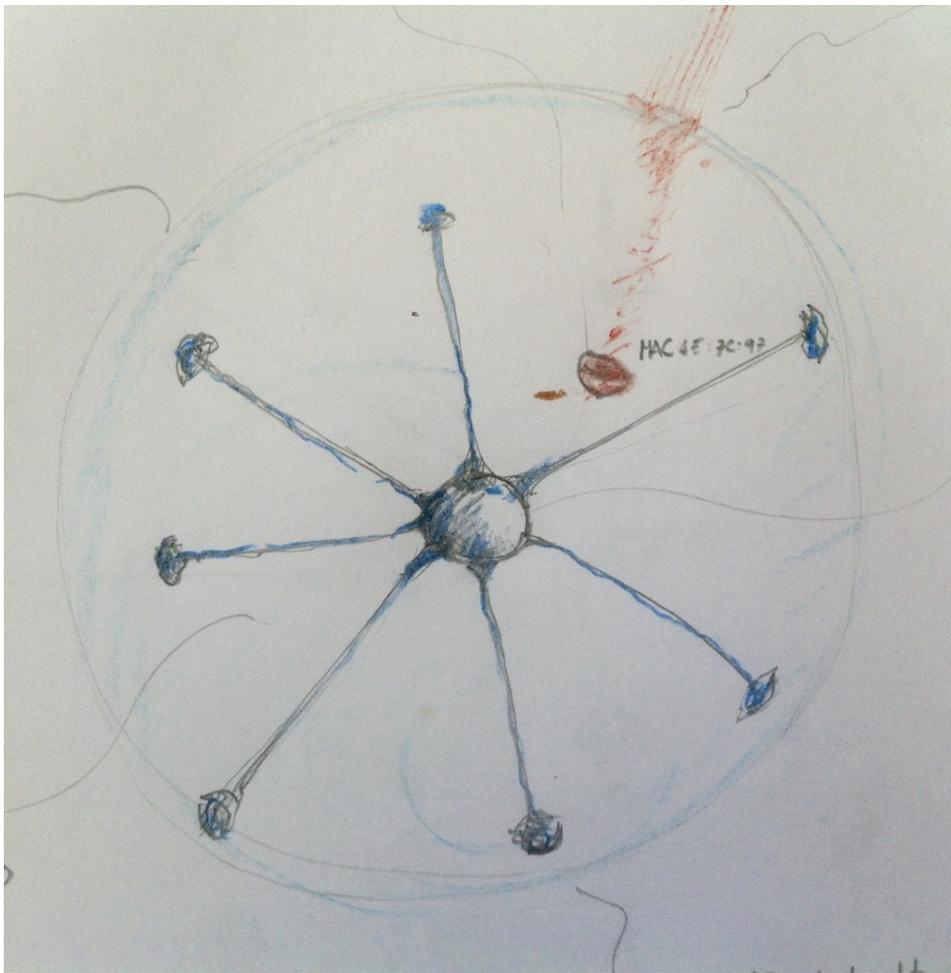# Interface Design Guidelines
0.4

Illustration 1: Dowse concept visualization. sketch by the author (2015)

draft 0.4.1.
author: Federico Bonelli
date: 6-10-2015

1. DOWSE interface design

> "Dowsing is a type of divination employed in attempts to locate ground
> water, buried metals or ores, gemstones, oil, grave sites, and many
> other objects and materials without the use of scientific apparatus.
> Dowsing is considered a pseudoscience, and there is no scientific
> evidence that it is any more effective than random chance. Dowsing is
> also known as divining, doodle bugging or (when searching specifically
> for water) water finding, water witching (in the United States) or
> water dowsing."   [Webster Dictionary]

1.0. Abstract

In this document I will discuss and recapitulate the general ideas behind the development
of Dowse Human Interface. Some user cases are thereby proposed to be considered for
prototyping, test and adaptation. Concepts expressed elsewhere about Dowse Os and about
Dowse Box design are also recapitulated in section 1. of this document.

Main concepts are: awareness design, sensing the invisible, synesthetic representation of
data variation, situation and transformation design(see:1.2.2 and 1.2.3).

"Dowsing the router", is the activity we try to summarize in this development paper, it
refers to the use of a dowse box in some context.
As such it is an operation that underlies to a different approach to network filtering.

In conceptualizing and documenting Dowse, all references to military traits are removed:
there is no use of "defense", "shield", "guardian" or "firewall" words or metaphors.

Privacy awareness (rather than protection) is envisioned and presented to its public not
as a violent process, but as a responsible, natural act — one in search of harmony among
those things connecting the inside and outside of a person's private, common, and public
aspects of life.
Dowsing is the new action that we propose for shaping the use and share of information
ethically, contextualizing what we see as positive and organic feedback cycles in the
field. The scope of Dowse project is, in the essence, to give access in IoT contexts to
humans and devices alike sensing and acknowledging in time what it might imply. Through
this effort we will envision new habits and protocols to be used in human to human and
human to machine interactions. All this starting from the router.

NOTE FOR THE READER OF THIS DRAFT
I have inserted a list of arguments that point some reminders to chapters not yet
written. These are to be found in previous documents wrote on various purposes for the
dowse definition and founding: the white paper; the WP in Horizon2020 call etc.

