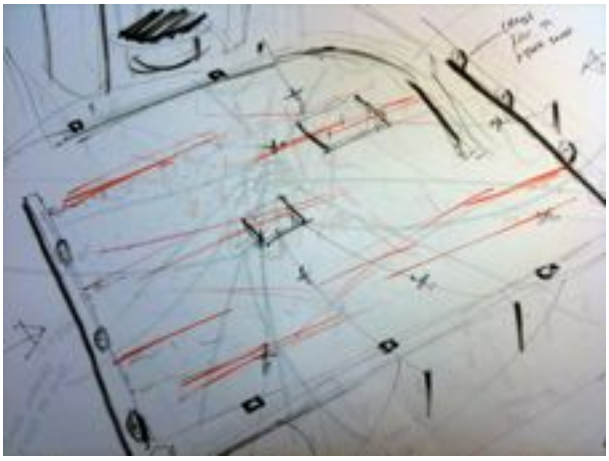
Smoke Dispersion:

Some lazer setups we have sketched out assumes the lazer can be seen throughout the square; this will depend on the dispersion of the smoke, too dense and the lazer wont travel through, too thin and the laser will be invisible. Therefore in some setups we imagine a thin mist covering the entire square; ideas to solve this problem are as follows:



Pumping dense smoke though a long tube with small holes along the tubes length could be an effective way to distribute the smoke.

This setup disperses the smoke along tubes surrounding the edge of the square, being blown across the square by large fans:



This setup creates a pyramid shape using the tubes, allowing the smoke to fall naturally down onto the square:

Participation:

Selection of the flyer's:

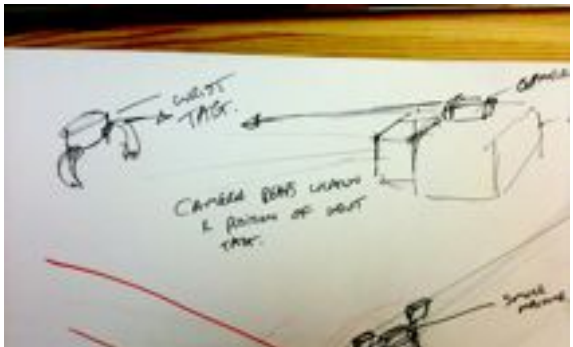
Organising the participants will be a crucial part of the smooth running / continual through put of flyers for the flightpath project.

Allocating most of the ziplines for pre booked participants will allow us to inform the flyers about weight, clothing and potential height restrictions and at the same time guarantee a constant throughput of people, avoiding long waiting lists or queues.

Although most of the lines will be ‘pre booked' a couple could act as open access,;giving the unexpecting general public a chance to experience flight.

Laser Interactivity:

Wrist tag and Laser system:

