

The Emergent City

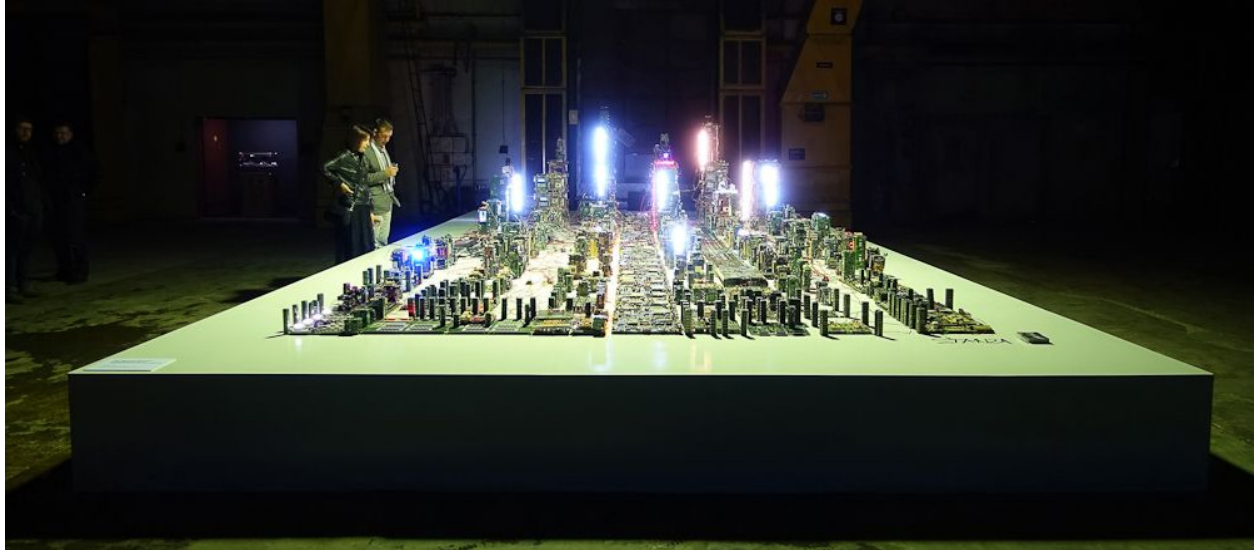
STANZA

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The Emergent City by Stanza is a responsive real time installation illuminating global data connectivity and collaborative possibilities.

Touring.

- This artwork installation is available for exhibitions please get in touch.
- It is always different for each installed set up and it is an evolving artwork.
- In the gallery the work can be shaped formally on the floor or also grow into different shapes and spaces.

Scale and Size depends on the venue and it is variable in several approximate sizes:

- Large version (50 metres plus).
- Extra Large version (100 metres -150 metres square and much larger is in development.)

Development.

- This is an ever evolving and changing artwork.
- I am also developing several new concepts and data types are being introduced into the largest version.
- Extensions to the artwork include mixed realities, AR app, extended facial tracking and robotics.
- Funding is needed for further technological experiments and development with this project and I am looking to work with an organisation to progress this further.

Videos

- Stanza talking about the main art work and concepts 2019 <https://vimeo.com/339299723>
- The Nemesis Machine artwork represents the complexities of the real time city as a shifting morphing and complex system. <https://vimeo.com/237884023>



THE EMERGENT CITY. A unique, site-specific data sculpture exploring the future of connected cities.

The installation which the audience experiences is a multi-layered expression of a technology-based future focussed on big data, privacy, liquid surveillance, the ethics of open data control and the use of information systems and sources in a responsible way.

Imagine walking out the door, and knowing every single action, movement, sound, micro movement, pulse, and thread of information is being tracked, monitored, stored, analyzed, interpreted and logged. Selected artworks explore these concepts relating to the behaviours, activities, and changing information, of the world around us using my networked devices and information across the internet.

Videos. Stanza talking about the main art work and concepts 2019

<https://vimeo.com/339299723>

The British artist Stanza presents a spectacular installation using real time data interactions to create a unique responsive connected city installation and interactive experience which is both audio visual and participatory.

This will become the largest and most complex art city the artist has made to date which is be custom built for each location.

You see a large spectacular installation made of hundreds of custom electronics parts and computer parts built into what looks like a city, and each individual customised area reacts to layers of incoming data from a variety of sources. These data are mixed and reassembled to create a unique hybrid Third Space. This is an audience engaging multi layered digital experience of the modern world and includes:- overlaying smart city IOT networks which change and affect in real time the lights and motors, so that the whole installation is actually a hugely impactful responsive intelligent city data visualisation. There are screens showing the data sets and real time feeds from the connected networks of mesh sensors. There are several towers which are customised to show live surveillance and camera feeds of people inside the space as well as another software showing the wider context of networked surveillance from 300 cameras in London. There is an extended sound layer of global city sounds which is created into a unique connected city interface merging sounds and maps from over fifty world's cities and traversing the globe and this can augment the whole experience by playing these sounds in a network also built into the installation. Other layered systems in development include a unique phone APP called Velocity that allows the installation to track people walking which then visualises this data incorporates this into The Emergent City and demonstrates of the possibilities shared open and collaborative data in an ethical and responsible way. Additionally news and stock exchange data can be presented into the installation.

THE CONNECTED CITY.

The installation the audience experiences is a multi layered expression of technology based futures focusing on big data, privacy, liquid surveillance and the ethics of open data control. It operates to demonstrate the agency and collaborative possibilities of our connected world by overlapping and layering systems. This city governs itself and its actions and intelligence is completely controlled by data interactions of the system. In its physical form it gives visitors a bird's eye view of a cybernetic cityscape, where skyscrapers are constructed of silicon and circuit boards. Areas of the artwork acts as a frame for the different expressions of data and information which is in effect a connected intelligent city.

PHYSICAL INSTALLATION WHAT IT DOES.

The actual physical presentation the audience experiences responds to smart city wireless mesh sensor networks. The environmental data represented by these systems include light, temperature, noise, sound, humidity, CO2, O2, nitrogen, alcohol and city sounds. What we see and experience are lights that respond in real time data from the networks, motors that turn and are responsive and move, sounds can be heard from the city and as well as mini screens that have data flows on them. The installation becomes a conglomerate expression of the real world made digital and then presented back to us in real time.

DATA VISUALISATION

The art installation therefore becomes a huge data visualisation. The city we witness and experience performs itself through an-other city. Cause and effect become apparent in a discreet, intuitive manner. When certain events occur in the real city they cause certain other events to occur in its completely different, but seamlessly incorporated, double. The avatar city is not only controlled by the real city in terms of its function and operation, but also utterly dependent upon it for its existence. **The real world is made virtual and then made real again.**



Why? About the artwork in detail:

The avatar city is not only controlled by the real city in terms of its function and operation but also utterly dependent upon it for its existence. This is a city where there is no privacy. By presenting these technologies to control us, separate us, divide us, create more borders, the city challenges new technologies to imagine a world where we are liberated and empowered; finally, all of the technology becomes more than solely a gimmick and starts to truly work for us. This city governs itself. Its actions and intelligence are completely controlled by data and the interactions of it. The machine poses the question of true data possession while speculating on both the virtual and physical borders a growing dependence on technology will form.

The artwork focuses on the aspect of the so-called "smart city" / digital city as a space for the parsing of (any /all) data.

- **So, how can you make meaning of this liquidity?**
- **How can it be of any common benefit?**
- **Will it be at the expense of something else?**

Artistic Contexts. I am not presenting a model that seeks to didactically present a series of suggestions; rather it is an artwork that represents the real world as a series of interconnected flows, each having consequences on the next. While each data flow is specific, truthful, analytic, and quantitative, the composite whole becomes something else. The real world is made virtual and then made real again, allowing various perspective shifts within the landscape itself, which is addressed from a real-time, multi-point perspective parallel reality. By layering data into a *Hybrid Third Space*, the perspective of space also comes into question. The performance of oneself within the city-system is indirectly addressed, reducing the body to quantitative, traceable units of data input. The ownership of this data and space is questioned in relation to the value added to our wider human condition. How these merging systems can be seen, experienced and valued to exercise new experience and knowledge, creates a world of new possibilities that the artworks only hints at.

