'THE DYNAMIC FIELD'

Expression of Interest
Independent Arts Management - Queensland University of Technology

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e: dvr@allshookup.org

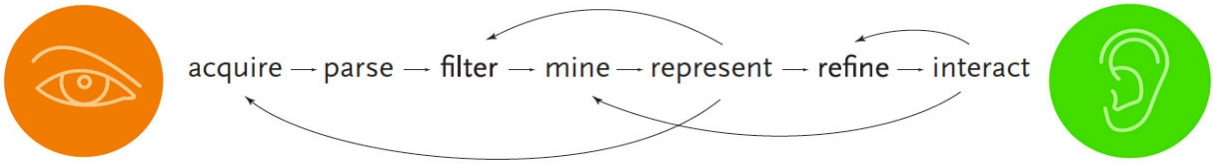
Overview - The Dynamic Field

This EOI proposal seeks commission to develop a detailed design concept for the Dynamic Field, a data controlled place-making and experiential device for the Undercroft area of the Science and Technology Building at Queensland University of Technology, Brisbane, Australia.

Intelligent architecture that interfaces with ecological data controlling LED lighting and generating audio sonification will become standard architectural features this early 21st century. This proposed Dynamic Field will transpose global ecological data and local building performance data collected from the Science and Technology Building at QUT.

This concept design is an interactive dynamic display of sound and light waves that responds with nature and the built environment. It is proposed this Dynamic Field will be controlled by the following ecological real-time collected data sets;

1. Building Energy Performance.
2. Local and Global Weather Data.
3. Local and Global Seismic Resonance.



Thirty-One modular LED light and sound module's measuring 1.6m x 1.6m x 0.75m, each containing an array of 1860 LED's and Holosonic soundfield audio spotlights are proposed to be installed at ceiling height in the Undercroft. This Dynamic Field will highlight how the built environment can directly connect, respond and reflect both local and global datasets generated by natural ecological systems as immersive architectural intervention.

This Dynamic Field is an ecologically sensitive, networked and a total intelligent architectural artwork that is in harmony with nature. A living, breathing, data collecting, data reflecting, art-sci immersive architectural installation that highlights and inspires the future of ecologically sustainable, and networked light and sound architectural interventions.

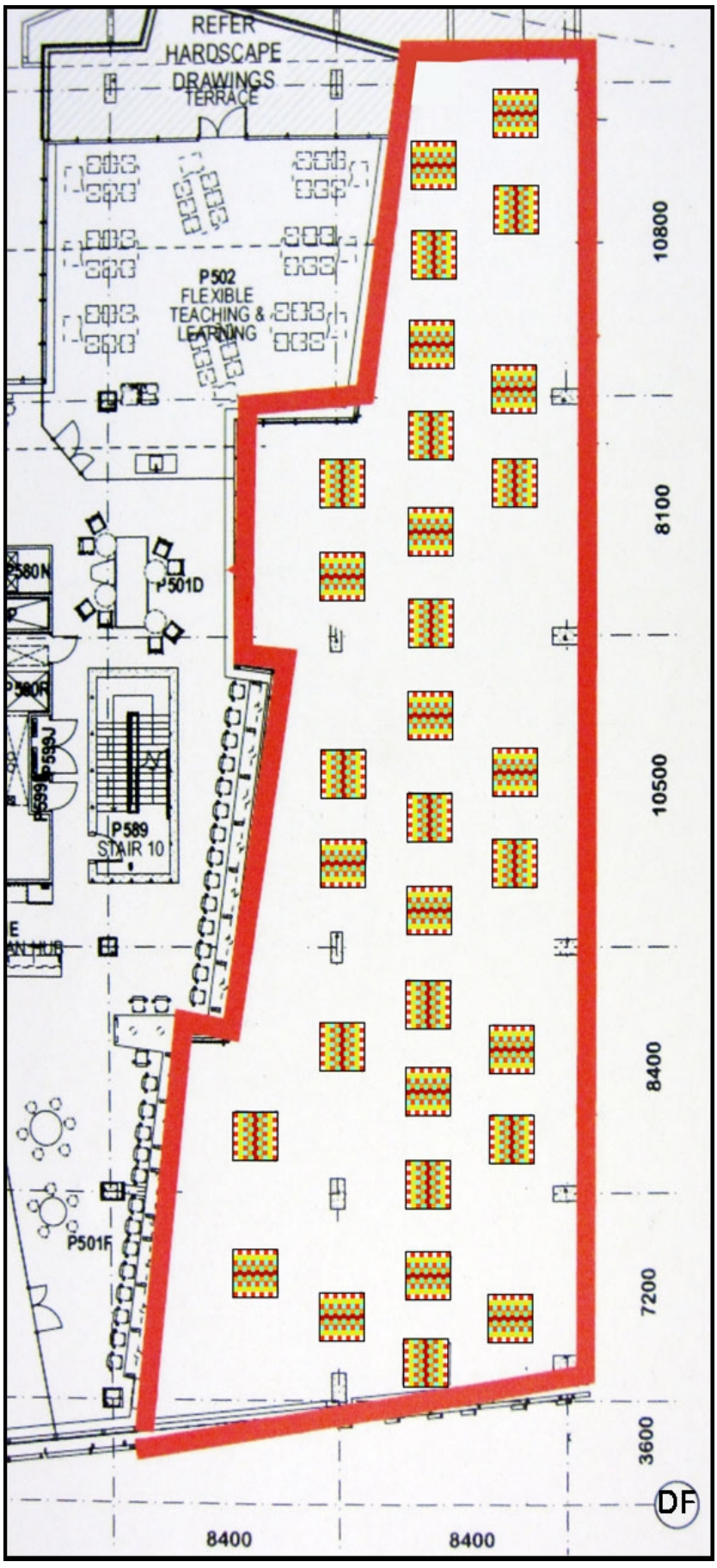
The history and ecology of life on earth is today informing the emerging field of Biomimicry and this Dynamic Field will demonstrate how architects, media-artists, engineers and scientists will design the future built environment. This future we deserve should engage and respond with natural systems, creating harmonious architectural features which are at one with both nature, and the human condition.

