

"Announcers at every modern-day concert command us to turn off our cell phones, but what Cagean aesthetic possibilities might we discover in leaving them on?"

- Golan Levin, *Dialtones* artist statement, 2001.

Distributed Music

What is it?

Here is one definition:

Music that performs an audience's electronic devices as a unified instrument or invites their participation as an impromptu electronic ensemble.

Demo

Connect to Wifi

Open a browser

Go to IP: xx.xx.xx.xx

- One performer controls an array of mobile devices as remote speakers.

1-to-n

- Giving each audience member an interface to collectively control one central synth.

n-to-1

- Giving each audience member a standalone mobile instrument to improvise on.

standalone

- Letting audience member influence the sound coming out of other audience member's phones.

n-to-n

The Audience as a Speaker Array



EXTRA



Ugnayan

A project of the Cultural Center of the Philippines in association with Public and Private Institutions. Imelda Romualdez Marcos, Founder and Chairman

Editorial

The Ugnayan Behind "Ugnayan"

The Filipino term "ugnayan," or liaison or relationship, has finally surfaced from the collective sensibility of our people to claim its rightful place in our language. It is a word that has been used for centuries. Moreover, "ugnayan" is likely to impinge on familiar catchwords like "bayanihan" and "bakukahan," which are also derived from the same root. "Ugnayan" is an instinct and characteristic of Filipinos as Asians to group together, to live in community rather than as individuals.

Although "bayanihan" and "bakukahan" have been effective communication vehicles for the Filipino spirit of cooperation, they do not fully encompass the totality of the idea involved. Perhaps this is the reason why our negotiators have not come up with a single term to describe the concept.

The term "ugnayan" has been effective communication vehicle for the Filipino spirit of cooperation, but it does not fully encompass the totality of the idea involved. Perhaps this is the reason why our negotiators have not come up with a single term to describe the concept.

The value is not difficult to understand if we examine the etymological and existential implications of "bayanihan" and "bakukahan." The latter derives from the name of the traditional social organization of the Tagalog people, Mrs. Imelda R. Marcos, in her capacity as Director and then Chairman of the Cultural Center of the Philippines, aims to bring about a situation where people can live and interact together because they are, as it were, in the same boat.

The term "bakukahan" could be developed further by association of its meaning with that boat or sea craft, or perhaps, the sea itself. "Bakukahan" is a word that means to bind or to hold together. Unfortunately, its shorter version, "bakukahan," is so strongly fixed in the Filipino psyche as to be used more often than "bayanihan" to mean holding together exclusively, so that in the long run, in terms of meaning, it is more likely to mean "hold together" rather than "community."

"Bayanihan," on the other hand, is an ideal that emphasizes the need for cooperation, but it is not necessarily an attempt to reinteriorize or to unify. Just the opposite. It is an attempt to emphasize the need for cooperation as a community effort on an agrarian level, like the building of a house or a community hall.

The term "ugnayan" is more appropriate because it brings together and carrying the same elsewhere together, and other such rural activities.

On the other hand, "ugnayan" is an approach to apply the bakukahan and bayanihan approach on a national level so far failed, notwithstanding the spirit unity on "bayanihan" that it did not contain the specific focus or dynamics to include a whole community and project its power.

In other words, "bakukahan" and "bayanihan," although they have been effective on the micro-social, individual and family levels, may not necessarily work on the macro-social or national levels. This is because they are very static. An operative hypothesis for this is that both bakukahan and a tendency to stigmatize the Group at the expense of the individual, and the individual at the expense of the group.

On the other hand, "ugnayan" is simply linking people, linking them together, linking them through orientation and by its very nature, it may or may not have a tendency to stigmatize the individual at the expense of being together, so that they have the opportunity to interact positively and creatively together, and grow, or to be more effective in their interactions. They are united together as a result of their ability to interact individually and by the means by which they can develop individually.

Thus, "ugnayan" as an ideology of evolution looks upon the individual as a whole, as a part of the community, not only as socio-economic units but as organic entities in the process of development. In the case of "ugnayan," the individual is not only a part of the whole, but also on the national or cosmic planes, in the generation of the future, in the development of the past, and a compensatory development-oriented society.