As an artwork, it allows us to step back and experience the collection/ collaboration/ total quantum possibilities of emergent city systems. Inside the sculpture, these events overlap alluding to our new agency and awareness of this complicit arrangement. This allows us to ask how we must action such knowledge as we inquire further into these worlds.

For example: Will it empower our collective humanity?

We need to know not how the emergent city behaves, but why it behaves like this so that we can speculate what this world will look like in 40 years time. Technology borders, access to data, and the open agent of software needs to be freely available for all, interacting seamlessly in a universally common language.

These overlapping experiences create a universal vision; a machine vision. The sensors action specific tasks, changing over time- for example, by taking temperature readings. However, mixed together, The Emergent City creates a conversation about the performance of space and everything combined; the total universal algorithm in flux. The fixed points become insignificant as the data poetics allows the perspective shift; everything combined can be recombined. True, the sensors might read 27 degrees or the pollution data of XYZ, but turned into code and remade it can be a system for climate change: a symphonic musical experience, switch lights on, trigger political statements, allow the fire brigade to come to save your house. The values themselves are effective in the performance of others. Temperature affects fires, crops, the clothes we wear, the price of stock, and the food in our fridge.

Our actions affect its actions and this becomes the responsive, real time artwork.

“Quantum physics is a new model of reality that gives us a picture of the universe. It is a picture in which many concepts fundamental to our intuitive understanding of reality no longer have meaning” The Grand Design- Stephen Hawking.

By observing any system then, it must alter its course de facto, as we bare witness. Our agency and interaction alter course (and therefore meaning). Implicit in this quantum reference is that our engagement in anything affects its course. Once the knowledge is given, it cannot be undone. It is the menu of life.

The City is emergent and responsive simply by our own agency and the multi point perspective of everyone’s interactivity constantly shifting; it creates a system of complexity which can be both witnessed and experienced. Everything is performing and relating to everything else in a constant temporal shift inside The Emergent City. This shift allows a joyful expansion of space as we observe the wider world and are ourselves incumbent within; both audience and actors, both spectators and spectacle, all at once.



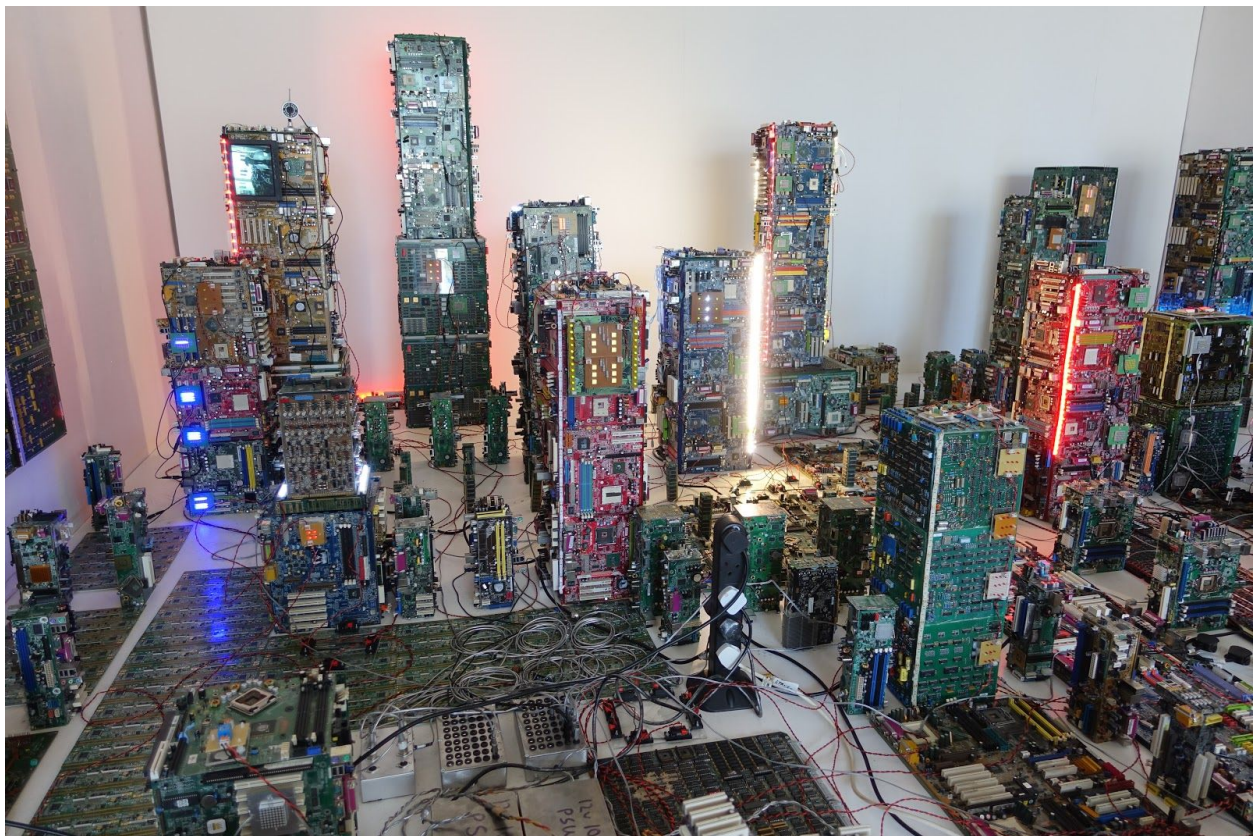
In Dresden for illustration purposes only.



The British artist Stanza presents The Emergent City. The art installation and presentation can also have all these components or districts and not unlike a real city which has separate neighbourhoods these data layers are all added into the composite artwork to create this experience. This can be shown and exhibited in various ways.

1. **The Emergent City: The Nemesis Machine. How does it feel to be part of the real time flow of a global system?** A unique connected art city data installation with thousands of electronic parts which become alive with the flow of the connected real time city. It gives visitors a bird's eye view of a cybernetic cityscape, where skyscrapers are constructed of silicon and circuit boards.
2. **Authenticity: What happens when we mix types of data across the landscape?** Internet of Things (IoT) mesh sensor networks – draw in real-time environmental data activity, which is merged together to represent a world full of data that Stanza calls The Third Space. The sensors include light, temperature, noise, sound and humidity.
3. **Soundcities: Sound is all around us as a landscape of musical flow.** Imagine being able to hear all the sounds from all over the world and see them on a generating map interface. The global map interface system presents thousands of sounds from all over the world connecting 150 cities in a custom made visual interface built inside the art city installation thus creating an additional audio component and enhanced audience experience.
4. **Electricity: How can we experience the invisible agency and performativity of all our connected devices?** Wifi beacons scan all wifi network activity in the locality. All phones all wifi in the locality are visualised as a stream of data inside the total experience. This adds to the experience by showing other types of network that we are all involved and collaborating with. We are all connected in this way.
5. **Toxicity. How can different realities and perspectives be mixed?** Another separate local sensor networks that trigger some extra LEDs in the installation. Consists of local sensor kit in the installation. Sensors with hardwired sensors, pollution gases no2, co2, o2, and alcohol. (ie general air pollution and car pollution sensors)..
6. **Omniscity: We live in a world of continual surveillance how are we in fact complicit in this dialogue?** Live traffic cameras and car feed images from London of 350 cameras. The software reworks this extra visual layer creating another data visualisation of embedded real time city data. It becomes a generative real time visual experience on several small screens.
7. **Publicity. The new and current affair from media shapes our understanding of the wider world yet we are bombarded with images of news and information streams that have created an infobesity as we struggle to remain connected.** A visual system shows these information streams as a fast flowing visual experience.