1.1. Dowse

Herschell thermometer
"On 11 February 1800, Herschel was testing filters for the sun so he could observe sun spots. When using a red filter he found there was a lot of heat produced. Herschel discovered infrared radiation in sunlight by passing it through a prism and holding a thermometer just beyond the red end of the visible spectrum. This thermometer was meant to be a control to measure the ambient air temperature in the room. He was shocked when it showed a higher temperature than the visible spectrum. Further experimentation led to Herschel's conclusion that there must be an invisible form of light beyond the visible spectrum." [Wikipedia]

1.1.1. Scenario: the Internet of Things

Running a network in the age of the Internet of Things means hosting the connectivity of multiple devices owned by a diversity of subjects. Often such devices have full access to private, common and public information about humans operating them. Furthermore, devices can talk to each other without humans even asking and such interactions are not even manifest. This situation raises issues that are not just technical, but socio-political, about the way connections happen without human consent, within local networks and towards the outside, to and from the Internet.
The risks of unconscious abuse or exploitation of information asymmetry is growing tremendously. As things initiate the context of users, we are making a major leap towards a world that provides us with contexts that we may not want at all. Getting some insights on such situations is crucial for societies at large.
Envisioning a progression in the way humans and things interact via the digital dimension, one could sketch a first leap into "Web 3.0" situations, where things can initiate contexts for their users and communicate with the things of other users. A further leap forward from this condition, a sort of "Web 4.0", is the closest scenario to the Internet of Things: a situation in which things will initiate contexts of users.

1.1.2 Idea: Responsible Networking

In the IoT scenario having a clear overview of what goes in and out of the network becomes of crucial importance for home users and professionals. The ultimate question of responsibility for whatever happens within a network cannot be easily answered, considering the way things can autonomously decide to initiate communications.
Dowse is a smart digital network appliance for home based local area networks (LAN), but also small and medium business offices, that makes it possible to connect objects and people in a friendly, conscious and responsible manner.
Dowse aims to be a critical engineering project, abiding to the principles stated in the Critical Engineers Manifesto.

1.1.3 Concept: De-militarization

Dowse is not only a functional tool, but a symbolic operation proposing a different linguistic approach to networking. In conceptualizing and documenting Dowse all references to military traits are removed: there is no use of "defense", "shield", "guardian" or "firewall" words.
The way privacy awareness (rather than protection) is presented to its users is not envisioned as a violent process, but as a responsible, natural act in search of harmony among the things connecting the inside with the outside of one's private, common and public aspects of life.

1.2. Conceptual context for the interface design

1.2.2. Situation based analysis

> Our central idea for the analysis of any human to machine and machine
> to machine interface is the construction of situations, that is to
> say, the concrete construction of momentary ambiences of life and
> their transformation into a superior emotional quality. We must
> develop a systematic intervention based on the complex factors of two
> components in perpetual interaction: the material environment of life
> and the behaviors which that environment gives rise to and which
> radically transforms it.
>
> G. Debord
> Report on the Construction of Situations and on the International
> Situationist Tendency's Conditions of Organization and Action.

A <u>situation</u> is a concept that calls for a triadic logic. By triadic is implied that at
least tree entities concur to effect the situation. Is proven in mathematical theory of
complexity that in feedback processes at least a period of tree is necessary to see a
cascade effect.
As a general empirical rule I assume that 3 is the minimum number of entities to be
considered in any design. A situation is generally composed by various concurring factors
that collide in a space/time to a certain effect[1]. Situation as a notion and as a
conceptual instrument pertains both to psychology and to history of art. What I do is to
use it explicitly as a conceptual framework as a start for my analysis.

We see as situation an occurrence of intentions, people and objects in a space at a
certain time. This determines at best a tree of concurrent causal chains. My approach is
top down: instead of insulating the situation components in an attempts of hierarchically
order them I begin observing situations as a whole. Patterns of a different order emerge.
Some times this rises to aesthetically determined connotations. Has a particular sound or
figure that evolves in a geometry, behaviour, armony.

Moreover situations can be designed: for example a performance, a car race, a spectacle
of fireworks or a dinner.

Situation design is traditionally connected with perception and emotion design.
Theatrical performances can be seen as large situations. A site specific performance is
nothing else than a specific situation were the environment becomes one of the main
characters of the story we envision.

Situations usually just "happen". To create a specific situation we must use specific
type of design. Architecture, design and their products serve the design of certain type
of situations that, when successful embed meaning to meaningful actions. Temples,
fireplaces and TV tops, ceremonies, tables and chairs, tea cups. The design of the object
is, when design is considered as functional to a situation, the result of the coexistence
of functions, forms and energies determined by the desired effect of a situation and a
purpose to its use. Any object can off course be used in unplanned situations. And an
object can be planned explicitly to subvert a known situation if the occasion arises.
Es. A crucifix that hides a blade inside. Surrealists, functionalists and other XX
century designers have long explored in these directions. Moreover Situationists have
hinted to the consequences of design in crafting the ideology of a society. In the
Nederlands as an example the "New Babilon" project by Constant was exemplar.

1.2.3. Transformations and transformators

I consider the study of interaction is a smallest sector of the study of transformation[2]

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1 Situation analysis is a concept developed with this name to be used in media interaction and performance design. I used it over
the years and is not strictly original. My own influence is both renaissance authors like Giulio Camillo and Giordano Bruno,
Hakim Bey's notion of Poetic Terrorism and Bauhaus.
2 See http://www.trasformatorio.net on this concept.