Themed around the science of the dynamic wave equation creating audio/visual display this concept brings together an international team of designers, critical engineers and software developers from Australia, Netherlands and the USA. This team was recently announced winners of the Sydney Ecology project, an ANAT and Carbon Arts initiative to develop Terra Sensing Tower for 1 O'Connell St, Sydney.

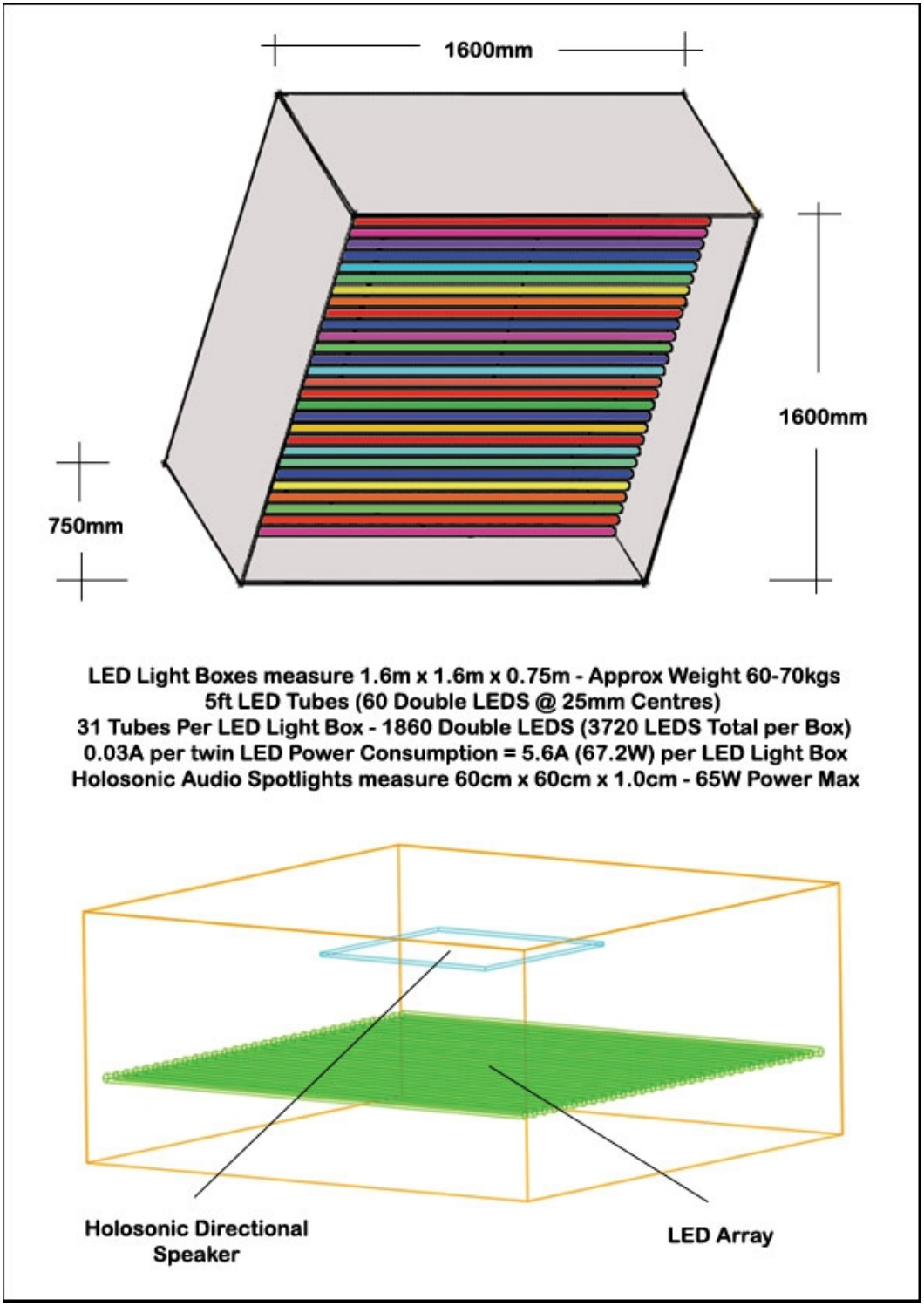
REF: http://tst.allshookup.org

If selected to produce a detailed concept for the Dynamic Field the team will pursue an integrated approach with all stakeholders and will actively seek collaboration with the Science's, Engineering and Architectural faculties at QUT. A detailed and