



ART and Science Proposal

# **Atmosphere ONE:** Visualizing The Atmospheric Data as an Experience

**Proposal for A 3D PLANETARIUM  
SCRIPT  
PRODUCTION and  
INTERACTIVE CONCEPTS**

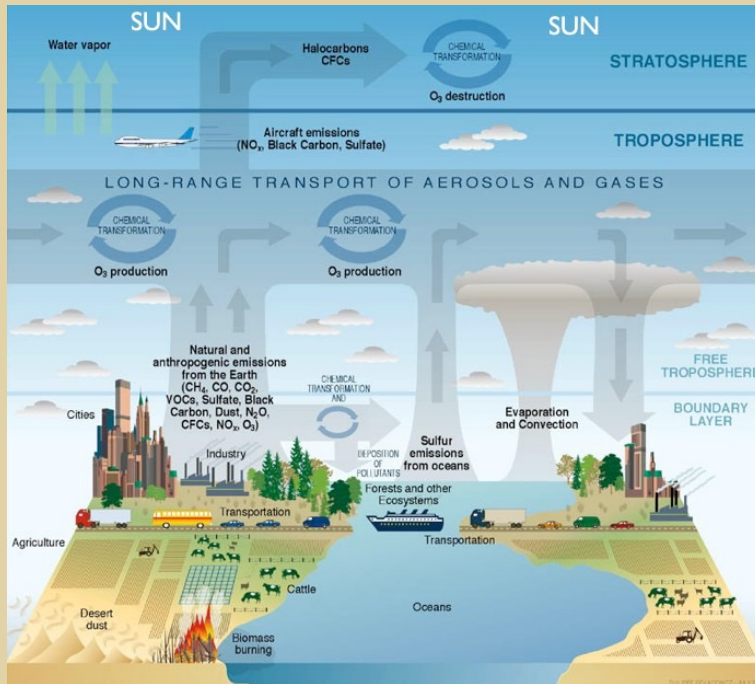
**Prof. Dr. Jill Scott  
Professor Emerita ZHdK**



# ATMOSPHERE ONE: PLANETARIUM

**Atmosphere One** - balance of molecular gases in our atmosphere - number one priority for future life and the sustainability of nature

Aim of Project: to remind young urban dwelling adults that natural cycles require their help in order to curb emissions and reduce energy usage.



## SEQUENCE ONE:

Coming from our watery planet: The energy of the molecules in the upper atmosphere

## SEQUENCE TWO:

Coming from our plants: the carbon-oxygen transformation

## SEQUENCE THREE:

Energizing our body: the oxygen-carbon dioxide transformation

## SEQUENCE FOUR:

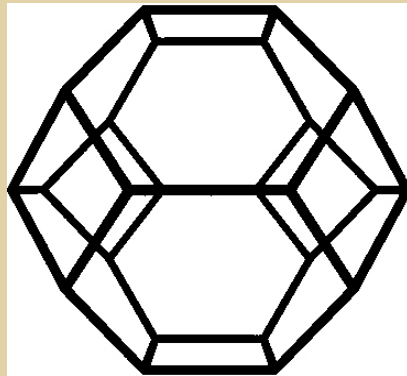
Sustainable energy sources: the sharing of the electricity grid



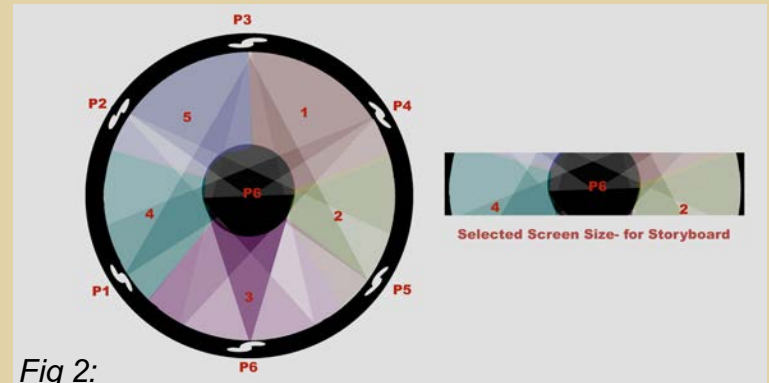
# ATMOSPHERE ONE: PLANETARIUM

## •**STRUCTURE OF BOTH PROJECTION AND VEHICLE**

the Tetrakaidecahedron, a shape commonly found in nature,  
And a shape that can be applied to the hemispheric dome projection