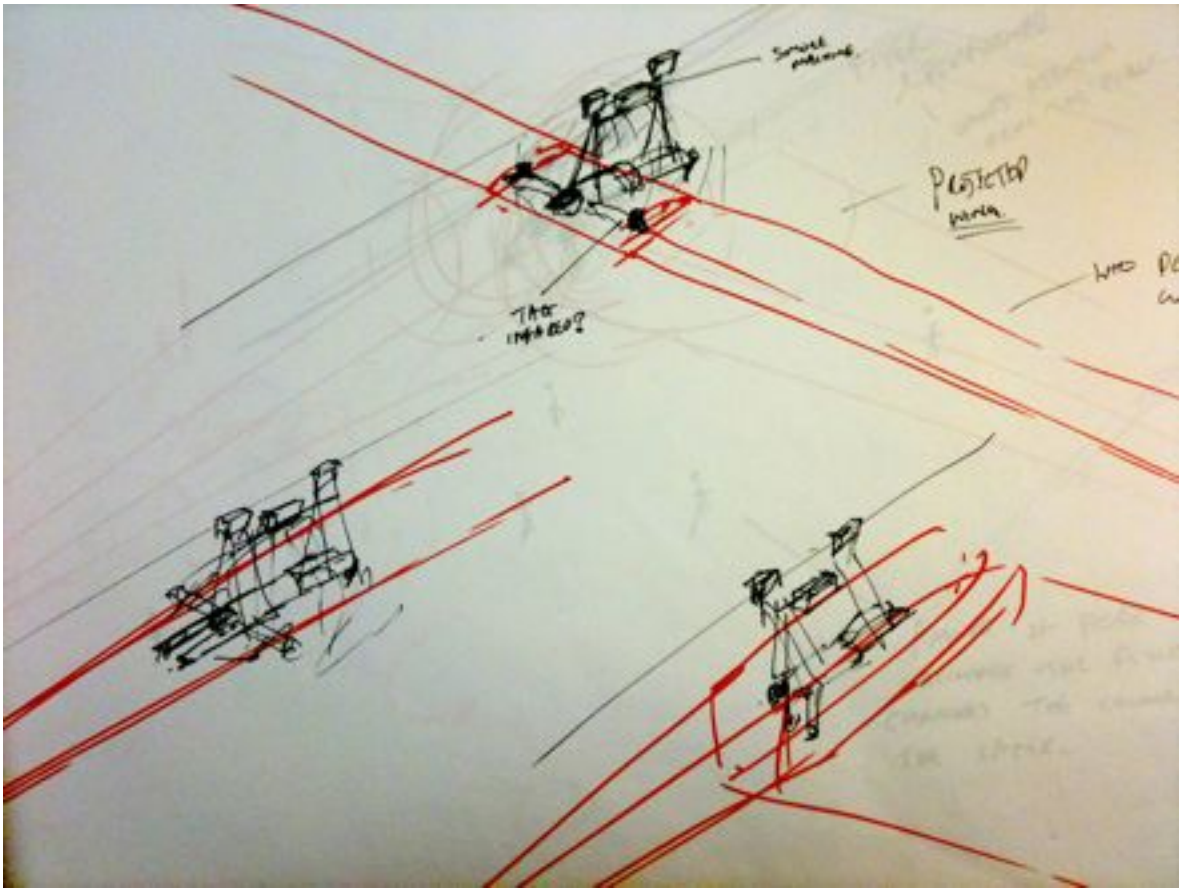


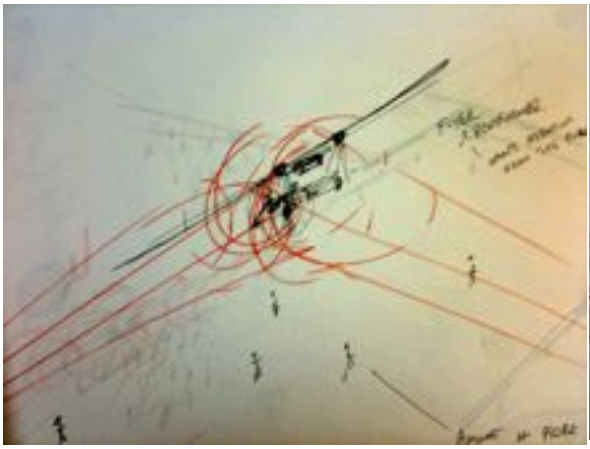
The sketches to the left and below; communicate the idea of the riders arm movements directly effecting the lasers.

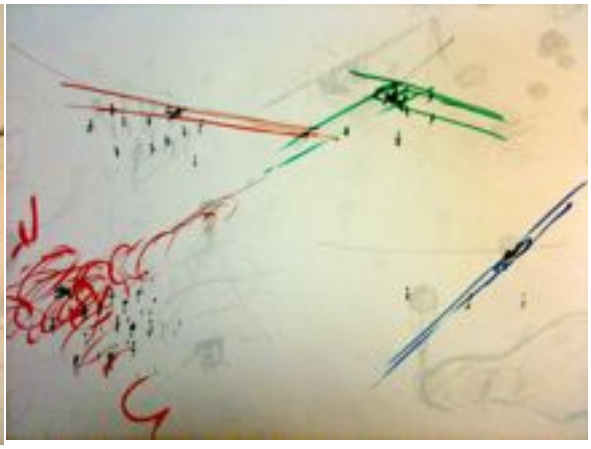
Employing some form of remote motion sensor the

position of the flyers arms change the laser projections... effectively this change in arm position alters the shape of the laser around the flyer.