developed concept for the Dynamic Field will focus on sensory design research as spatial stimuli enhancing the quality of architectural effect creating healthier mind and body connection's with contemporary urban spaces.

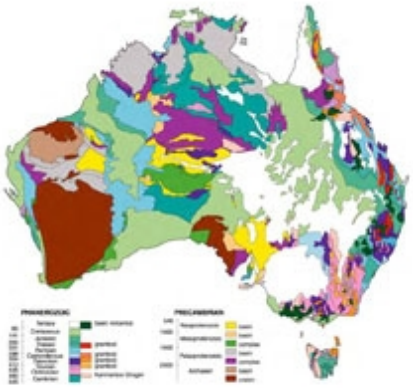
"Up to the Twentieth Century, reality was everything humans could touch, smell, see, and hear…tomorrows is being developed by humans using instruments and working in ranges of reality that are non-humanly sensible." - R. Buckminster Fuller 1979



Plan View Undercroft – The Dynamic Field

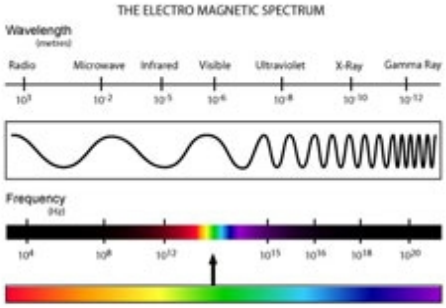


LED Light Sound Box – The Dynamic Field



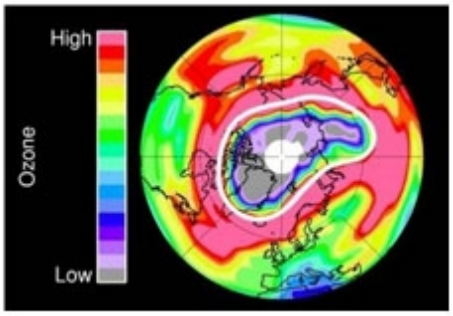
Modified Mercalli Scale vs. Richter Scale