*Fig 1:  
The Tetra-kai-  
deca-hedron  
(Tetra)*

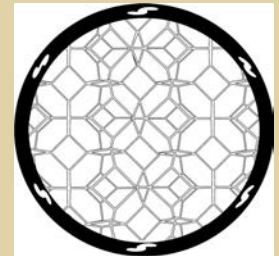


*Fig 2:  
The dome projection is accomplished by 6 projectors*

TETRA A very spatially efficient form it will be used as a metaphor for:

- the strength of the individual to work alone and also to join with others for strength into groups
- a stage for the best presentation of climate science content (dome format)
- a transportation vehicle for the characters (as in science fiction films)

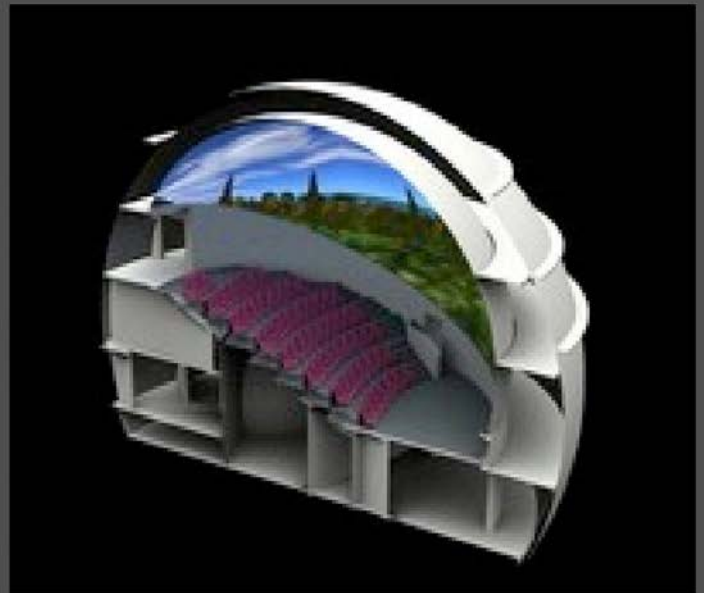
*Fig 3: Many  
Tetras  
together*





# THE PLANETARIUM DOME FOR DEBATE

## 3D Visualization and Interaction in the Planetarium Dome



***PLANETARIUM format 3D Film***

***Marille Hahne and Jill Scott***



# ATMOSPHERE ONE: PLANETARIUM

The Tetra - The Cell, The Transporter  
*atmosphere one* – actors represent 3 characters

- The audience - **The Learner**
  - The artist or designer - **The Fabricator**
  - The scientist - **The Researcher**
- ILLUSTRATIONS BELOW:
    - Hemispheric view- forest
    - Baby pine with roots effects by toxic rain
    - The process of Human Breath
    - Distribution of electricity in a polluted sunset



Forest



Soil



Lungs



Energy



# ATMOSPHERE ONE: PLANETARIUM - SEQUENCE ONE

- **WATER VAPOUR – EVAPORATION AND REFLECTION IN THE HYDROLIC CYCLE**
- H<sub>2</sub>O water vapour is the most effective greenhouse gas and it consists of two atoms of hydrogen bonded to a single atom of oxygen. In this sequence the Tetra acts like a floating atmospheric chamber.