8. **Sensity. DATA DATA DATA.** The whole world is actually performing system of numbers. A hybrid poetic interpretation of data turned into numbers.
9. **Simplicity. As everything is tracked and technology spreads across the public domain. What are we gaining if anything as we look closer at real time patterns in the city the create complex maps.** TFL transport data interpretation using thousands of records for every journey as a complex aesthetic visualization.
10. **Univercity.** An artistic screen based visualisation of a community of 80 thousand visitors to a festival. Which can also be customised to any location.
11. **Diversity. Who are we in this bigger picture. How does the individual fit in?** A network of small screens and micro cameras capture the visiting audience inside the space and around the installation in real time and embeds them back inside the artwork as participants of the bigger systems. This creates a sense of belonging and spectacle while embedding the audience inside the artwork create a selfie system with facial tracking.
12. **Velocity. Imagine if everyone was tracked in real time; can we create a performative event with our agency to reclaim public space?** Open data from Stanza brand new phone app is shared in real-time via GPS, allowing anyone to contribute and become involved in a huge collective participatory artwork
13. **Capacity The participatory experience is explored further in** a dedicated skyscraper integrates eight mini screens, which are gathering and displaying citizen contributions from Twitter as scrolling text. This feature is specifically focussed on the conversation customised to the area about inclusive cities, by gathering citizen contributions with the customisable hashtags.



THE 'DISTRICTS' OF THE EMERGENT CITY.

**Authenticity - Soundcities - Diversity - Electricity - Toxicity - Omnicity - Publicity -
Simplicity - University - Multiplicity - Velocity - Capacity**

1 The Nemesis Machine. The machine poses the question of who owns the data while speculating that virtual borders will soon create more systems of control. It is always different for each installed set up and is evolving dependent on the situation it becomes exhibited in.

Is an ever evolving system based artwork, always different and always expanding. It has become a multi layered installation incorporating concepts of data ownership, surveillance, real time space, urban environments as well as systems based metaphors for interactive and generative spaces.

The artwork you see is a city of electronic components that reflect in real time what is happening elsewhere. Technically the installation also incorporates several technological systems:-

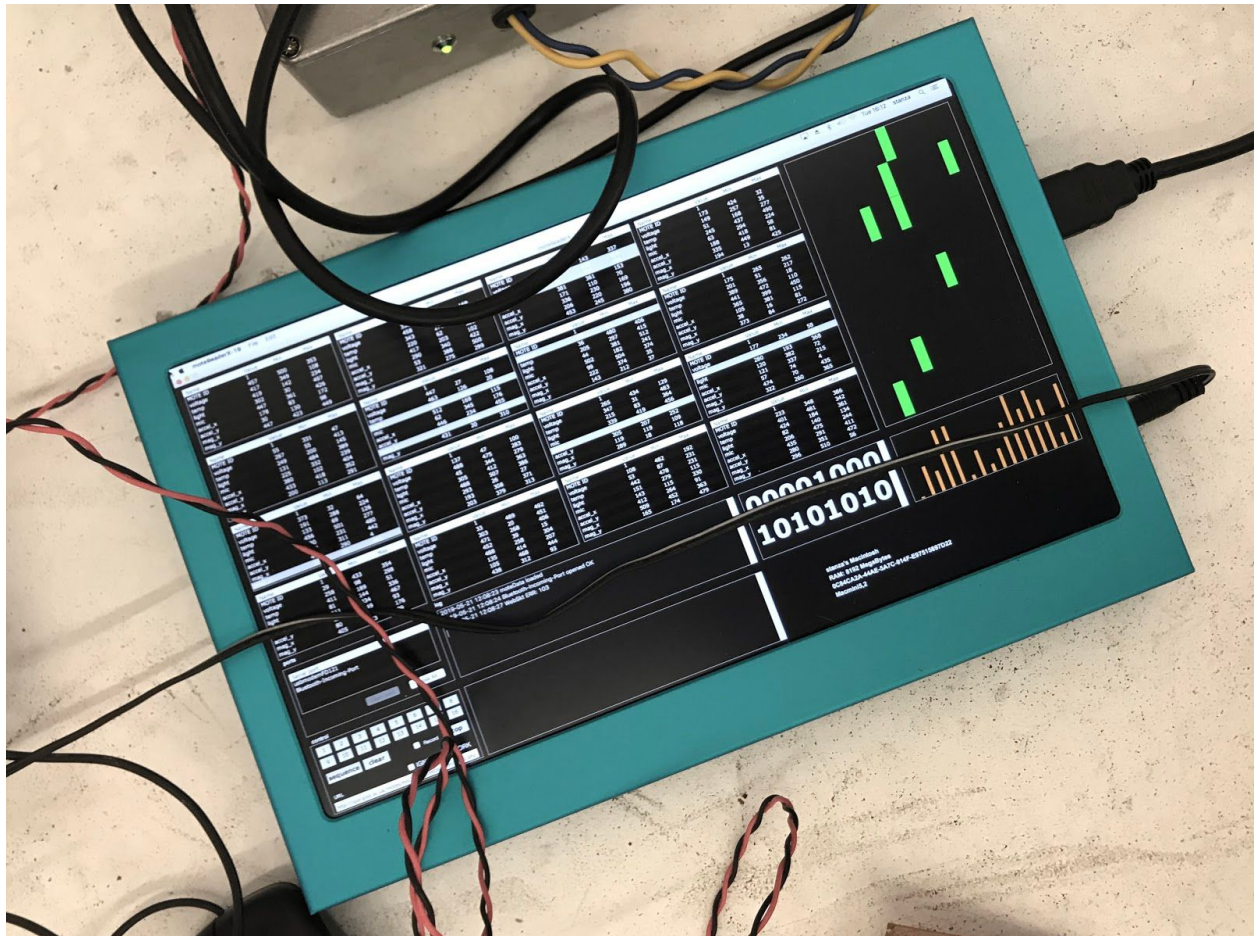


2 Authenticity. This digital artwork also focuses on how we consciously or unconsciously influence each other, and also the degree to which technology may in future take over control of our own bodies and our presence in the city.

Screens show real time environmental data activity. I have been researching wireless sensor networks since 2004 for this installation. I use motes sensors in two networks and I have custom built software that gathers data and places the data online via a java proxy server. This then allows me to make this artwork with the data. The data include GPS positions, humidity, noise, temperature, light, sound of the space and the surrounding environment. The interactions of all this data, controlled via interfaces that re-form and re-contextualise experiences in real time. Representations of these data sets allow unique understanding of the gallery and the urban environment in real time.

The data is also used to create the visualizations in an open source environment. Because the data is networked other online users can also re-interpret the data and interrogate the various sensors in the network as this is open source as well (via xml streams online). The sensor network takes a constant stream of data which is published onto an online environment and this is used to make the artwork. The sensor networks are situated through the building and across the city or location space. Once switched on they gather the data. I have made two versions of the interface software and custom built software for real time data over networks. Mote proxy software version 20, allows real time polling of data online from any sensors network that is connected and switched on from the formatting PHP and XML feeds this allows to enable anyone to make a visualization or interpretation of the data.

The changing data is what affects what you see and experience in the artwork. Ie the light motors and noise to happen.



3 Soundcities. We cannot be heard in the herd for all the noise.

Imagine being able to hear all the sounds from all over the world all at once. The sounds of cities give clues to the emotional and responsive way we interact with our cities. Cities all have specific identities, and found sound can give us clues to the people that inhabit these spaces, as well as provoking us and stimulating our senses in a musical way. A growing labyrinth, a community of aural cityscapes and collages is now evolving. The city is its own music, constantly evolving, a beautiful composition of squeaks, clanks, and pulses. The city is the orchestra.