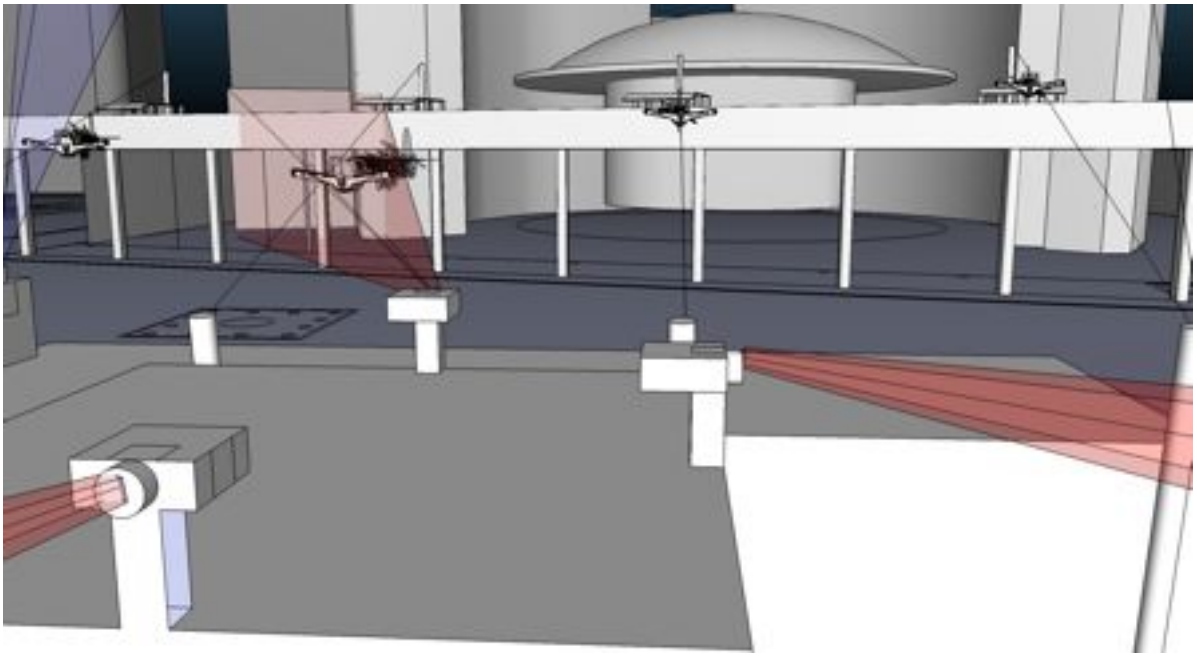
This arrangement could eliminate the fixed wings and create a per-formative wing, which the shape and colour are controlled by the flyer.