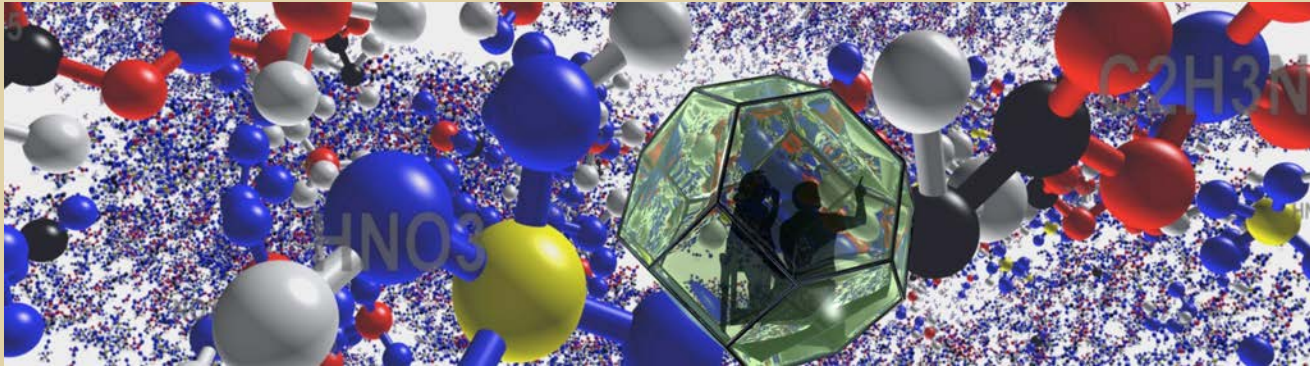
*SEQUENCE ONE : A Tetra (-kai-deca-hedron based on the minimal space-dividing cell) rolls over the ocean, its movements and occupants being affected by the evaporation process.*



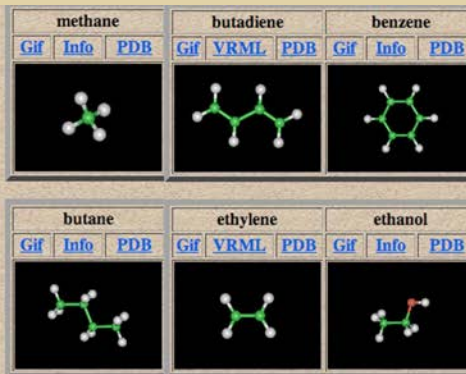
*SEQUENCE ONE: Interior shot of the Tetra as a scientific researcher and a learner discuss the measurement of the water vapour and carbon levels in the atmosphere.*



# ATMOSPHERE ONE: PLANETARIUM - SEQUENCE ONE



*SEQUENCE ONE : Travelling through the molecules into the Troposphere, the learner and the scientist inside the Tetra as transportation vehicle*



*SEQUENCE ONE : Selected screen images from scientific research displayed inside of the Tetra:1. Hurricane Katrina, 2. greenhouse gas molecules, 3. Satellite view of cloud formations*



# ATMOSPHERE ONE: PLANETARIUM - SEQUENCE TWO

## •CARBON DIOXIDE

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## PHOTOSYNTHESIS AND CLIMATE HISTORY

•This sequence of the film takes a more historical approach, because there was no oxygen in the atmosphere until the first life forms helped to produce it through photosynthesis. The characters can reveal how photosynthesis converts the energy of light (photons, electromagnetic waves) into chemical energy and stores it in organic structures such as plants. The Tetra acts like a transportation and conversion vehicle in this scene



*SEQUENCE TWO : The fabricator constructs a small Tetra in order to enter the leaf of a plant as Carbon Dioxide 12.*



*SEQUENCE TWO : A scientists and a fabricator discuss how the insect life has been affected by climate change over time.*





# ATMOSPHERE ONE: PLANETARIUM - SEQUENCE TWO



*SEQUENCE TWO : Historical referencing on climate change through the Dendrochronology -Tree Ring Analysis. Old people add stories from their life experiences to the narration.*