All the sounds from all over the world are displayed on screens (a generating map interface) and heard on speakers. This can be on two speakers or on two hundred speakers.

http://stanza.co.uk/soundcities_herd/index.html

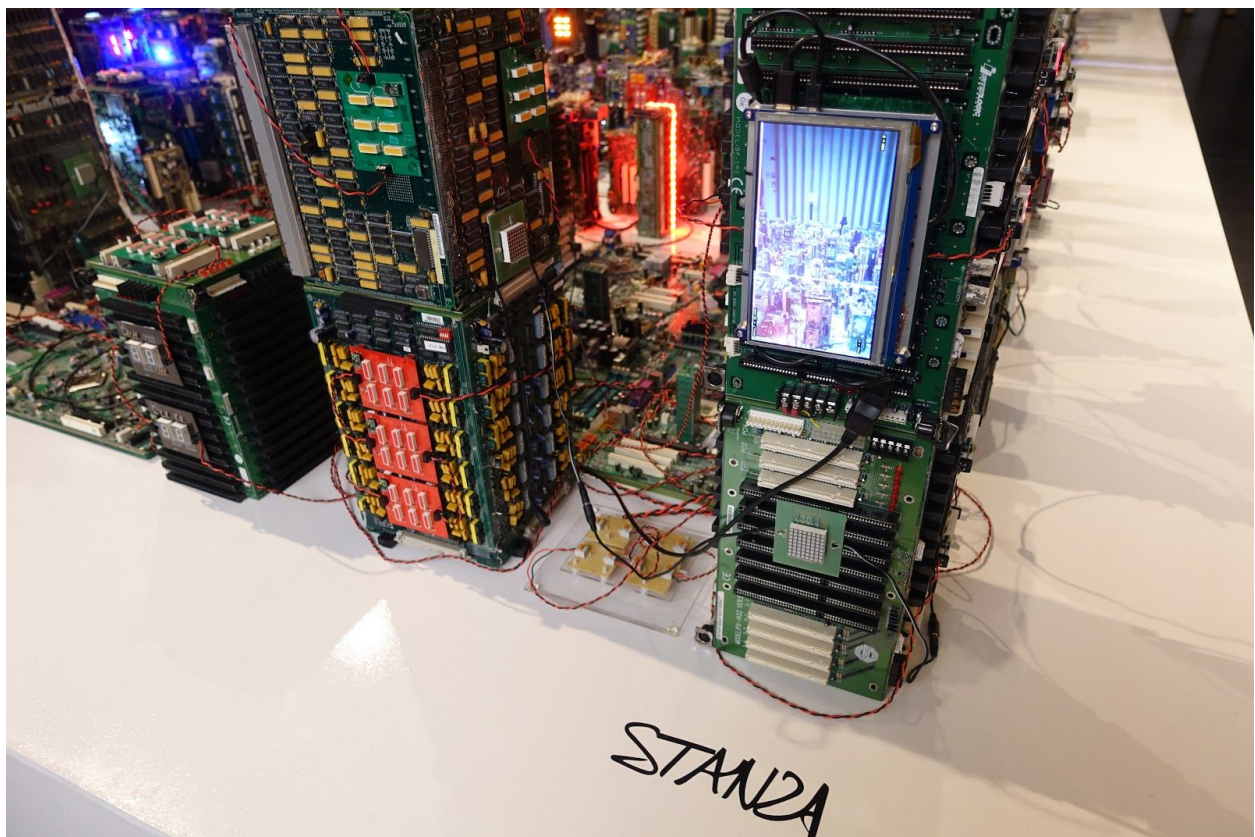
Current list of cities

The World | Aarhus | Adas | Albany | Aluksne | Amsterdam | Ashland | Atlanta | Baltimore | Bamako | Bangkok | Barcelona | Beijing | Belo Horizonte | Bergen | Berlin | Bilbao | Binghamton | Birmingham | Blue Ridge | Bogota | Bordeaux | Bristol | Brussels | Budapest | Cairo | Calcutta | Camberwell | Caracas | Catania | Champaign | Charlottesville, Va | Chernogorsk | Chicago | Cluj Napoca | Colombo | Cork | Corvallis | Crawfordsville | Dakar | Dresden | Dundee | Ekaterinburg | Enschede | Esquerdes | Foz Do Iguacu | Frankfurt | Genzano Di Roma | Glasgow | Gothenburg | Granada | Graz | Guangzhou | Halifax Nova Scotia | Hamburg | Helsinki | Hong Kong | Istanbul | Izmir | Jaipur | Kobe | Koln | Kyiv | Lexington | Lisboa | Liverpool | Ljubiana | London | Los Angeles | Louisville | Luzern | Madrid | Manchester | Marrakesch | Marseille | Medford | Minneapolis | Montevideo | Montpellier | Montréal | Moscow | Munich | Napoli | New York | Palma | Pamplona | Paris | Pavia | Perugia | Phoenix | Phoenix, Or | Portland | Porto | Prague | Rabat | Rennes | Richmond, Vt | Rome | Salzburg | San Fiorenzo | San Francisco | San Sebastian | Santa Terezinha | Sao Paulo | Seoul | Shanghai | Stavanger | Stuttgart | Suzhou | Taipei | Tallinn | Tel Aviv | Thessaloniki | Tokyo | Toronto | Toulouse | Trieste | Ulm | Utrecht | Venezia | Vienna | Wroclaw | Zurich |



4 Diversity. How do we see ourselves inside the wider world in which we are performing in a constantly changing system . As selfie culture and our obsession with self conflicts with the idea that facial tracking and surveillance is everywhere. A network of small screens and micro cameras capture the visiting audience inside the gallery and around the installation in real time and embeds them back inside the artwork as participants of the bigger system. This is a unique network of micro cameras connected into its own router. The aim is to give agency to the city and to create art system that incorporates the visitors to the gallery inside the artwork.

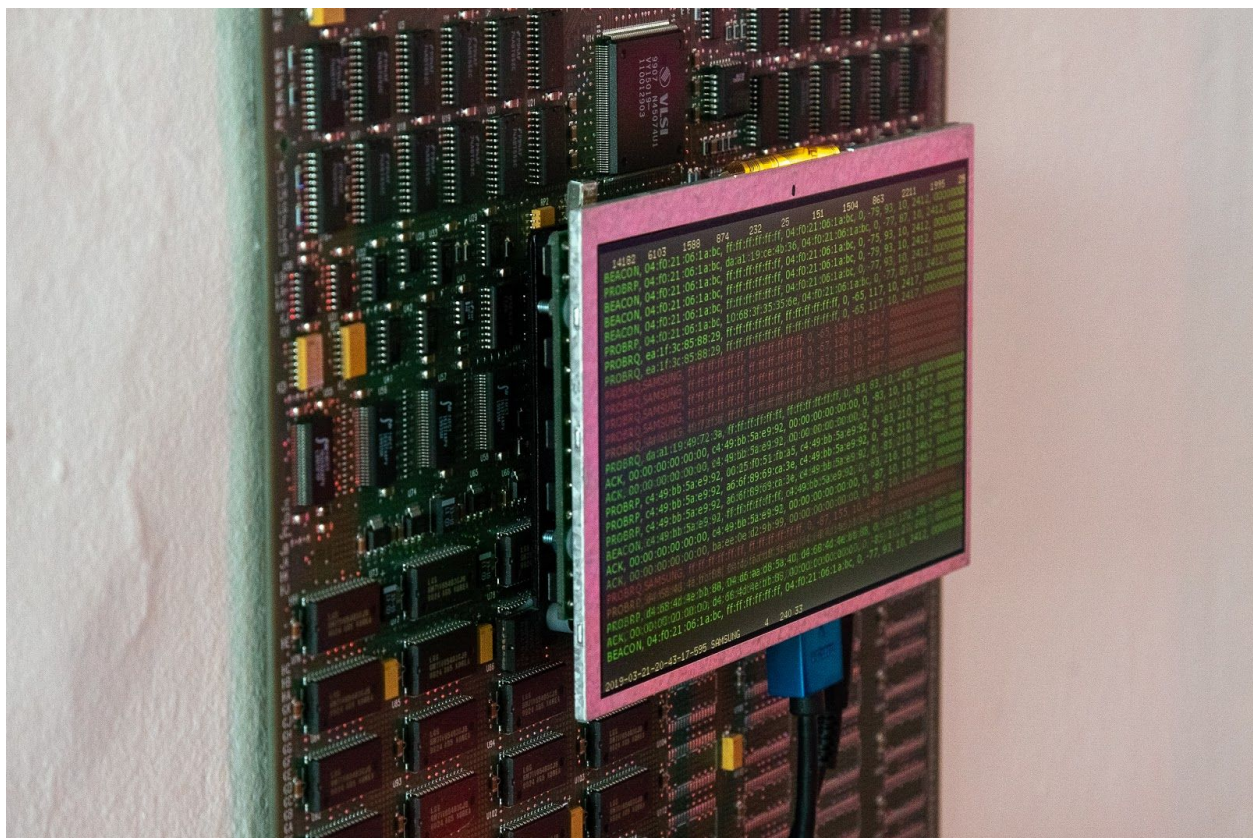
- The public are embedded into the "information stream" of the artwork so that they become the artwork.
- This is an open process where the invasion of privacy is made public and shared.
- The resulting experience becomes a real time artifact, the work is always changing, never the same again always different forever.
- The focus is the live dynamic interpretation of the space
- The surveyed public become everyday actors are displayed and incorporated into the spectacle as performers..
- Artwork functions: Transparency of space; ownership of data; and problems of representation identity and privacy. (**Note:** No data is recorded. It is real time only.)