As a creative ideology for unity and cooperation, "ugnayan" is an approach for development, for development of the individual, for development of the group, for large or small groups, including that of two persons, brought together or linked together, for development of its full potentials, to experience its longest for democratic revolution, unless its people are willing to sacrifice their personal interests for the sake of others, who in other cases have failed because it springs directly from the distinctive psychology of the Filipino, and at the same time expresses a universal human need.

How to Enjoy Ugnayan

1. Visit the Ugnayan Logbook at the Ugnayan Center on the designated hour in order to have enough time to set up your transmitter radio equipment, and to find the best radio frequency, place, etc., and to participate in the Ugnayan program.

2. You are urged to circulate among friends, acquaintances, and "tambuli" as well as the public. The spirit of creative interaction is part of the concert.

3. Listen to the tape recordings of the Ugnayan Center, and if you are interested, will inform the station of your interest to follow. If you choose to keep your own even better, record the tape of concert, stay tuned to one station.

4. A countdown from 10 to 1, at approximately 6 p.m. by the Ugnayan Center, will signal the start of the concert.

5. Have the volume of your radio fixed at a medium level. Once the concert starts, do not turn it up, or down, or turn the tuning dial. Ugnayan is not electronic music and you will not hear it if you turn it off.

6. As much as possible try to sit in a quiet place. The music of Ugnayan contains some subtleties relatively new to most listeners. Listen to the sounds not only to the sounds near you. Also try to feel the enveloping atmosphere of the concert generated by masses of radio sets in the room.

7. While the performance is on, feel free to move around, rock, knit, whatever. Ugnayan is not electronic music and you will not hear it if you turn it off.

8. After the performance, go to the creative area as the active principle, the life-force, originator, and inspirer.

9. The Tambuli As Symbol

The design of the Ugnayan Logbook is shaped like the symbol of the tambuli, an ancient Filipino instrument used to bring people together. Why the tambuli particularly?

Because the tambuli sends messages to people in faraway places, and because, like another symbol must be blown. Alternately played, the sound becomes something more than just a sound and a symbol.

The logo symbolizes the meaning of two tambulis, alternately played. The call to come together.

1) BALIBINGBING

Balibingbing is a bamboo harp-like instrument of the Ilocanos of Northern Luzon. It is also known as the basabas and the kawaling. It is made by bending and paring by hand the bamboo without a bow.

Some of these harps will be divided while the others are without.

To play the balibingbing, the tube halves allow these halves to vibrate and burst when the left hand strikes the base against the base of the left hand.

It is said that among the

UGNAYAN PREMIERE JAN. 1 '74

Open-air event to draw thousands; Unity marks First Lady's project

A musical performance of

original compositions

and international standards

will be held in open air

in parks, suburban commerce

centers, and in far-flung com-

munities, plazas and towns,

to share in the experience of

the musical and spiritual con-

tinuum being presented on

20 different radio stations,

each bringing a transistor ra-

dio to serve this evening.

At six to seven this evening,

1974, New Year's Day

1974, the Ugnayan Logbook

will broadcast simultaneously

precomposed music

on 20 tapes, with each tape

from the rest.

The 20 different radio sta-

tions will constitute a mu-

sical composition. Sounds

from the 20 tapes will be

mixed by 20 different radio

stations to produce a mu-

sic composed by the rest

of people in the Philippines.

According to Assistant En-

semble Secretary Romulo

Cruz of the Ugnayan Logbook

Board, "Ugnayan Day Program to be held by the

Ugnayan Logbook

will last 51 minutes. Its writ-

ership involved a recording,

recording, dubbing were un-

derseen by Dr. Jose Maceda,

recipient of the Republic

Heritage Award.

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The Audience as a Speaker Array