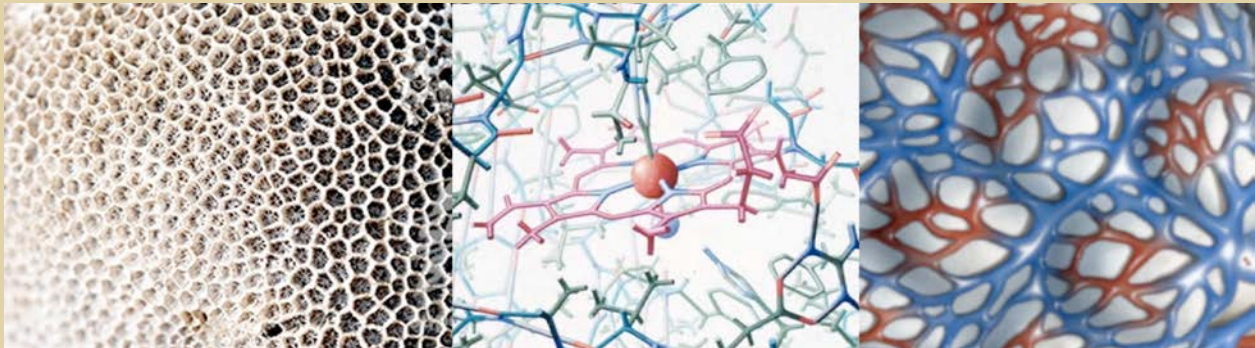
*SEQUENCE TWO : Screen images displayed inside of the Tetra:  
1. Atmosphere Chamber WSL. 2. Water draught analysis on a cellular level. 3. Problems and advantages of fungus.*



# ATMOSPHERE ONE: PLANETARIUM - SEQUENCE THREE

## ***ENERGIZING THE BODY – THE TRANSFORMATION OF OXYGEN TO CARBON DIOXIDE***

Sequence three deals with our own human health in relation to polluted environments. As many people know, the primary function of the respiratory system is to exchange oxygen and carbon dioxide. By entering through the lung, the Tetra could follow an oxygen molecule as it reaches the alveoli.