5. Electricity: The invisible agency of technology is everywhere and the invisible forces around us can be drawn into a performative arena of numbers and sound by our own interactions within these technologies.

Wifi beacons scan all wifi network activity in the locality. This shows types of technologies used, make of phones, their locations, passing traffic, buses, Mac addresses. Packets of data are taken and represented as a rhythm of moving and raw real time data. By addressing it head on a number of issues will be raised about wifi networks and mobile phones as ubiquitous systems of surveillance, invasion, and control.

Tech: Raspberry Pi running Kismet server app and USB wifi dongle. Custom app to connect locally to Kismet and parse data. Remote connect via ethernet from laptop to parse data. GPS dongle and build GPSD server software.



6 Toxicity.

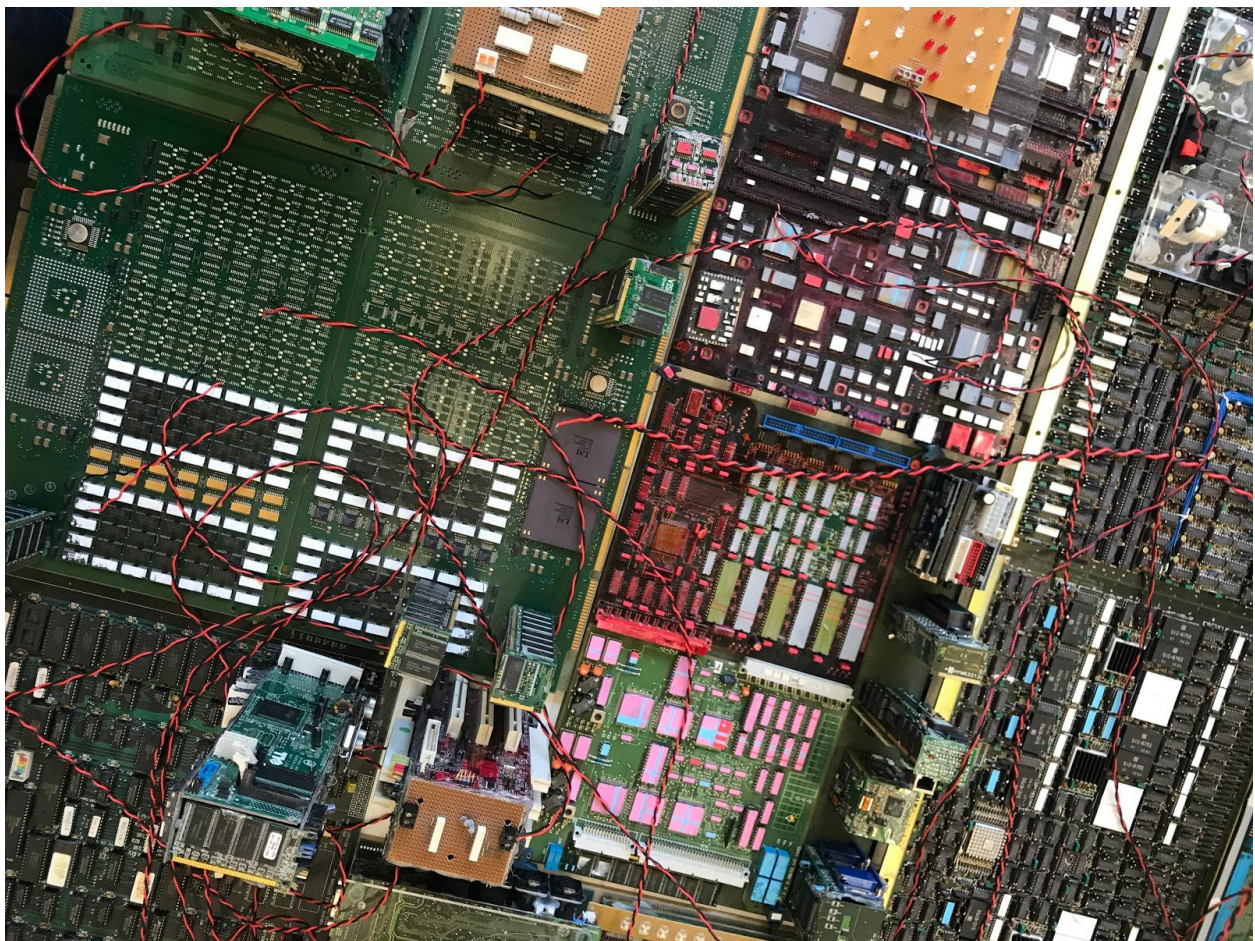
The special data modifying system has been designed to capture and monitor the data in real time and series of custom made components are triggered in real time as environmental events change in the surroundings. The artwork re frames issues around the meaning of data and space to question audiences' experiences of real time events to create an experience of life as it unfolds.

The system by measuring the climate around it in real time and acts to mediate a response, it is a provocation for your own agency and what we can do about it.

Sensors with hardwired sensors pollution gases no₂, co₂, o₂, and alcohol. (ie general air pollution and car pollution sensors) Used for some lights.

The NO₂ module (nitrogen dioxide analyzer) is used to detect pollutant nitrogen dioxide gas in the air. (this module would be most affected if someone was smoking in the building.

An alcohol sensor can tell if you have been drinking and relative changes in the display system are affected accordingly if any change in the alcohol concentration in the atmosphere is detected.



7 Omnicity:

Imagine walking out the door, and knowing every single action, movement, sound, micro movement, pulse, and thread of information is being tracked, monitored, stored, analyzed, interpreted and logged and we are complicitly involved. This artwork uses networked cameras from all over the city. The networked channels are always on, and therefore, the artwork is always changing. It depicts a constant and evolving view of the urban landscape and its inhabitants exploring the controlled state of the metropolis. The artwork collects live feeds from 450 cameras in London in real time and rework these video streams into multi-layered visual structures.

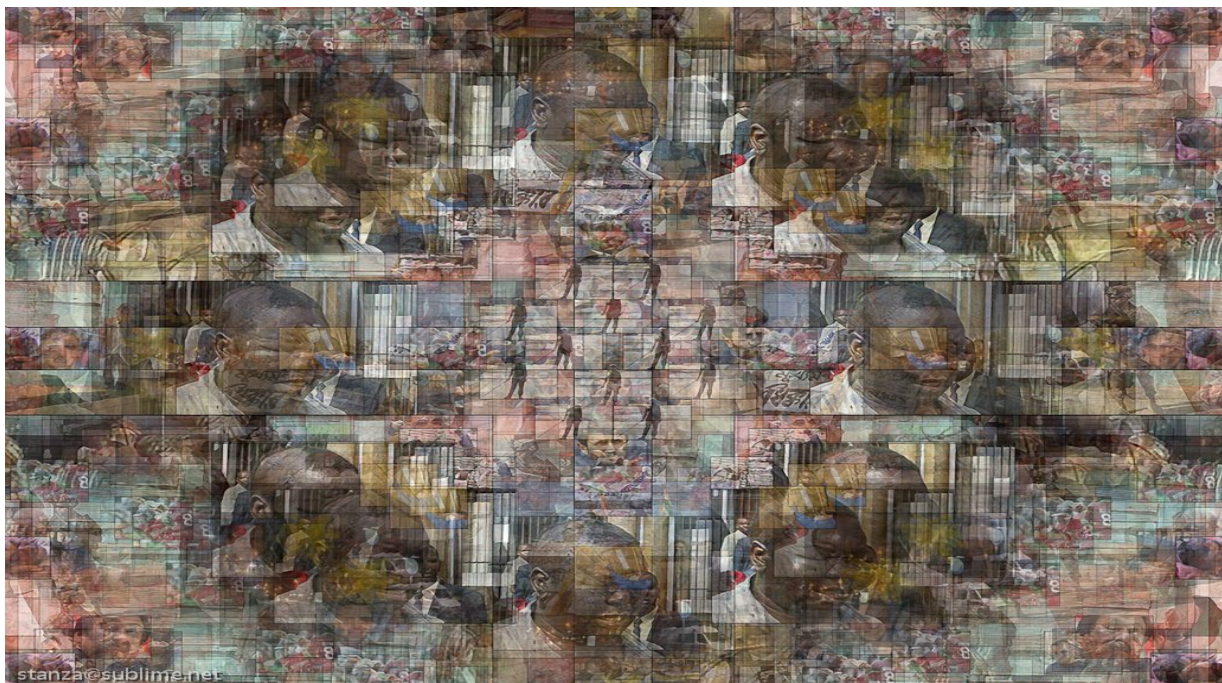
Live traffic cameras and car feed images from London. The software rework this extra visual layer creating another data visualisation of embedded real time city data. It becomes a generative real time visual experience on several small screens.