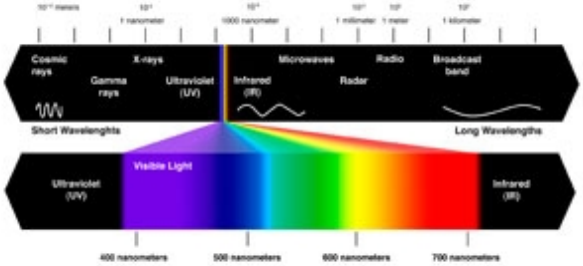
Category	Effects	Richter Scale (approximate)
I. Instrumental	Not felt	1-2
II. Just perceptible	Felt by only a few people, especially on upper floors of tall buildings	3
III. Slight	Felt by people lying down, seated on a hard surface, or in the upper stories of tall buildings	3.5
IV. Perceptible	Felt indoors by many, by few outside; dishes and windows rattle	4
V. Rather strong	Generally felt by everyone; sleeping people may be awakened	4.5
VI. Strong	Trees sway, chandeliers swing, bells ring, some damage from falling objects	5
VII. Very strong	General alarm; walls and plaster crack	5.5
VIII. Destructive	Felt in moving vehicles; chimneys collapse; poorly constructed buildings seriously damaged	6
IX. Ruinous	Some houses collapse; pipes break	6.5
X. Disastrous	Obvious ground cracks; railroad tracks bent; some landslides on steep hillsides	7
XI. Very disastrous	Few buildings survive; bridges damaged or destroyed; all services interrupted (electrical, water, sewage, railroad); severe landslides	7.5
XII. Catastrophic	Total destruction; objects thrown into the air; river courses and topography altered	8

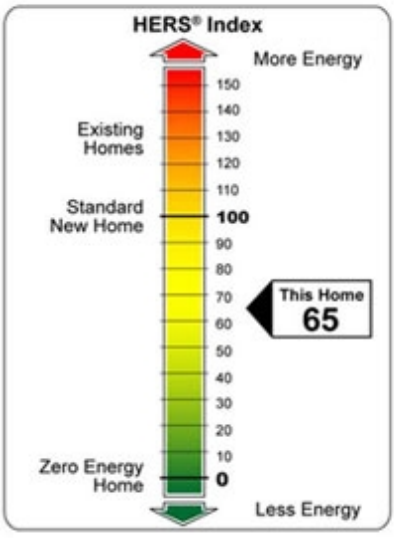


UV INDEX

0-2	No danger to the average person
3-5	Little risk of harm from unprotected sun exposure
6-7	High risk of harm from unprotected sun exposure
8-10	Very high risk of harm from unprotected sun exposure
11+	Extreme risk of harm from unprotected sun exposure





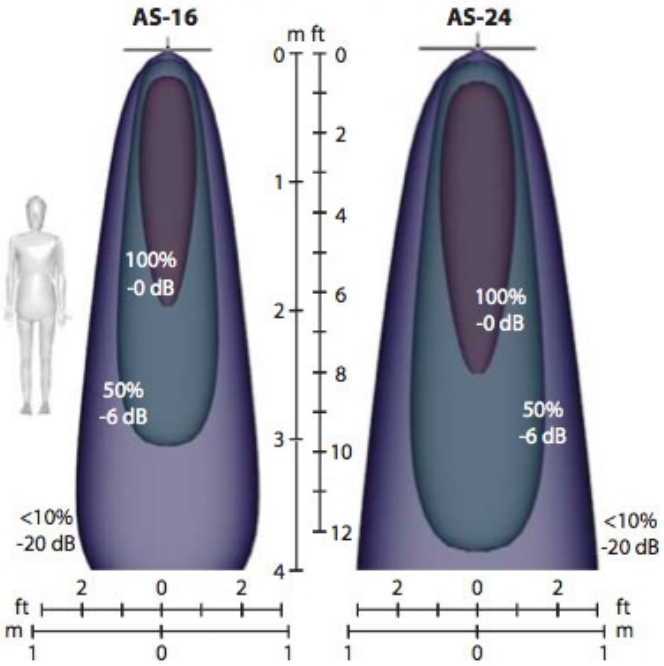


ECO Data RGB INDEX Examples

audiospotlight®

Technical Specifications

Sound Field Distribution



Sound field distribution is shown with equal-loudness contours for a standard 1 kHz tone. The center area is loudest at 100% amplitude, while the sound level just outside the illustrated beam area is less than 10%.