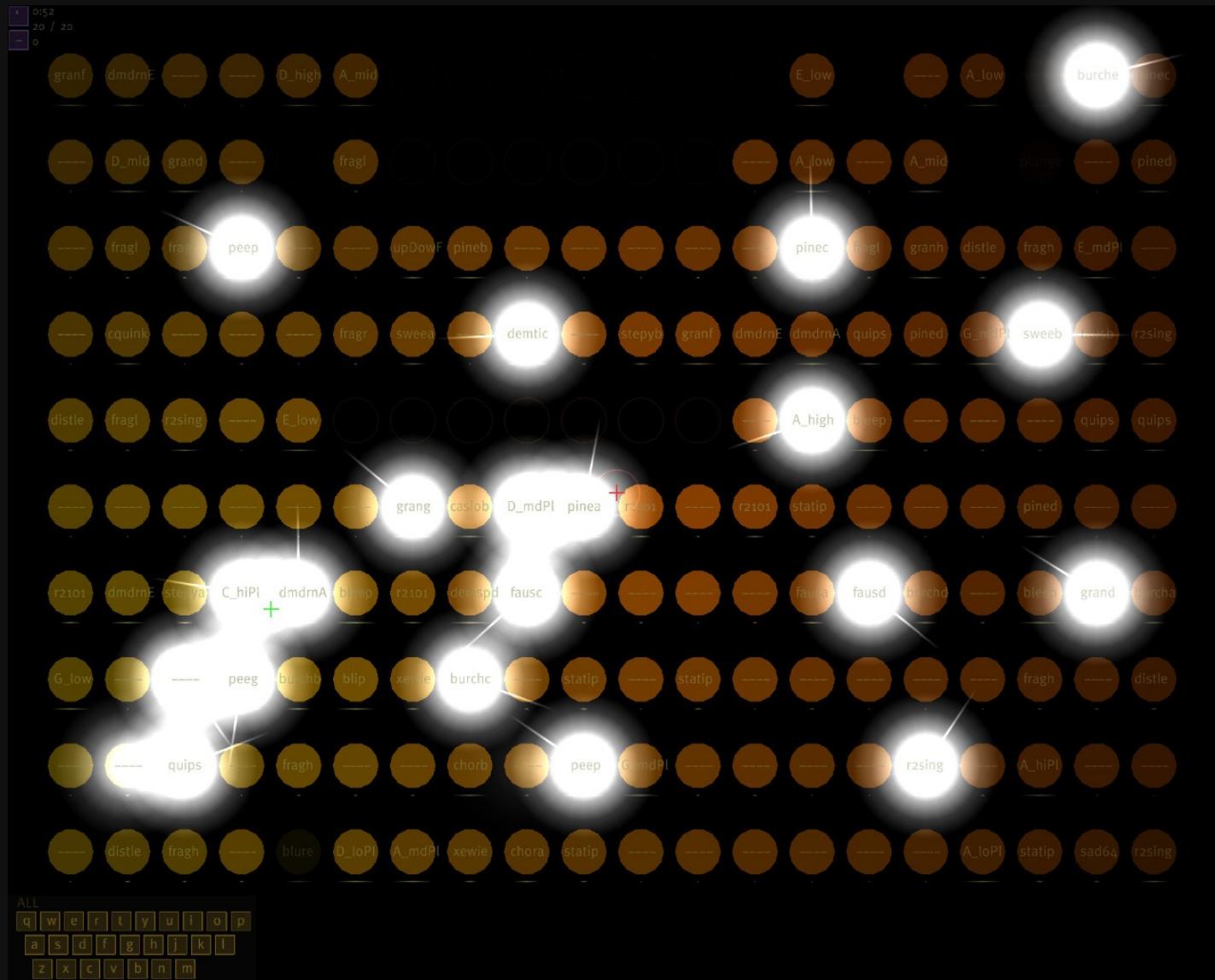
A crowd gathers around transistors in a town plaza in the first Ugnayan assemblage.

The Audience as a Speaker Array





Dialtones: A Telesymphony (2001)



Dialtones: A Telesymphony (2001)



The Audience as a Speaker Array



Participant information:

Show Time	21:00
Phone Number	0664XXXX1234
Phone Manufacturer	Nokia 6210
Phone Owner	Dialtones / Guest
Seat Location	Row 5, Seat 4

Your location:
Row 5, Seat 4

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
01																			
02																			
03																			
04																			
05				X															
06																			
07																			
08																			
09																			
10																			

Your ringtone:
18 (bigSqueal)



The Audience as a Medium



Where are we now?