Multiple cameras are accessed randomly in real time to make this digital artwork. The observed real time surveillance society is re-worked into a series of grids. Here the images are remediating into what you see. It's not a film, its a real time experience of the city from multiple perspectives. It's what I describe as a parallel reality.

The patterns we make, the forces we weave, are all being networked into retrievable data structures that can be re-imagined and sourced for information. These patterns all disclose new ways of seeing the world. These patterns all disclose new ways of seeing the world.



8 Reciprocity. Images of news and information streams. An artwork using live news feeds made using a screen scraping technique (custom made software) to mash up the news in real time to create the artwork ready for exhibition. The artworks remediate new feeds into a noise flow.

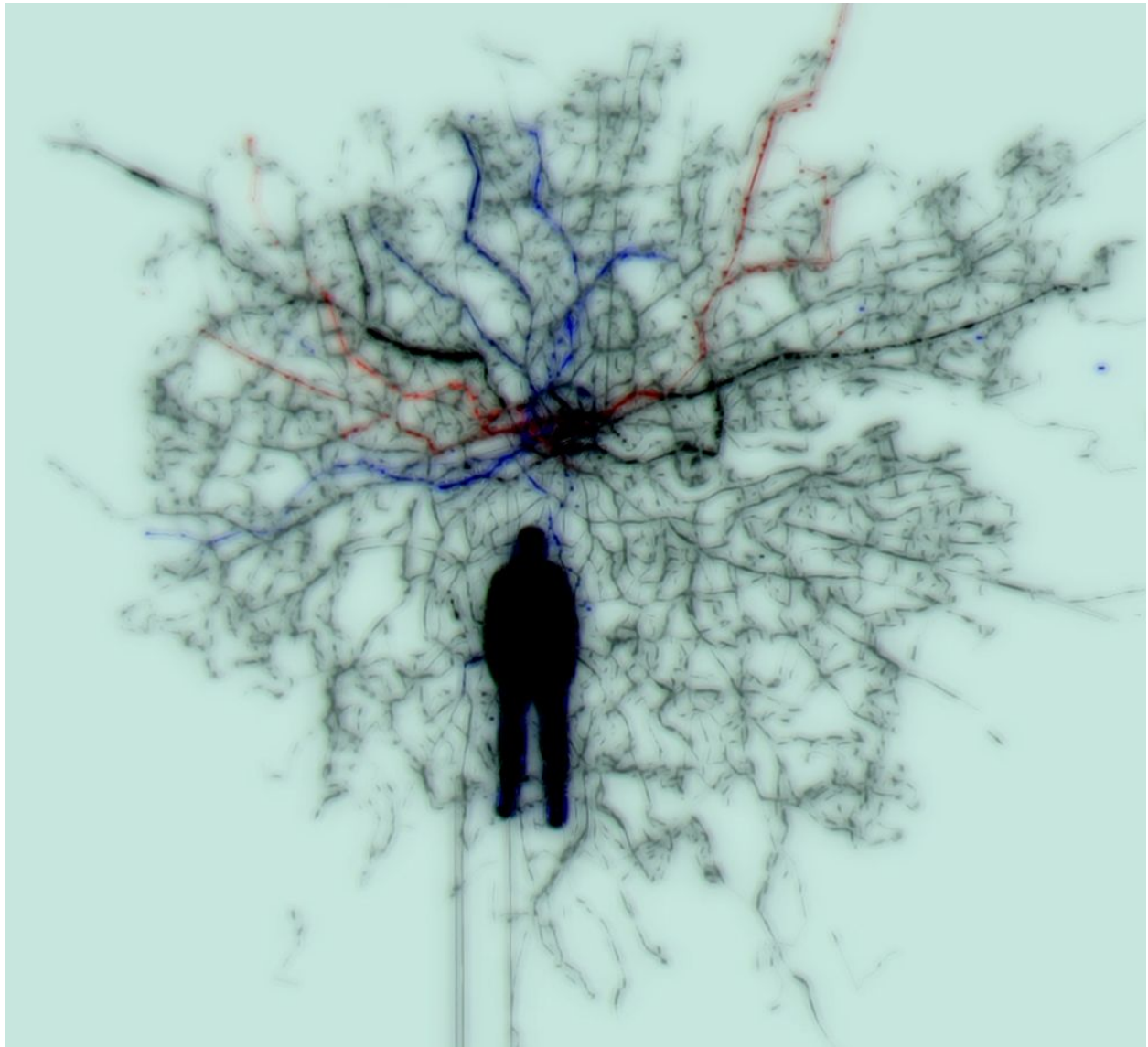


9 Synchronicity

Using real time TFL data Synchronicity, uses real time transport data of London to reinterpret the city fabric as an organic pattern based system. The artwork uses real time bus and tube data from London accessed from several online networked sources. The map forms itself because of the changes data over time of the buses and tubes positions ie its formed by these movements through the city. Synchronicity becomes a hybridized maze, a cellular and organic system which is presented to the screen.

An artwork about mapping, data as culture, and how information bombards us everywhere

- What happens in world of merging data streams?
- How will big data empower the system and does this added value allows more freedom or does it seek a more subversive form of control? Synchronicity starts to answer this by merging different live streams of real time data to investigate how these visual patterns and organic structures can be redrawn from real time information and how we fit into the understanding of this monitored system.