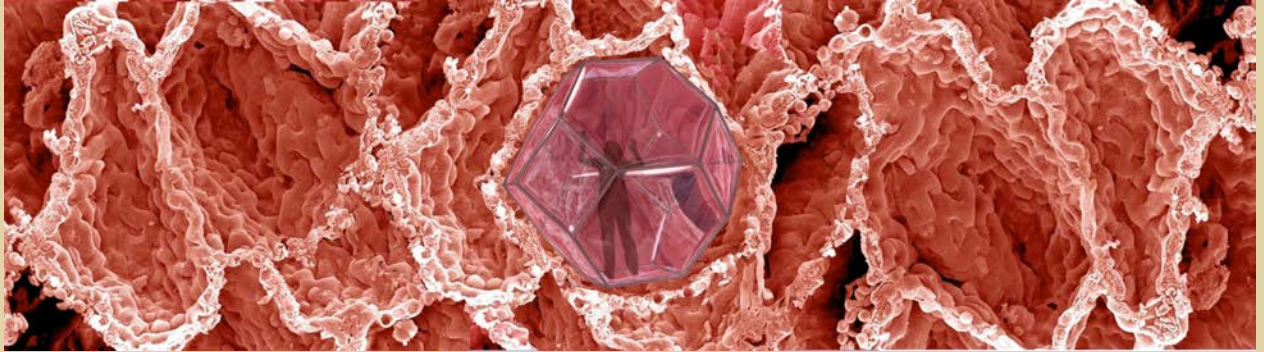


*SEQUENCE THREE : Selected screen images displayed inside the Tetra:*

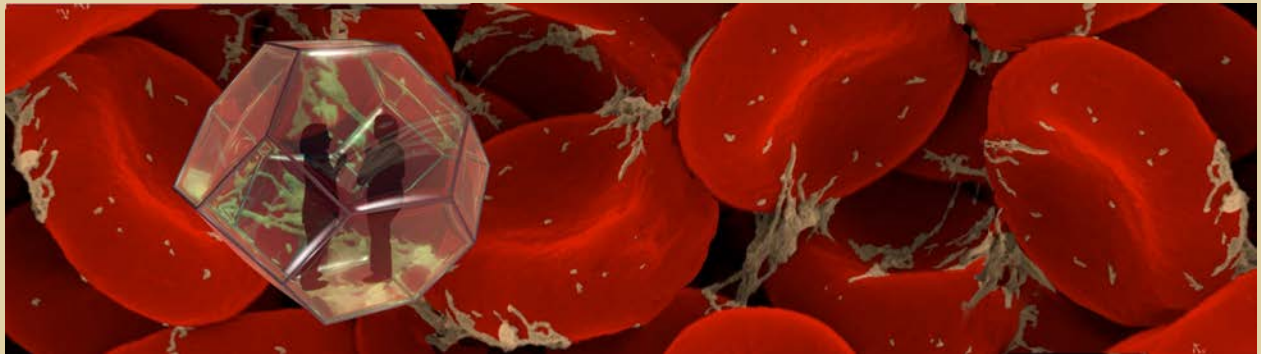
*1. Honey comb shapes of the alveoli (SEM), 2. Oxygen molecules, 3. The blood vessels at the back of the alveoli.*



# ATMOSPHERE ONE: PLANETARIUM - SEQUENCE THREE



*SEQUENCE THREE : The Tetra with the shadow of a learner inside travelling through an alveolus in the lung where Oxygen is transformed to Carbon Dioxide.*



*SEQUENCE THREE : Travelling through the blood a fabricator explains how clean air can be built by using new technologies for our urban environment.*



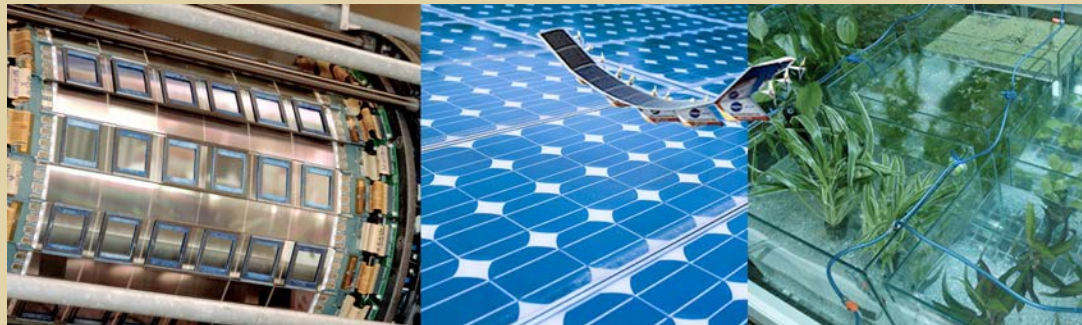
# ATMOSPHERE ONE: PLANETARIUM - SEQUENCE FOUR

## •THE CYCLE OF ELECTRICITY – SHARING STORAGE AND PRODUCTION THROUGH THE GRID

•Many people are unaware about how electricity is generated let alone how electrons move and their atomic structure! In sequence four the Tetra could follow the course of the electron in order to understand the feedback loop.



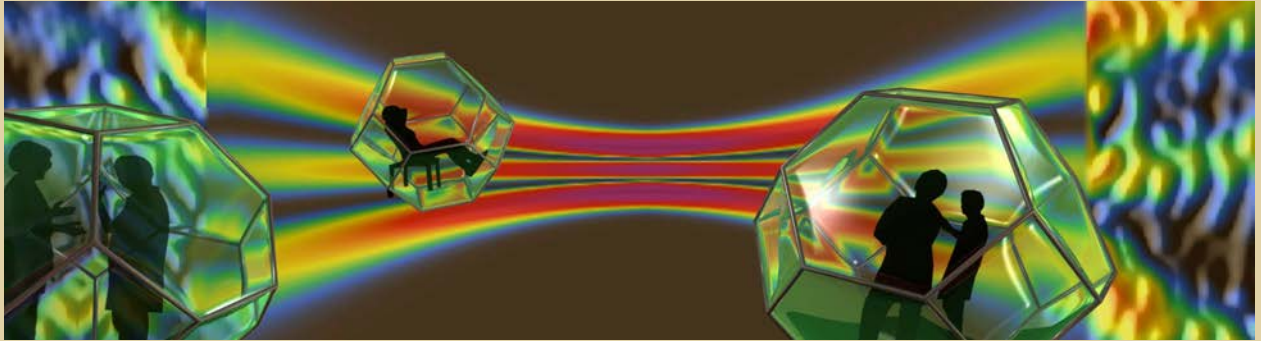
SEQUENCE FOUR : Discussion about greenhouse gas between a fabricator and a researcher.