Art that follows transformations of situations into other situations (fluxes) shall be used to create multilayering narratives of great interest. These narratives are orchestrated toward opening spaces of talk and semantically enriched emotional events. More radically, objects that encode in themselves situation design, envisions ways to transform situations by themselve. I call objects designed with these characters in mind transformators. This is, in its simple terminological core, my approach to interface design, radically different from simple mainstream idea that product design, placing and marketing, is the core of the job. I cherish this difference.

1.2.4. Limes, Liminality

> "Any sufficiently advanced technology is indistinguishable from magic."
> A.C. Clark, third law of prediction

> "Sorcery: the systematic cultivation of enhanced consciousness or non-ordinary awareness & its deployment in the world of deeds & objects to bring about desired results."
> Hakim Bey, T.A.Z.

For the purpose of this text we intend by *liminality* the area of perception adjacent to conscious perception (as in sub-liminal). It is necessary an act of will to bring a message from the liminal zone of perception to our full attention. As an example imagine the small noise of the fridge motor. If the situation is a daytime conversation you will not notice it, yet you can focus your attention to it and you perceive a relevant enough change of it. Wile the physical qualities of the noise stay the same it can be the shift of on of the elements in the situation that makes it emerge out of the limen to our attention: imagine the same small noise relevance during a sleepless night, or a sudden crackling noise coming from the motor disrupting the conversation and so on.
Most of the normal activities of Dowse will be reflected in the situation space at liminal levels of perceptions. Moreover the act of dowsing will be developed and designed to activate perceptive states at *limen*[3].

1.2.5. Awareness

Awareness is the zone of sensorial perception to which an event is perceived cosciently with the system of causes that concur to its happening, and both are brought to be acknowledged. To be aware of an activity of the information flow routed in and out our own premises (or space of responsibility) is the scope of Dowse existence. Organization and relevance of con-causes and meaning of router events are to be represented in a scale of importance according to their sensorial relevance before than as a one way semantic is set.
Shape, light quality, shadows, sounds character and musicality, speed of movement, interdependence with neighboring elements, particles attitude, color and modes of organizations, as well of other sensorial qualities, are all tactically to be used as awareness modes, to represent information in the perceptual sphere of human and non-human activities alike. And the process has to be fluid with the evolution of the triadic system determined by the dowser, her traffic and her appliances needs.

1.2.6. Flow

Change in time, permanence, habitude, flow of complex representations are also very important factors. From them we are able to sense what is normal, what is new and what have been evolving into something. Changing behaviors and patterns of complex and natural systems alike exhibit flows. We shall give flows a relevant aspect in our visualization strategies. We refer also here to aspects of qualitative representations in natural system modeling. Aa space of phases those have been popularized by complex system theory and general computational mathematics.

1.2.7. Aesthetics/Synesthetic

Dowse box will be open in its behavioral semantics to be skinned by anyone. All types of interface will then be possible and experimentation encouraged by design: software visualization, mechanical, light and sound agent based, email or messaging or else. All possible way of representing data flows can be invented, implemented and integrated in modules. This gives us freedom, as Dowse project, to go far for our own aesthetics, simulating and experimenting on our own principles even on future machines yet to be invented.
I chose for enhanced reality (EnR), were objects can have auras, force fields and changing visual qualities and our gestures can interfere with such qualities inside the metaphor of mechanical or natural systems. In EnR to connect with the phenomena we want to perceive we are immediately set to to the analogy. Activities may have the consistence of metals, or water, be fluids or grow as crystals, connecting with first and second degree of temporal abstractions: energy, resistance, speed, force and so on. In the aesthetics of dowsing I wish to insert those metaphors that can be applied into defining

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3 To be noted here that liminal is also intended by anthropology as a state of organized human activity that is close to the possession state in a rite but not yet into it, a state that borders supernatural altered conscience states.

a data flow over time with the maximum amount of freedom.

1.2.8. Feedback

Dowse box accepts decisions and always gives feedback. Using it should be a practice of calm and awareness. It should be simple but not necessary a pampering tool of command for its user ego like a software personal assistant AI. I see the act of using dowse to grant access to our network to guests like to serve tea, or coffee. To Dowse our network like looking to a landscape from above a cliff and to effect its organization like playing chess or Go. A rewarding act of conscious control that allows grace and courtesy. A Dowser shall open to the world without fear as an equal and a host, and the world, as well, feel like a welcome guest.

2. Description of Dowse BOXES

2.1. Dowse OS

2.2. Dowse Hardware

2.3. Dowse box (alpha and beta)

We recently met Olivier Boireau from design company Shift Design. He showed us a prototype secure computer whose design that intrinsically strive to the kind of device we had in mind for Dowse box. It is not exactly the device because is a full secure computer concept design and not a routing device. But there is interest by Shift to investigate and collaborate over the hypothesis of a secure computer/dowsing device together.

        http://www.design-shift.com/orwl/
        olivier@shift-ltd.com

The design of Shift fits fully with our concept of table top device, object of beauty and design not to be hidden. Circular shape reflects idea of sharing around a table as in tribal hospitality rituals (tea ceremony, coffee table conversations, mate drinking etcetera). The four directional "feets" shaped as a cross hint to the four directions in space. Blackened glass mirror effect hint to hard shell but also to vision of unknown (black mirror is used for scrying, a "magical" activity of vision). Name of device hints to critical understanding of implications of defending privacy with active and creative thinking (Orwell), or, well...