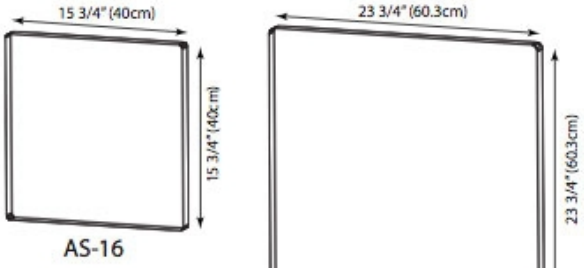
Audio Spotlight systems are much less sensitive to listener distance than traditional loudspeakers, but maximum performance is attained at roughly 1-2m (3-6 ft) from the listener.

Typical levels are 80 dB SPL at 1kHz for AS-16, and 85 dB SPL for AS-24 models. The larger AS-24 can output about twice the power and has twice low-frequency range of the AS-16.

Amplifier Specifications

Input:	RCA line-level audio
Power draw:	65W max (AS-24) 25W max (AS-16)
Output:	BNC coax cable (25' / 7m included)
Controls:	Volume, tone, on/off
Voltage:	100-240V 50/60Hz
Dimensions:	6"w x 7"d x 1.6"h (15cm x 18cm x 4cm)

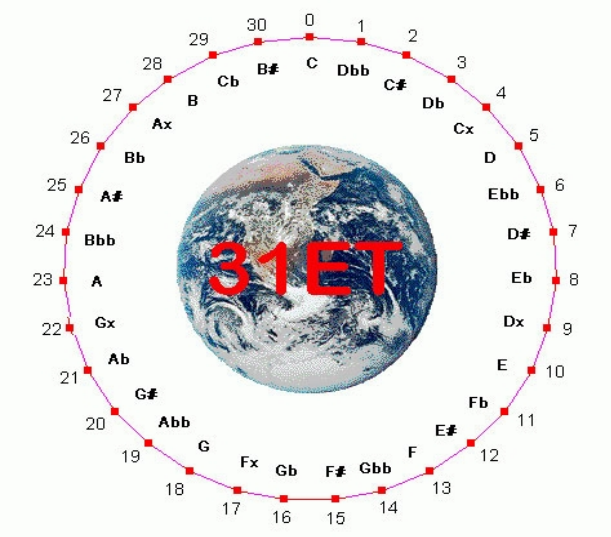
Speaker Dimensions (thickness ~0.5" / 1cm)



New square models shown. Legacy round speakers are also available.

Holosonic Research Labs, Inc.
www.holosonics.com
617-923-4000 info@holosonics.com

Add sound... and preserve the quiet.™



Ecological DATA as 31ET Generative Music for the 21st Century

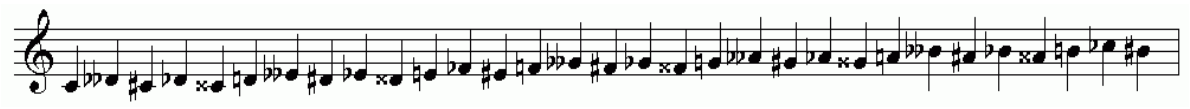
We all think we know what nature sounds like. The sound of wind blowing through trees for example produce sound perceivable to the human ear. There are other sounds from nature which produce sound waves not perceivable through our biological senses. Infrasounds such as seismic waves are examples of phenomena which do not fit within the audio spectrum of human audio perception.

Rapid technological advances with smaller, faster and cheaper computing resources are enhancing our ability to create new sense making tools to observe the natural world in which we cannot see or hear. The digital effect in this early 21st century is creating new translations of Big Data expanding our ability to perceive in greater detail the ecological world in which we inhabit.

To play music is a mind, body, and spirit experience whereas computational generative music revolves around the idea that music, or sounds is generated by parameters derived from an ecological system which produces variations of audification and sonification through algorithmic composition. Generative music created from ecological data mirrors the way we see ourselves in relation to the universe and the natural word in which we inhabit.

Traditionally, European classical music was built around the orchestra and its hierarchical approach to creation. 20th century Musique Concrète took a radically different approach with recorded sounds when analogue tape became a source for new forms of music. Experimental music today continues to move away from the idea of the composer as creator, and the field of microtonal music notation is a re-emerging vehicle for autonomously generated music representing the creative nature of ecology.