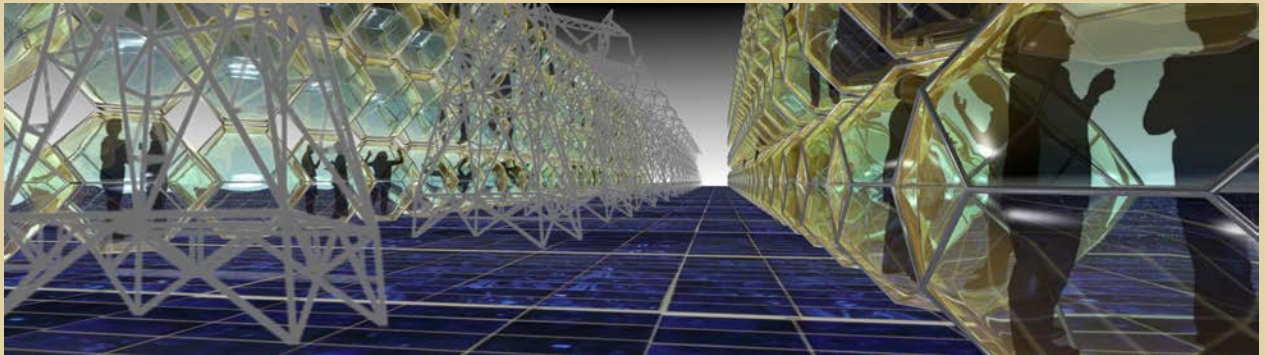
SEQUENCE FOUR : Selected screen images displayed inside the walls of the Tetras:  
1. Hub of the Hadron Collider, 2. PV solar panels, 3. The problems of Oxygen farm production.



## ATMOSPHERE ONE: PLANETARIUM - SEQUENCE FOUR



*SEQUENCE FOUR : A number of green-lit Tetras float over diagrams explaining phenomena of electricity. The camera moves from one Tetra to another catching the discussions inside.*



*SEQUENCE FOUR : A Tetra Village, which shows how humans can conserve with the help of new sustainable technologies and solar power.*



# INTERACTIONS: ATMOSPHERE ONE

## INTERACTION WITH THE AUDIENCE

Interactive potentials and user feedback from the Audience.

In the form of identification with the Learner and the expert characters travelling in the TETRA

In the form of voting to guide the Tetra forward or back.

In the form of filling out questionnaires about the experience.

In this way the Plaetarium becomes an interactive experience

### ***Scientific Advisors:***

Dr. Norbert Kräuchi, Forstwirtschaft und Klimawandel, Eidg.

Forschungsanstalt für Wald, Schnee und Landschaft WSL

Dr. Christopher Robinson, Aquatic Ecology, ETH EAWAG

Dr. Fritz Gassman, Projekt Director iLab, Paul Scherer Institute

PSI



## CREDITS and CONTACT: ATMOSPHERE ONE

### PARTNERS:

This project still need an addition of Partners.

### ***Directors:***

*Marille Hahne and Jill Scott*

### ***Script Production and development:***

Jill Scott

Andrew Quinn and other animators to be found.

### **Producers:**

Possible producers: ??

### **Production Team:**

From ECSITE:

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