Illustration 2: ORWL computer, illustration from ORWL website http://www.design-shift.com/orwl/

TWO HARDWARE FORM FACTOR:
Alpha: Short term low cost box: price comparable with raspberry py. Plug-in-the-wall and plug eth in. Simple and open. Out of the box dowse proof of concept.
Beta: Longer term development project for high profile and concept sandbox secure computer and router for those who need privacy and can afford that.

NOTE: Is it to be foreseen, when out in the social space, a dowse(r) suit? How does it looks like? Should a car be equipped with dowse?

2.4. Extended device interoperability

Dowsing is done at low level and high level alike. [see white paper]

2.4.1. Awareness modules

Every time a new sense is necessary to perceive an activity, connected to commercially powered or friendly interest alike, the dowse box shall give us a clear sign of it's presence. An awareness is a modular AI that exposes some parameters from router space to OSC space, then these parameters can be on/off switch, 0 to 1 valves or other types of variable data flows to witch to interface our controllers. The modules are open design, extra can be d/l for free (or for a price) from dowse store etc.

2.4.2. Shapers

Shapers are hardware/software plugin modules that allow to shape the traffic creating a different perception on the outside about inside activities. It should be left to our community to design, exchange and share actively all kinds of shapers, freely debating about them. A shaper is a dangerous idea but also an interesting toy.

2.4.3. Visualizer

On top of the OSC controllers that allow anyone to build and operate the awareness modules of a dowse box, we will design a visualizer. Anyone can design his own. Our proof of concept shall be targeted on the Beta model, that will represent the icon for our unified visualization and operation concept.

It will hang in virtual 3d space, as a bubble or as a glass bowl, and contain in its' center a representation of the admin secure zone. Users and machines alike will be represented as zone, with colors, transparencies and shapes according to their visibility and relative importance during dowsing. Traffic will take organic shapes, represented as flocks, lines, crystal growth or sparks according to it's meaning in time. Acknowledging or blocking an unwanted device shall be done with a simple gesture. The memory of the device shall be long enough to securely store some years of use logs.

2.5. Modularity

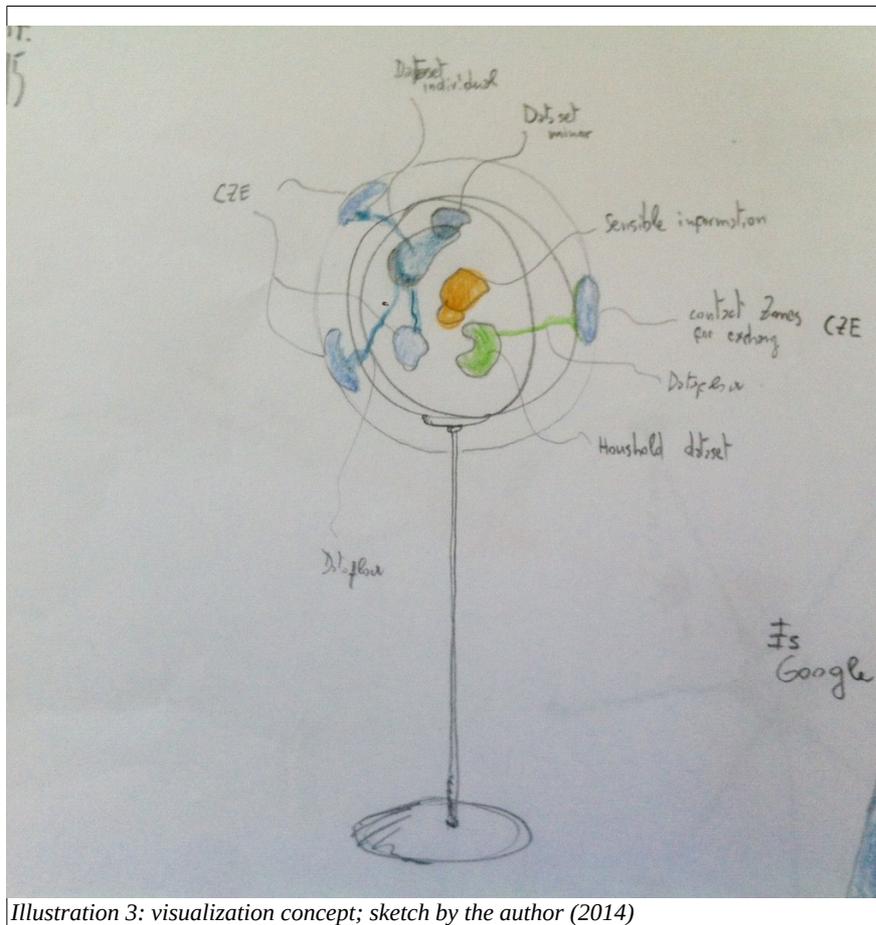[DOWSE AI MODULES and VISUALIZATION INTERFACES IMAGES]

Illustration 3: visualization concept; sketch by the author (2014)

2.6. Lifetime

Dowse box is to be designed to have a long lifetime (5 years and more). A router does not get old as fast as a computer.
Is also based on embedded linux open hardware platform, meaning that makers and hackers might build their own variations and models.