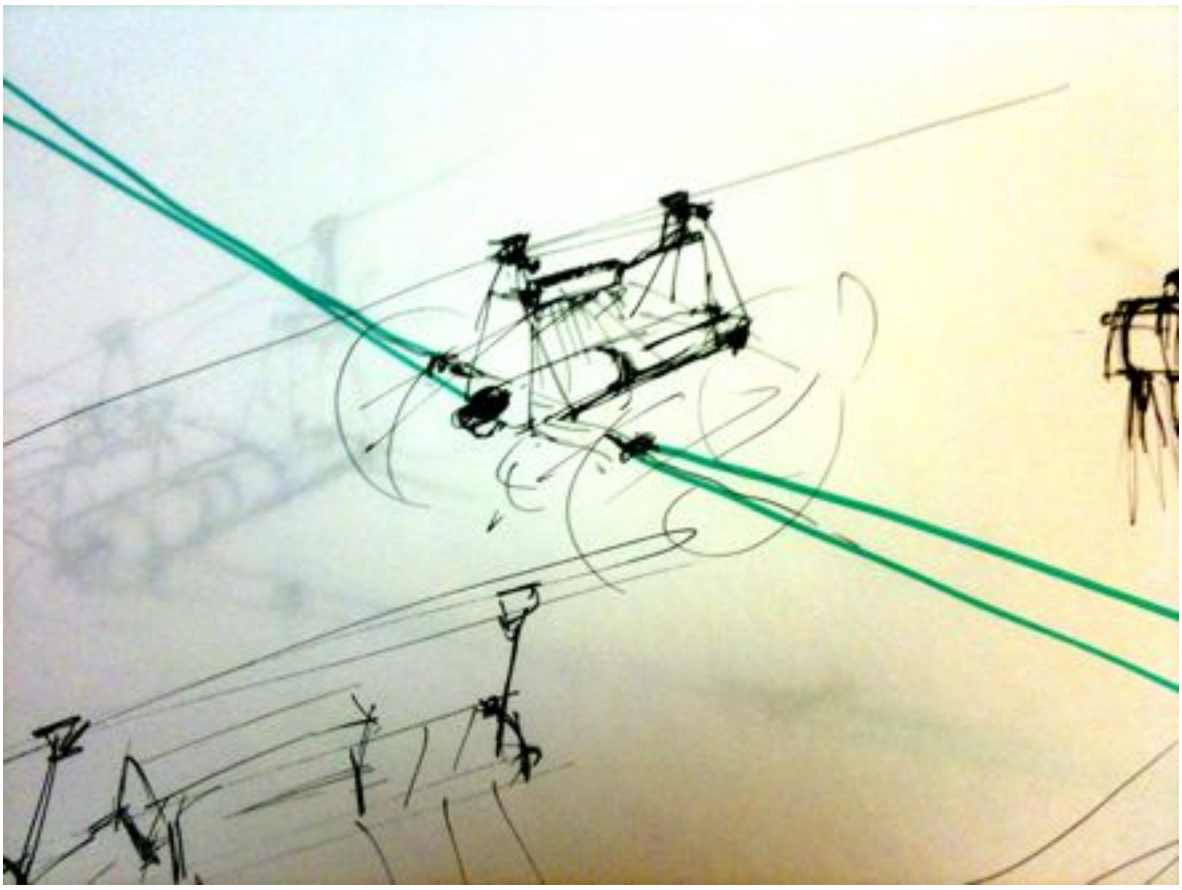


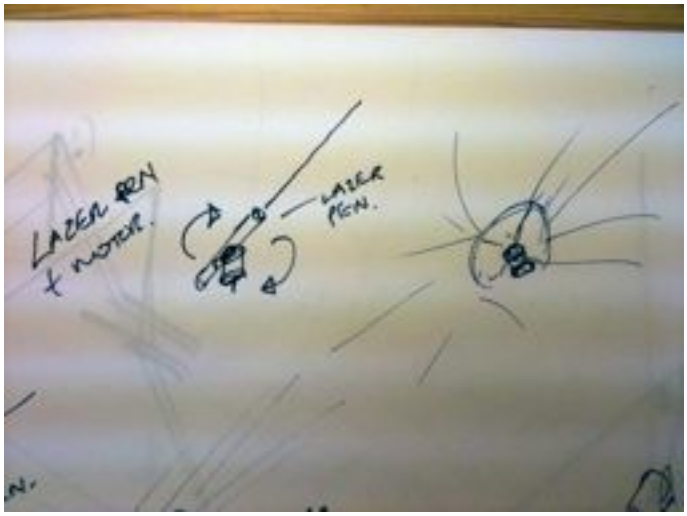
Race / landing lasers:



The laser setup within the current design highlights the flyer who are closest to the landing pad. Drawing parallels from the ‘runway end identification lights' or REIL's on commercial runways; a laser faces each row of ziplines; using a simple infra-red distance measuring device the closest flyer has the laser project a mid air landing tunnel around them.

Low cost lasers fitted to flyer:





Above: Low-cost lasers could be fitted to each end of the ‘flyers’ wings... highlighting the flyers position and speed.

Left: Cheap low-cost Laser fixed to a small dc motor, which creates a wall of light.