The 31 Equal Temperament (31ET) is a one-quarter-comma mean-tone tuning system that had significance in the history of the Renaissance through the 16th and 17th centuries. 31ET is a division theory of 31 steps to the octave and offers largely untapped potential as generative computational music theory towards transposing the mean-tone harmony of ecological data as music.



PROJECT TEAM

Rene Christen (AUS) - *DMX/Art-Net Lighting Design Software*
Rene Christen is an Australian based media artist and software developer who integrates the conceptual and technological through custom built technologies to explore the poetics of systems. Rene graduated with Distinction from the Electronic Arts program at the University of Western Sydney before completing his honors at the College of Fine Arts, Sydney and receiving a full scholarship to do his Masters in Electronic Integrated Arts at Alfred University, New York. Rene has been with Spinifex (Sydney) since 2007 developing high level concepts and systems integration for numerous interactive and experience based media projects. http://renechristen.net

Dr Geo Homsy (US) - *Technical Design Direction*
Geo Homsy is an innovator, scientist, engineer, and technology artist with deep understanding of physics, computation, biology, and robotics. He has collaborated on more than thirty large-scale machine sculpture and technology-based artworks over a period of 23 years. He has also made original contributions in theoretical chemistry, biological computation, secure networks, and spread-spectrum data storage. Current works include biofuels research, guidance navigation and control for aerospace applications, and teaching introductory electronics to artists. Geo holds a PhD in Electrical Engineering and Computer Science from MIT. http://homsy.org

Mark Lottor (US) - *LED Lighting Hardware Design*
Mark Lottor founded Network Wizards in 1990 specialising in unique products relating to computers and communications including wireless electronic mail systems, computer control of cellular telephones, electronic jewellery, satellite delivered usenet news receivers and protocols, computerised temperature sensors, computer console management systems, internet domain system surveys, and Internet web hosting services. Today Mark designs and implements computer controlled RGB LED lighting displays. http://3waylabs.com

Ryan McGee (US) - *Auditory Display Software*
Ryan Michael McGee is a transdisciplinary hybrid engineer and creative programmer working at intersections of sound design, signal processing, music composition, data mining, mobile development, and human-computer interactivity. He is currently pursuing a PhD in Media Arts and Technology at the University of California, Santa Barbara as part of the AlloSphere Research Group. His primary research explores new paradigms for sound spatialization and sonification. As a musician, he has performed electronica as well as highly spatialized compositions over large multi-channel sound systems. http://lifeorange.com

Stock Plum (NL) - *Data Aggregation Development*
After having worked for several years as a freelance "Technician for the Arts," in Eindhoven and Berlin, Stock joined the V2_Lab team Rotterdam in 2000 as a Systems designer and Hardware-engineer. Stock has designed, built and programmed numerous interfaces for various international artists. Today Stock operates as "Mister Stock Interfaces" specialising in Interface Design, Sensor Systems, Embedded Systems, Machine-control, Audio-processing and programming, Max/MSP/Jitter, Python, C and low-level programming. http://www.v2.nl/archive/people/stock/view

D.V. Rogers (NZ/AUS) - *Concept Direction/Producer*
An early 21st century installation performance artist and critical engineer working between the fields of geophysiology, conceptual cultural theory, activism, performance, systems engineering and social commentary. His 2008 seismic machine earthwork, the Parkfield Interventional EQ Fieldwork (PIEQF) was a telematic performance earthwork installation which mapped the terrain of spatio temporality of shifting tectonics and information networks in this NoW digital age. http://allshookup.org - http://en.wikipedia.org/wiki/D.V._Rogers

Mr Snow (NZ/AUS) - *Software Development Management*
Mr.Snow is an artist and an artists technician. He has worked as a technician with leading international artists and curators including Carolyn Christov-Bakargiev, Allan Giddy, Caleb Kelly, Rosemary Laing, Wade Marynowsky, Caitlin Newton-Broad, Kate Richards, D.V. Rogers and Jennifer Turpin in various technical roles such as drafting, system design, implementation, programming and visual design. His areas of expertise currently include design and construction of custom web applications, open source mash-ups, database programming, video and audio streaming and hardware input/output. http://www.linkedin.com/in/mrsnow