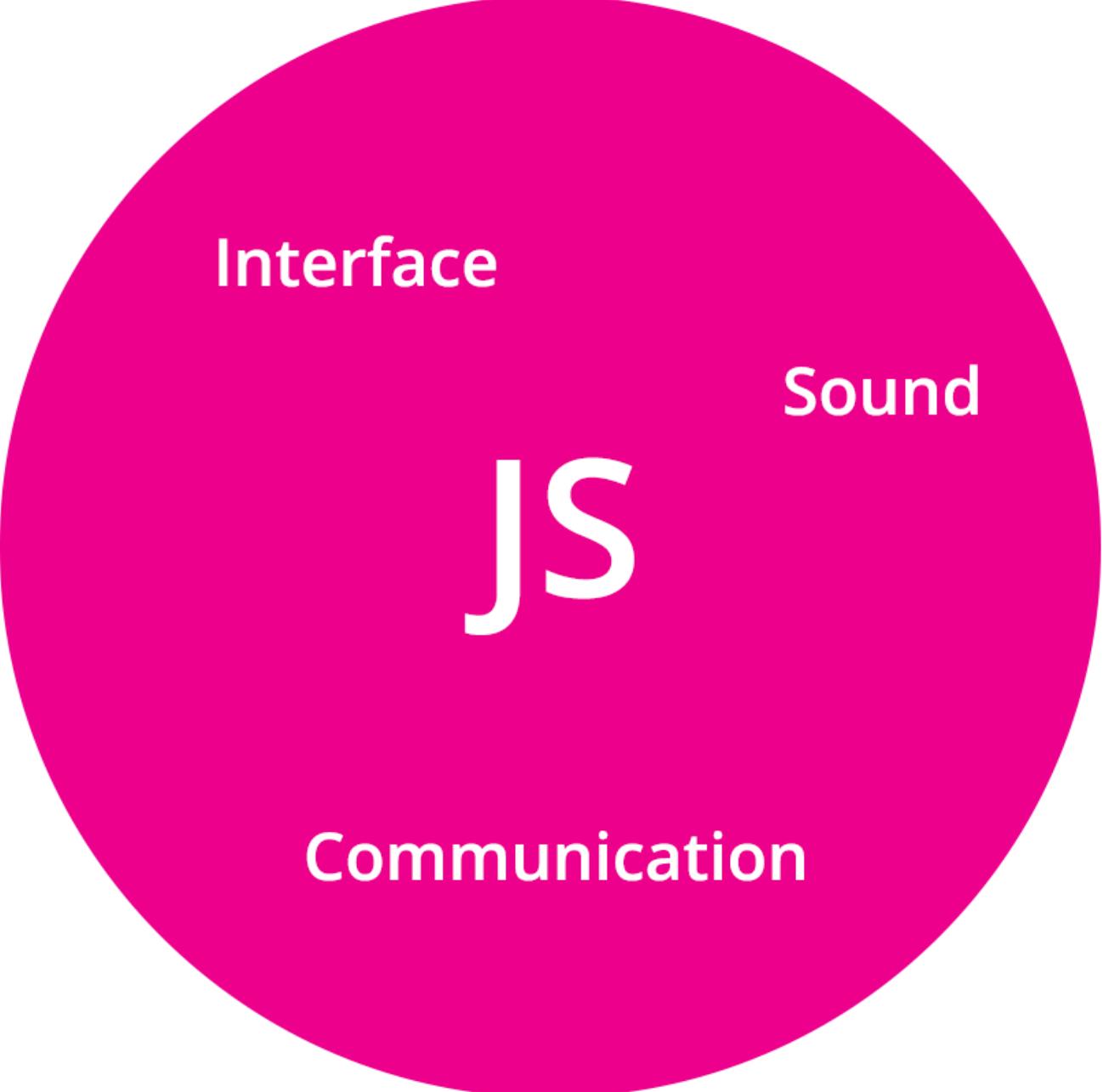
This genre has really taken off in the past 5 years!

- a smartphone in every pocket
- mobile web browsers are now able to run distributed performances

Where are we now?

Today we are going to look at Javascript as an enabler of distributed music performance.

Javascript is not just for making popup ads anymore...