2.7. Cost

As above described we shall have a very low entrance cost for the model alpha to assure the maximum diffusion rate for it. Current hypothesis are for 39.99 euros for Alpha.

3. Description of the interface layer between dowse and the OSC environment

3.1. The technology

3.1.1. Dowse box

3.1.2. IoT layer

3.1.3. Awareness layer

As a technology I would like to design the entire awareness layer using web technology. It is possible by now to have in webkit space to have all the necessary tools: interface layers, visualization layers and data flow layer. The result will mainly depend at this stage by the skills of the programmer/designer we can co-opt in the project.
We also need to have an interface tool that is apt to be implemented on mobiles both for sensor data interpretation and for visualization of the EnR tools.

I suggest at the moment javascript/webgl that is a layer of tools already geared towards enhanced reality.

Jaromil suggested to investigate this: https://github.com/pixijs/pixi.js.

I also would like to point a couple here thereby of webgl experiments that are of interest for inspiration:

- http://flowmaster3.flambweb.com/
- http://david.li/flow
- http://www.laplace2be.com/lab/PixelParticles/
- http://jarrodoverson.com/static/demos/particleSystem/#0,basic:Sv1(2000|1|0|0|1|E500,250:4,0:8:-1:3.14:4|F500,250:80)

Interesting also this video:
https://vimeo.com/130972302   is by the same designer that made the image I have used on the opening page.

Side by side with the implementation of a functional visualization engine we will develop a fictional one, as a prototype of the imaginative effort to envision dowsing as a social act.

This development of concepts to describe Dowsing will be done widely in shared comunal experiments that will coinvolge artists and designers alike. These dowse meetings will be allowed by the use of OSC (Open Sound Control) as a communication layer with the dowse box.

3.2. Exposure of data sources and controls to OSC transport layer to serve for fast interface design

3.2.1 OSC environment

Open Sound Control protocol (OSC) is a protocol for networking sound synthesizers, computers, and other multimedia devices for purposes such as musical performance or Show control. Bringing the benefits of modern networking technology to the world of electronic musical instruments, OSC's advantages include interoperability, accuracy, flexibility, and enhanced organization and documentation.

Some of his general characteristics:
- Open-ended, dynamic, URL-style symbolic naming scheme
- Symbolic and high-resolution numeric argument data
- Pattern matching language to specify multiple recipients of a single message
- High resolution time tags
- "Bundles" of messages whose effects must occur simultaneously

OSC messages consist of an Address pattern, a Type tag string, Arguments and an optional time tag.
Address patterns form a hierarchical name space, reminiscent of a Unix filesystem path, or a URL.
Type tag strings are a compact string representation of the argument types.
Arguments are represented in binary form with 4-byte alignment.

The core types supported are:

- 32-bit two's complement signed integers
- 32-bit IEEE floating point numbers
- Null-terminated arrays of 8 bit encoded data (C-style strings)
- arbitrary sized blob (e.g. audio data, or a video frame)
- boolean type (OSC 1.1)

Implementation of OSC in Zero-configuration networking (Zeroconf) technologies is also going to be part of dowse. Zeroconf is a group of technologies that includes service discovery, address assignment, and hostname resolution. Bonjour is the apple implementation of zeroconf. It is used to locate devices such as printers, other computers, and the services that those devices offer on a local network using multicast Domain Name System (mDNS) service records.
Note: zeroconf standard RFC 3927, a standard for choosing addresses for networked items, was published in March 2005 by the Zeroconf IETF working group, which included individuals from Apple, Sun, and Microsoft.[18]

3.2.2. Examples of Hardware and Software Implementations of OSC

OSC has been implemented both into development multimedia languages and into controller hardware. Some experimental gesture interpretation devices have been also developed to broadcast OSC messages. The TUIO community standard for tangible interfaces such as multitouch is built on top of OSC. Similarly the GDIF system for representing gestures integrates OSC.

There are dozens of implementations of OSC, including real-time sound and media processing environments, web interactivity tools, software synthesizers, a large variety of programming languages, and hardware devices. OSC has achieved wide use in fields including new computer-based interfaces for musical expression, robotics, video performance interfaces, wide-area and local-area-networked distributed music systems, inter-process communication, and even from within a single application. [wikipedia]

3.2.2.1. Examples of software with OSC implementations:

- Ardour
- ChucK
- CSound
- Digital Performer
- FreeJ
- Gesture Recognition Toolkit
- IanniX
- Isadora (v.1.1)
- LiVES
- Max/MSP
- Mixxx
- Modul8
- Overtone (Clojure)
- Processing
- Pure Data
- Quartz Composer (as of v3.0 / Mac OS X v10.5)
- Reaktor
- REAPER
- Renoise
- SuperCollider
- Squeak
- Traktor DJ Studio
- Veejay
- VirtualDJ
- vvvv