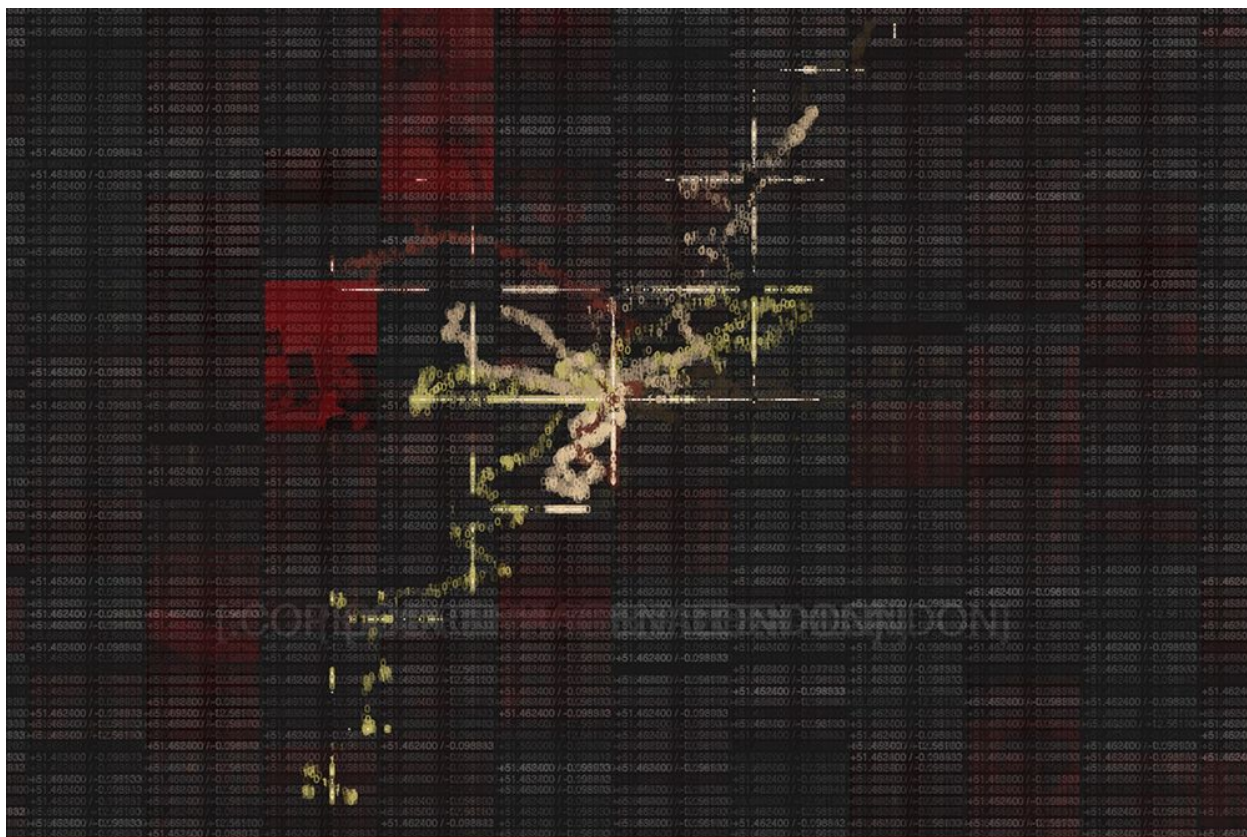


10 Velocity

<http://velocity.stanza.co.uk/>

This urban mobility experience tracks you in real time and places the data into an art installation. The artwork addresses the ethics of data ownership within the connected city. The combined result is shared and exhibited on screens as an installation in real time. What you see on the screen is a poetic interpretation, an abstracted artwork of all the combined data. Each person is active in the creation of the resulting artwork. All data is anonymized.

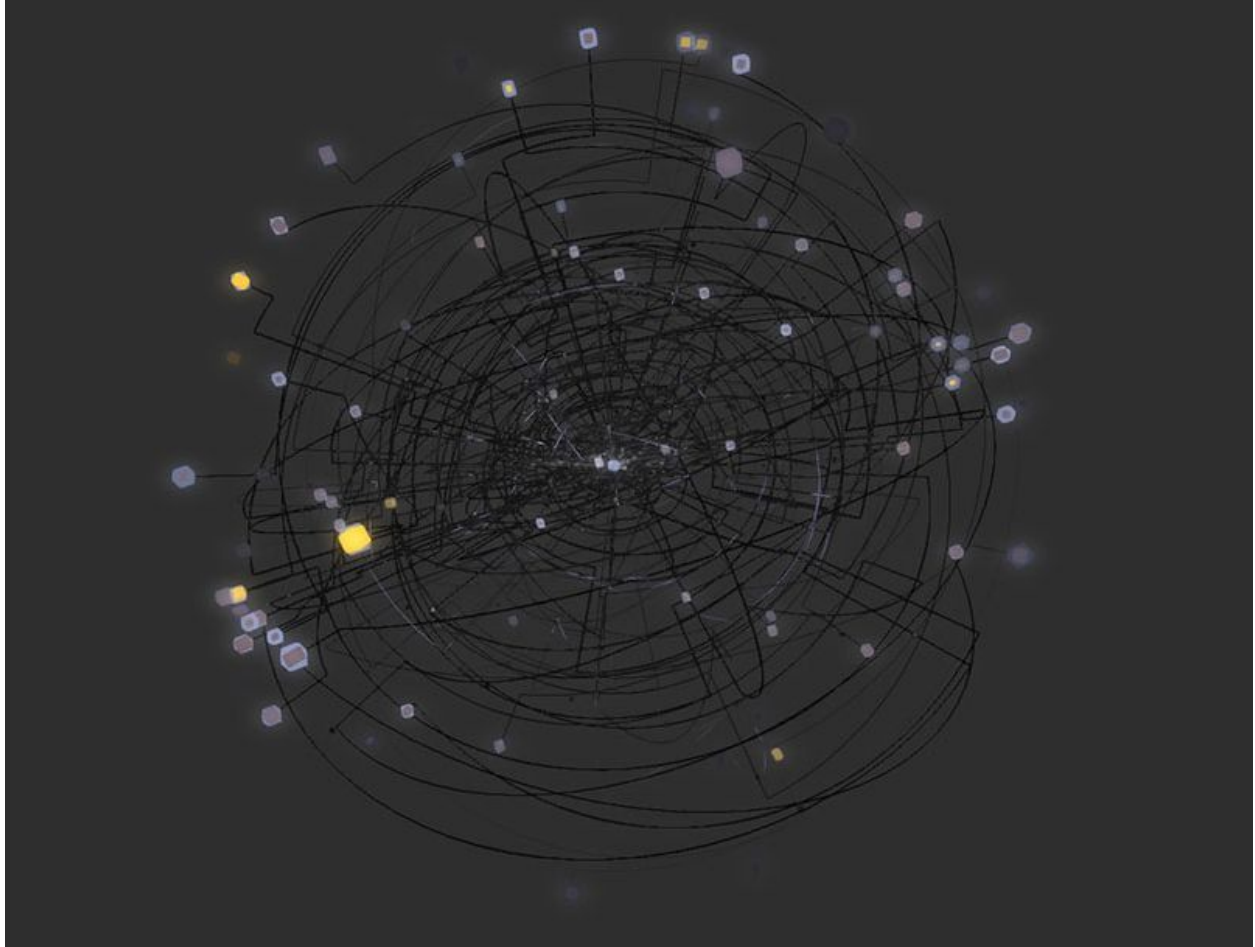
Velocity is a data visualisation which addresses the ethics of data ownership within the connected city. (this is a big subject at recent IoT conferences). The solution includes the composite mix of peoples information, the body in the data space. To facilitate this raises many important issues and questions that aim to empower connected city spaces. The Stanza Velocity app: People walk around the festival. They install the software and all permissions are given. The custom made software tracks their real time positions (GPS) and data is collected and fed back to the server. What is unique is that the combined result is shared and exhibited on screens inside the installation in real time. The output represents the collective agency of the performing groups, thus the sum is greater than the parts. Each person in the system is an active participant in the creation of the resulting artwork.