Interface

Sound

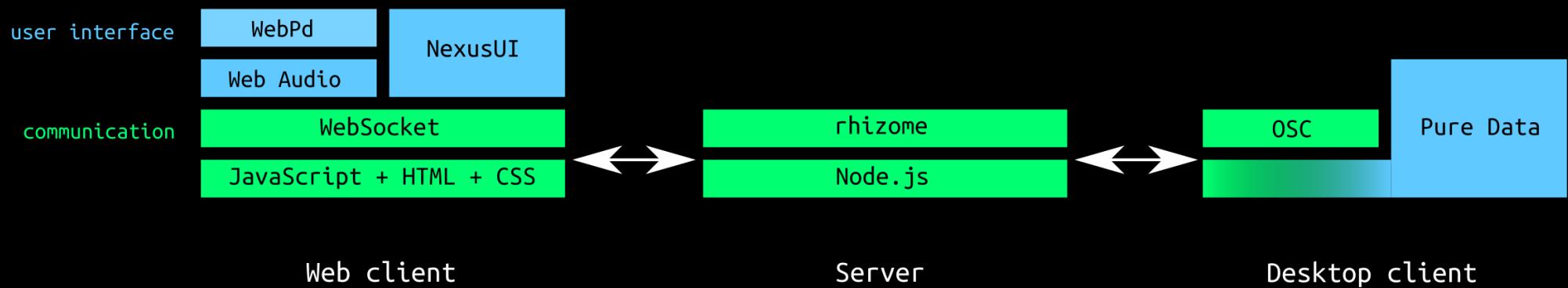
JS

Communication

Making Distributed Music with Javascript

- Interface: **NexusUI**
by Ben
- Communication: **Rhizome**
by Sébastien
- Sound: **WebPD**
by Sébastien

Now I'll hand the mic to Sebastien to share an overview of the web technologies we're using.



Interface

HTML

- Syntax

```
<tag attr1="value1" attr2="value2">children</tag>
```

- Creating structured documents

```
<!DOCTYPE html>
<html>
  <head></head>
  <body>
    <div>A block of content</div>
    <div id="myBlock">Another block of content</div>
    <!-- This is a comment -->
    <button>A button</button>
    <ul>
      <li class="myListElem">List element</li>
      <li class="myListElem">Other list element</li>
    </ul>
  </body>
</html>
```

CSS

- Applying style to a structured document

```
selector {  
    attr1: value1;  
    attr2: value2;  
}
```

- Example with previous document

```
/* Select by tag name */  
button {  
    background-color: orange;  
}  
  
/* Select by class */  
.myListElem {  
    color: red;  
}  
  
/* Select by id */  
#myBlock {  
    border: 1px solid blue;  
}
```

JavaScript

- Scripting language for the web

```
var aNumber = 123
var aString = 'blah'
var anArray = [1, 'blah', 2]
var anObject = { key1: 'value1', key2: 2 }
// A comment
/* Another comment */
function aFunction() {
  console.log('hello!')
}

// One way to iterate over an array
anArray.forEach(function(elem) {
  console.log(elem)
} )

// if/else
if (anArray.length == 3) {
  console.log('happy')
} else {
  console.log('sad')
}
```

JavaScript

- JavaScript is asynchronous, everything works with callbacks

```
console.log('starting')

asyncCall(function done() {
  console.log('nope!')
})

console.log('after asyncCall ?')
```

- Web APIs : examples : DOM, WebSocket, Web Audio, ...
<https://developer.mozilla.org/en-US/docs/Web/API>
- Node.js, for scripting server applications in JavaScript.

JavaScript + CSS + HTML

```
<!DOCTYPE html>
<html>
  <head>
    <style>
      .blink1 {
        background-color: red;
      }
      .blink2 {
        background-color: blue;
      }
    </style>
  </head>
  <body>
    <div id="blinky" class="blink1">BLINK!</div>
    <script>
      var blinky = document.getElementById('blinky')
      var counter = 0
      setInterval(function() {
        counter = (counter + 1) % 2
        blinky.className = 'blink' + (1 + counter)
      }, 150)
    </script>
  </body>
</html>
```