3.2.2.2. Examples of hardware with OSC implementations:

- AlphaSphere

- Audiocubes
- Kyma
- Lemur Input Device
- MIDIbox
- Milkymist One
- Monome 40h

3.2.2.3 Hybrid OSC interfaces

- Touch OSC

See:
- https://en.wikipedia.org/wiki/Open_Sound_Control
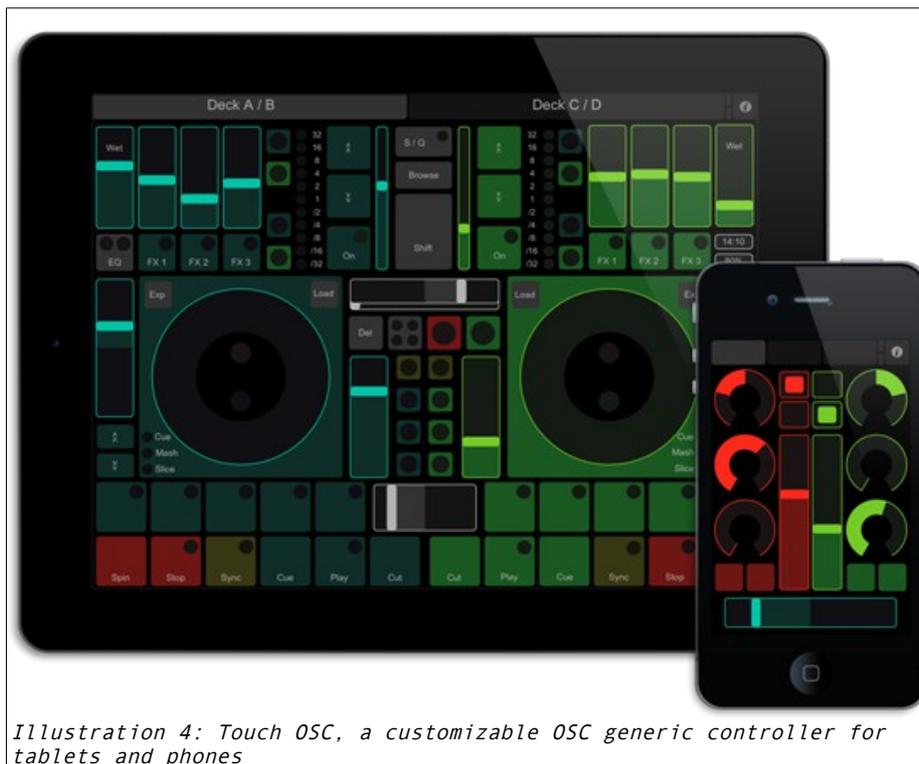- www.opensoundcontrol.org
-

Illustration 4: Touch OSC, a customizable OSC generic controller for tablets and phones

4. User cases

In this sections we will try to generally sketch some user cases. We will investigate them from the point of view of transformations involved in data flows living within a dowse network.
NB user cases list will be constantly updated and modified during development.

4.1. Home

> "Home is a dwelling-place used as a permanent or semi-permanent residence for an individual, family, household or several families in a tribe. It is often a house, apartment, or other building, or alternatively a mobile home, houseboat, yurt or any other portable shelter." [Wikipedia]

Home is both a design sector and a physical space, the latter with variable architectonic characteristics.
The architectural and the many setting were the place called "home" resides create our way to live the space. In many ways the ideology of the time, especially if related to the evolution of society and its many ideologies have reflected in what we call "home design". The design of furniture gives a clear example. The seminal case of the *Wiener Werkstatte* or of the more commonly known *Bauhaus* movement, both can be laid down as an example of the radical reinvention of a home.

Without entering deep in the ways *ideology of housing* shapes the design of its objects (and technology) arranged to fit into one, we shall examine some simple common and close by cases, to establish the context to which we want to start the design our intelligent routing device.

A short study trip to a highly designed industrial home furniture design firm like IKEA will probably give us many hints about what constraints are the most given for granted[4].

For example:
- All furniture is engineered for 90 degrees corners rooms; I never expect to find furniture for a dome in IKEA.
- The kitchen is generally engineered for one operator that prepares food for 1/5 people.
- Storage space for food in Holland is designed for supermarket size, heavily packaged groceries.
- Sound insulation is average
- Maintenance and building tools are supposed to be used scarcely, once in a wile, and kept in boxes. Normal houses have no space for heavy tools nor for quality ones. This changes drastically in sub urban United States for example.

When we think about *a home* as a place to use a dowse device we talk about a design that uses to communicate representation of his use in situations that are in this homely zone of sensorial liminality. In ethnography as we mentioned before is a ritual that creates a "zone" or a "state" of liminality. Borders, rite of passage and "spooky" places alike may induce and work on this complex but sensorially active sentiment. In the most intimate and nonchalant of the rituals, like the tea ceremony for example, there are to be found elements of behavior that we believe crucial for the design of our interface. After all we are thinking and shaping an action that before the concept of Dowse did not yet have a name: Dowsing the router.

Def. Dowsing the router: to be aware of what the actual information flow is doing, shape it, know when and how to give access to a device or to a person, the act of sharing

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4 Since we consider as the job of innovative design to imagine a society were these "granted" are questioned and reshaped to the accommodation of evolving needs we will feel free also to extrapolate in fictional user cases or findings. Without touching the essence of a avant-garde utopian need, we are anyway confronted with a technological shift that is effecting our living spaces from the core. It is an objective of this document also to contribute in this direction by simply mentioning other possibilities as different design constraints.

bandwidth or to block activities to guests and the polite way to communicate to them on who's and why.