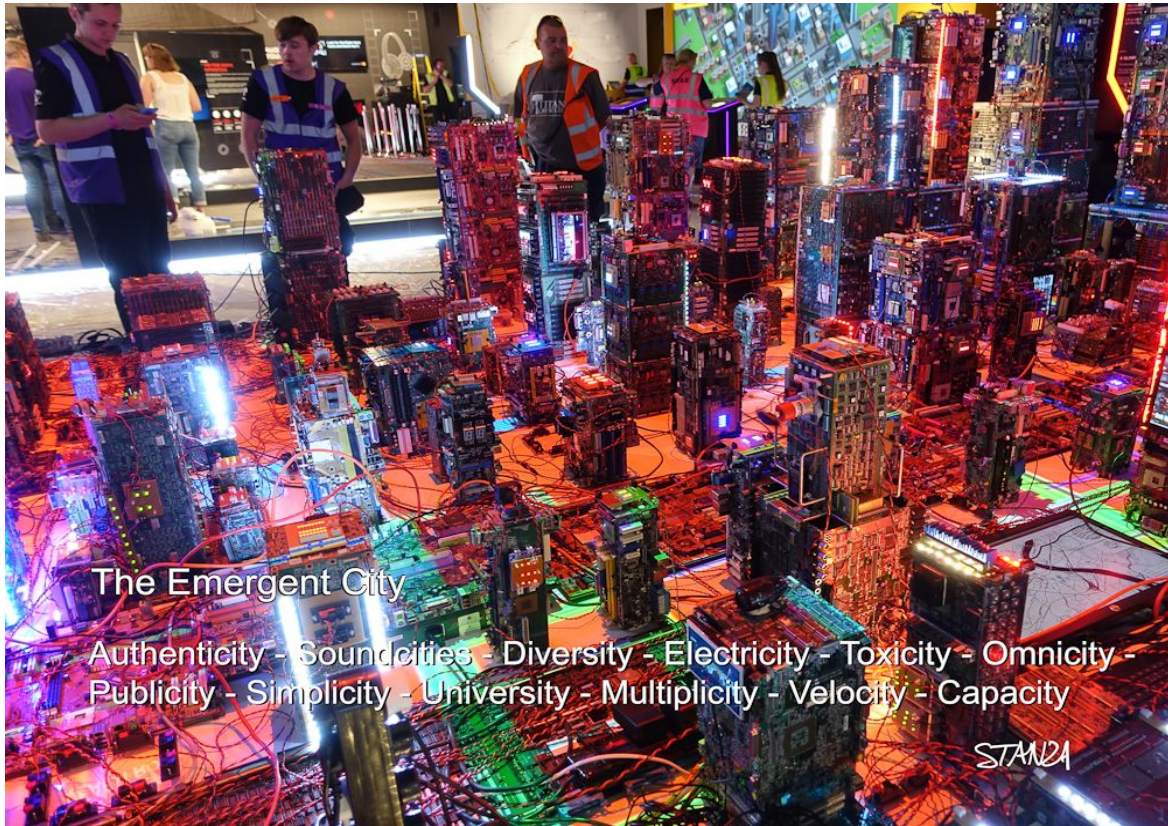


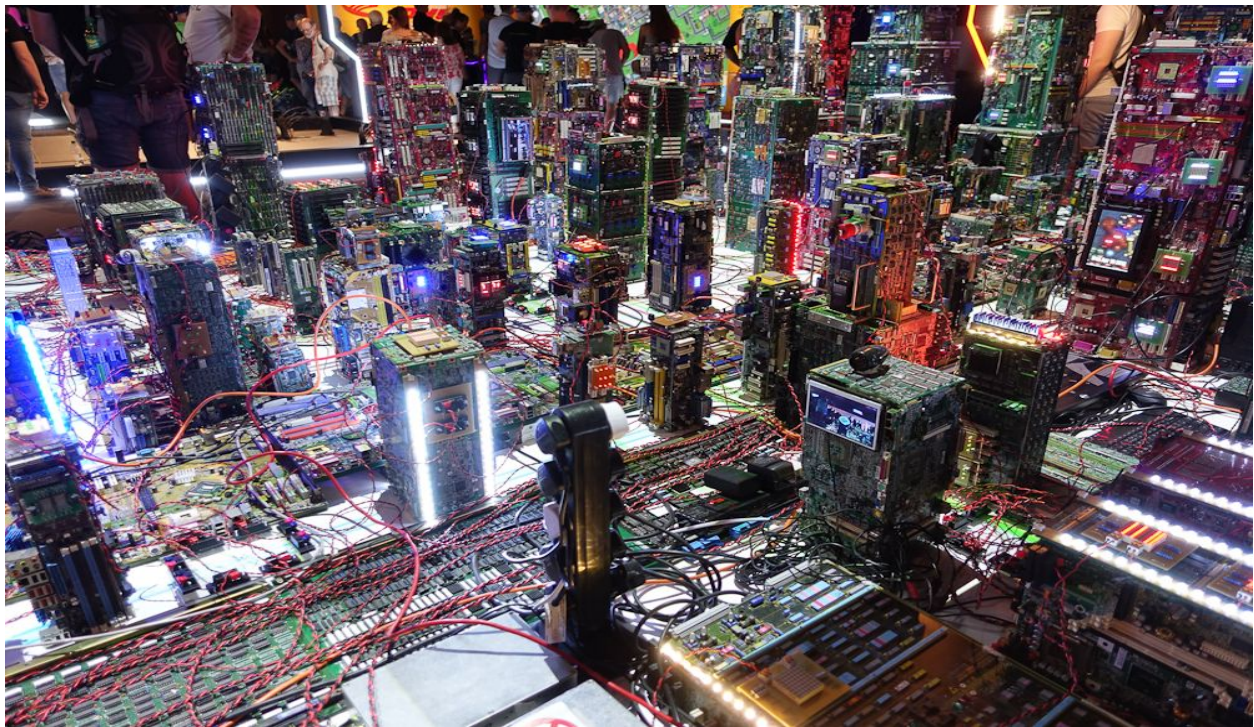
A mix of gps data and all the people on the site all at once. Version 1 image only.

13 Simplicity.

A representation of published transit data from Transport for London, which shows the rapid adoption payment gateways inside the city in this case across the capital.







Development exhibitions.

FOS Festival of Speed Goodwood UK 2019 Curated by Lucy Johnston

CUBO Bologna, Italy. 2019 Curated by Marco Mancuso

Ffoto Gallery Diffusion, Cardiff Wales 2019 Curated by David Drake

Cynetart Dresden Germany 2018 Curated by Ulf Langheinrich

Speculum Artrium Decades Trbovlje Slovenia 2018

Measures Of Life Lumen UK Hull 2018

Future Festival Nesta UK London 2018 Curated by Ghislaine Boddington

Beyond The Seven Warsaw Poland 2017 Curated by Piotr Krajewski

York Art Gallery. UK 2017

WRO Art Centre Wroclaw Poland 2017

The Internet of Things World Forum Cisco Systems. Tobacco Dock London 2017

Dundee Contemporary Arts at Centrespace (VCR) NEoN. Dundee 2016 Curated by Sarah Cook

Hacking Habitat Art of Control Utrecht Netherlands. 2016 Curated by Ine Gervers

The Intelligent City Arentshuis Bruges Museum 2015 Curated by Till-Holger Borchert

TSSK Centre for Contemporary Art. Metamorf Trondheim. Norway. 2014 Curated by Espen Gangvik

Centre des Arts d'Enghien-les-Bains. Paris. France. 2014

Watermans Gallery Brentford. London. 2013. Curated by Irimi Papadimitriou

New Technological Art Award Ghent. Belgium 2012

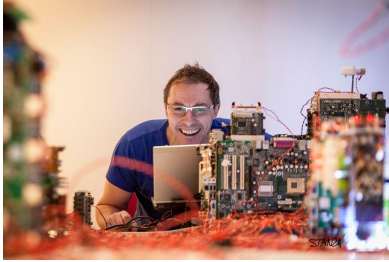
Share Festival Torino Italy. 2012

Gogbot Festival Enschede Holland. 2011

Lanternhouse International. Supported by Andrea Hawkins UK. 2010



ABOUT STANZA



Stanza is an internationally recognised British art living in London artist, who has been exhibiting worldwide since 1984.

Stanza artworks since the mid eighties engage with the city as a system and focus on how we identify our self in this increasingly technological and surveyed landscape. By using data expressively on a broad networked based canvas he creates art about the age we live in right now. This is reflected in the digital artworks that embrace the urban landscape, surveillance and identity, and the politics of the real time city. As a digital artist Stanza uses multiple new technologies to create distances between real time multi point perspectives that emphasize a new visual space. This can include observation by means of custom made sensors, networked cameras and computers. The purpose of this is to communicate feelings and emotions that we encounter daily which impact on our lives and which are outside our control. The results can be aesthetically beautiful maps of data or information such as personal interests, beliefs, environmental data, and traffic data and serve as a reminder as to our ever changing identity in the digital age.

Over the last thirty years Stanza has made audio visual installations, videos, cd's, paintings, software and public engagement artworks. His artworks have won twenty international art prizes and art awards. Vidalife 6.0 First Prize Spain. SeNef Grand Prix Korea. Videobrasil First Prize Brazil. Cynet Art First Prize Germany. Share First Prize Winner Italy. Wolfsen 25 UK. AOF Nova Competition Norway. Stanza's art has also been rewarded with a prestigious Nesta Dreamtime Award, an Arts Humanities Creative Fellowship and a Clarks bursary.

Numerous commissions include work for Quays Culture, Wolverhampton Art Gallery, Watermans Art Centre, FACT, and the Open Data Institute. His artworks have been exhibited in over one hundred exhibitions globally. Participating venues have included :- Venice Biennale: Victoria Albert Museum: Tate Britain: Mundo Urbano Madrid: Bruges Museum: Fundacion Telefonica in Madrid: TSSK Norway: State Museum, Novorsibirsk: Biennale of Sydney: Museo Tamayo Arte Contemporáneo Mexico: Plymouth Arts Centre: ICA London: Sao Paulo Biennale: De Markten Brussels: Transport Museum London: Haifa Museum: QUAD Derby: FACT Liverpool: Ars Nova Museum Finland: York Art Gallery: Centre des Arts Le Bain France: Bury Art Museum: Shrewsbury Museum: Samsung Media Centre Korea.

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