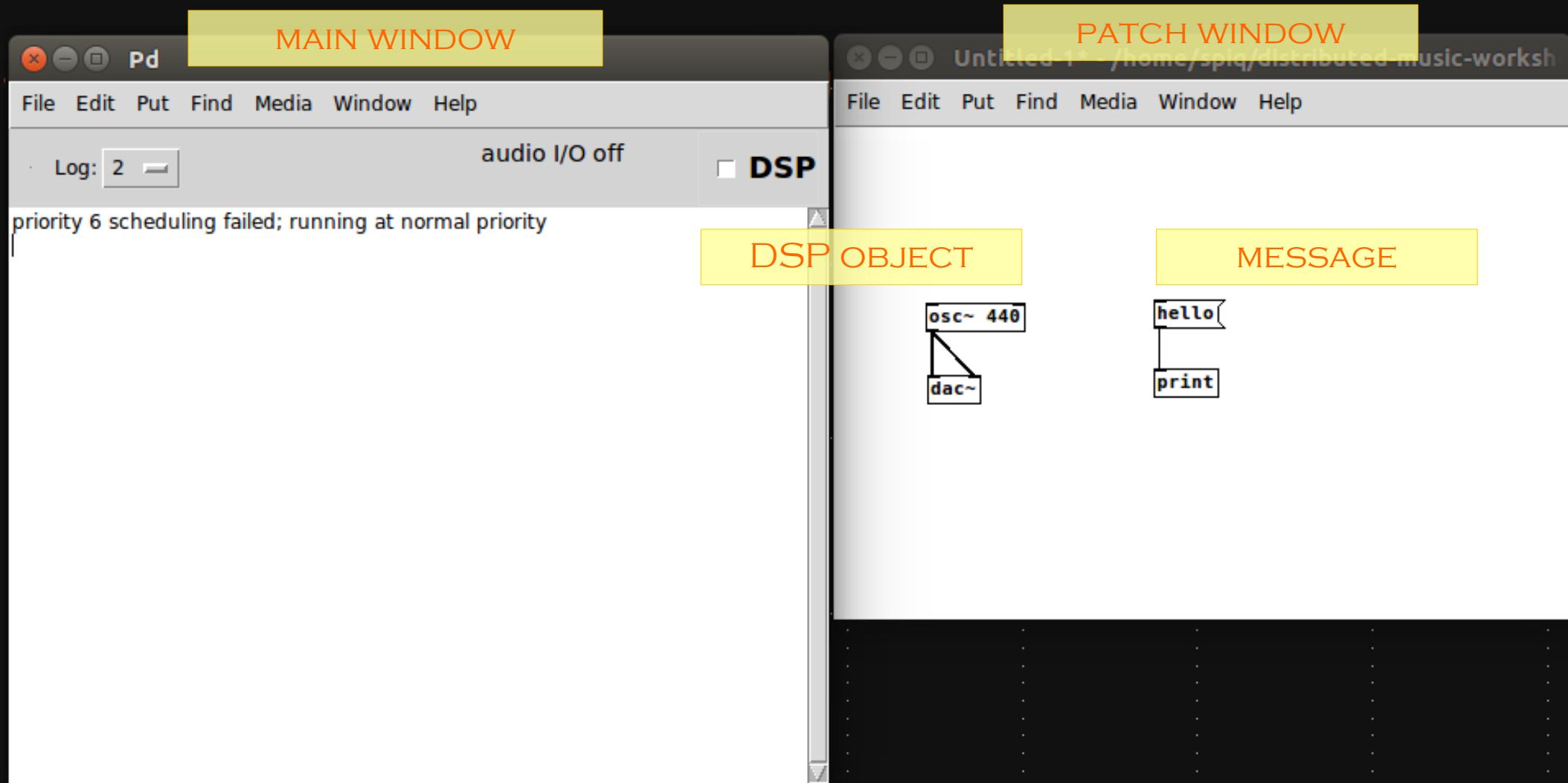
JavaScript + CSS + HTML

```
<!DOCTYPE html>
<html>
  <head>
    <style>
      .blink1 {
        background-color: red;
      }
      .blink2 {
        background-color: blue;
      }
    </style>
    <!-- Importing a JavaScript module -->
    <script src="https://code.jquery.com/jquery-3.2.1.min.js"></script>
  </head>
  <body>
    <div id="blinky" class="blink1">BLINK!</div>
    <script>
      setInterval(function() {
        $('#blinky').toggleClass('blink1').toggleClass('blink2')
      }, 150)
    </script>
  </body>
</html>
```