Not only before Dowse we missed a simple tool that allow these actions properly out of the technical black magic in the black box operation, but, moreover, we missed a jargon. Within this design effort we establish the basis from which a new set of rule of politeness shall emerge.

We want to set up in the space of a household a zone for discrete digital information permeability centered on sensorial awareness.
The following list of situations is there to be represented in the liminal behavior of the interface, directly or indirectly.

NB 4.1. Are examples in the range of domotics situations
4.2-5. Is more router awareness fields this all section has to be shaped adding more cases and then chosing for which one to design first.

4.1.1. Coming home

Many appliances have been designed to fit this situation. Car (or bike) has to be parked/stored, secured or reloaded, proximity lights go on at the door, Door open/closes, heating goes out of rest mode, lights go on etc.
At router level: mac address of carry on devices (phone/laptop/smartwatch) are detected in wifi zone and (eventually[5]) checked in the LAN. Some important data will be ready to be visualized to owner: for example energy balance, presence of snail mail, messages, un-answered visit of neighbors or friends, pets, status of plants etc. We can imagine electric/fuel-cell car that communicates amounts consumed and share with house amount still stored in and a balance that is drawn. Many of these processes have to stay in the background, available to the human only at will. Etcetera[6].

4.1.1.1 Going out of home

If is last person to leave the apartment checks if gas is on safe, devices communicate, alert on router to put himself in remote mode etc.
Lock procedure.
If is for a holiday, holiday mode is on. Might include responders on email, closing of water, alarm, a gardening system that goes on auto mode to provide plants and pets with water and food, a permission to a nanny or neighbor to enter the premises etc.

4.1.1.2 Waking up

The house awakens with you, changing state, from Night-sleep to Awake-feed.
A whole array of appliances will react to this change of state, as will your social proximity neighbors. Agenda influences the time schedule of waking up, times to switch on heating etc.
Example: a household with various families and children might have different wake up procedures and agenda recorded.
At router level: traffic starts to ramp up. Morning checks and night activities are reported.

4.1.2. Family Browsing

Parental responsibilities involve a certain degree of monitoring on on line activities for children and minors alike. Monitoring does not mean to censor, yet not all material available on the net is made to be seen from minors. Issues about monitoring family browsing can be shaped into our interface in an effective and respectful way as a set of shapers. Not only social exposure, sharing and email, texting and respect of privacy has to be helped by the use of our device but also the fostering of horizontal communication

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5 Shall I check in automatically in the home lan before the door is open (as happens now) or only after the owner presence is detected contextually with the device?
6 This is the tipical IoT scenario were efforts of corporate design are concentrated: mononuclear western families that have a home and a garage and live in suburbs or in apartments, in the grid. We are not tied to this kind of existent design. We know that we are obliged to move forward to a more sustainable design tht can be adapted for the rest of the world. What we do is to keep the possibility open, putting out intelligent design the is able to be recombined and explored to fit all kind of situations.

and observation. Shape traffic, elimination or else filtering of advertising, per-device traffic shaping and monitoring is a huge step in that direction. The open nature of the design will allow third parties to design appropriate tools to shape traffic in the house reflecting these needs, and to share them. We see this also as an opportunity for dowsing growth.

4.1.3. Personal information and family wide net footprint

Visibility and sensible data:
- In a household sensible datas are easy to point out checking the dossiers and files we store for finance and taxes.
- Data that regards money: bank numbers, credit cards, money flow, savings, cash
- Data that has to do with health and insurance: personal sanitary data, health monitoring devices data
- Data of interest of property: personal items, jewels, inventories, artworks etc.
- Data of interest to utility providers: optimization data (consumes of electricity/water/gas, energy produced for smart grids, time of in/out home etc.)
- Personal cloud of data of persons in household
- Political views and affiliation
- General interests
- Imagery and location data
- etcetera

4.1.4. Social gathering/party

Sharing access and respecting privacy during parties. Example: a party gets a bit wild and maybe the dj from the console needs to filter out instagram and facebook respect the sharing of pictures. He pushes a button and FB and Instagram are filtered with a "courtesy no pictures allowed" feedback message. Tactics to foster human interaction in the meat space can be proposed as possible interactions with dowse.
Example:
As in holland, when the act of entering a house for an appointment is followed by the offer of coffee and an exchange of flowers and small biscuits if is a formal gathering ritual. We can imagine (and show in a video) a Beta dowse box in the center of a round coffee table were mobile phones are posed to reload wirelessly by guests. The small and informal ceremony of opening dowse and giving access to the net becomes then the theme of a short film.

4.1.5. Car

Useful informations gathered and shared in the connected commuter space, car sharing, parcel sharing, small scale distribution. Radio. Car data is sensible and car electronics has to be as safe as possible. VW case suggests that the type of integration is better to be accessible to open public verification.

4.1.6. Bike

Neighborhood live vs long range commuting to work, low impact urban mobility solutions. Anti theft, bike finder, bike services all become subjects to the IoT space. Cases are climbing. To be analised.

4.1.7. Health

- Monitoring health devices and sport, health monitoring devices for elderly people etc.
- Health data files
- Every trainer tracker is already a health tracking device

4.1.8. Learning

Granularity of school performance data and its confidentiality.

Some start up of discussion questions: Why to go to school to ear your teacher when you can subscribe a course from MIT for free? The importance of learning with others and learning by doing and the IoMaking Things scenario

4.1.9. Death/Ineritance/Digital Legacies

Social media and digital memories are changing the way and the methods used to prepare and digest a passing away. Model Beta could give an interesting excuse to investigate that regarding to the ultimate privacy issue, the right for some things to be buried with

the deceased.

4.2. Small Business/Office/Home office or shared office space

4.2.1. Inter office security awareness on site

4.2.2. Having guests/ sharing access

Example:
As in holland, when the act of entering an office for an appointment is followed by the offer of coffee ritual. We can imagine a Beta dowse box in the center of a conference table were mobile phones are posed to reload wirelessly by guests and each one gets its own minimal courtesy access to the external world. In a small film we can show this being done in the visual interface.

4.2.3. Confidentiality

Confidentiality break awareness is a difficult thing to asset in a business case. Is usually implemented with policies and punishments. A more interesting and liberal approach might be dowsed. Is still very early to do that, we just notice that awareness and shaper are a viable metaphor to design such policies and influence the situational behavior of our information routing devices.

4.2.4. Router security and general policies awareness

4.2.5. Distraction free environment

4.2.6. General design for horizontal organizations workflows

4.3. Public access network and public space

4.3.1. The "Cafe" study case

4.3.2. Park/public space wifi access

4.3.3. Social gatherings

4.3.4. Political gatherings

A dowse box or a mesh of dowse box in a delicate political situation, like a demonstration or a meeting allows all participants to share the same grade of exposure. Not only anonymity if necessary, but also the opposite, a sort of minimal requirement of identification for the participant (and the participant owns intelligent gear) and an upfront defined (and public broadcasted) protocol for information sharing and production during a political gathering. Various level of memberships for example, liquid feedback, votes, consensus measurement and self organizational tools and strategies etc. The low tech examples that come from the occupy experience are of the outmost interest.

4.4. Neighborhood

4.4.1. Aggregation of data and anonymity.

Most of utility companies (gas, electricity, water, post and other services) will greatly benefit from gathering use data in real time, as IoT devices allow. They don't need user data to person by person granulation. They actually will aggregate the data to make it useful for them. Such aggregation can be done in many ways by street or postal code, the data can be anonymized correctly and we can forecast a sort of environment for a wide array of short range services to grow in such intelligent grid scenario. A cooperative of neighbors for example could decide to trade data for an exchange service (or for benefits) with the gateway company.

4.4.2. Local Digital Currencies

See D-Cent.

4.5. Basic School

Pre scholar and basic schooling needs traffic shaping if exposed to IoT scenarios. There are also some behaviors allowed by technology that is designed for entertainment that needs to be better taken into account when the purpose is learning. We will not expand on this too much because is outside of the limits of this paper. We will mention these problems only because they are relevant for Dowse design and left open to solution by its

open core. The exposure of dowse as a clean trustable and open environment for developing such tools and policies will greatly benefit the operators busy at university, governance and education level to think about the necessary tools. While these debates goes on a teacher can be aware in realtime and in any case block an undesirable flow of information.

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5. Reflections over dowse business model

5.1. Open hardware

Economic and DIY but also a top gear plug and play model alike are to be developed in first phase of the dowse box launch.
Two lines of thought that don't exclude one the other. A customizable, open hardware object, projected and build to last in time and that therefore that can be personalized. Aside an example of a highly designed, luxurious object made as a precious one. Dowse as a personal object. Is like to make yourself a wood cigar box mini-itx computer 10 years ago as opposed by the will to buy a iphone. It targets two different type of people that are both trendsetters for the rest. The majority will buy the 39.99 model anyway, st it up and go back to business as usual. Yet it will be aware and profit from the activity of the dowsers, makers and hackers, both locally and globally.

5.2. Subscription based free updates for dowse os

What we give and what we sell?
1. PHASE ONE we sell the box project, we give hardware and software free, we establish an environment were the community can share awareness plugins, stories and ideas on how to use. We give to public the concept of dowse beta computer as a working prototype. Also conceptuals examples of dowsing are given as films, proof of concept design and imagina-ware. Big launch at festival in may 2016 as "invent your dowse interface" art action.
2. ARDUINO BM
3. PHASE TWO
   we kickstart the box and sell the box worldwide through partners that do the b-to-c side.
4. PHASE TREE
   Shapers/ Awareness modules are exchanged through our platform, we pass to the charlie computer and the delta box: the anti virus BM: new devices behaviors detected, new attack schemes detected, new case scenarios etc… We sell up to date adaptation or we become a public service subscription based?

5.3. Subscription based plugins to detect new behaviors

5.4. Hardware and software shapers

5.5. Open Source and pre configured dowse box

5.4. Neighborhood wide data aggregation

This and other experimental business models for IoT big data harvesting to be sold to 3rd party B-to-B utility company. Is a good case to rise up for partnerships and founding in this phase.

6. Some extra notes on Dowse awareness design philosophy and aesthetics

A growing inspirational image collection is to be found here:
https://www.pinterest.com/freddbomba/dowse/

7. Ecosystems

    7.1. Monitoring the environment as a citizen initiative

    7.2. Sharing economies

8. Timelines

9. Guidelines for implementation and test

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