Sound

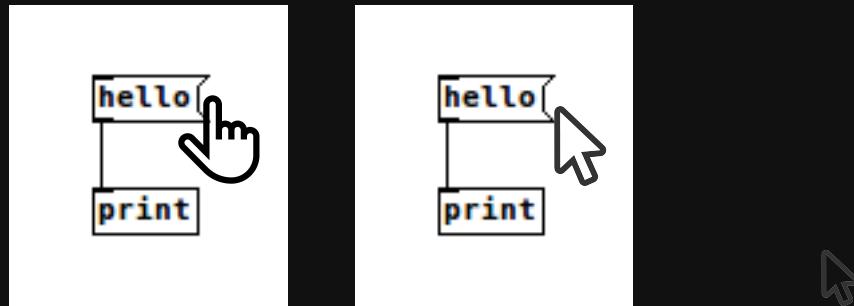
Pure Data

Open-source graphical programming language for audio/visuals

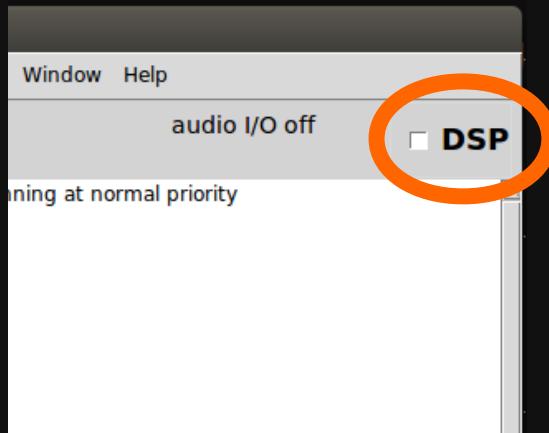


Pure Data

- Edit mode / Interact mode , ctrl+e to switch from one to the other



- DSP on / off , if you can't hear sound, check that DSP is on.

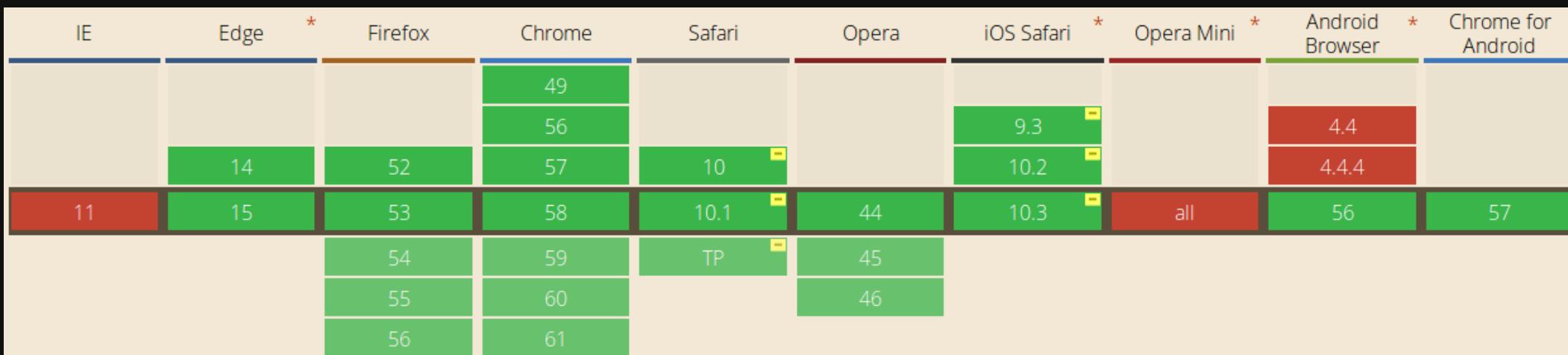


Web Audio API

- W3C specification draft for audio synthesis
<https://webaudio.github.io/web-audio-api/>
- DSP graph of interconnected nodes
- Limited set of native nodes
`OSCILLATORNODE`, `BiquadFilterNode`, ...
- Possibility to write custom DSP in JavaScript
`SCRIPTPROCESSORNODE`, `AUDIOWORKLETNODE`

Web Audio API

- Browser support



Source : <http://caniuse.com/#feat=audio-api> accessed 2017-05-10

Web Audio API

- Native nodes, code sample

```
var audioContext = new AudioContext()
var osc = audioContext.createOscillator()
osc.connect(audioContext.destination)
osc.frequency.value = 220
osc.start(0)
```

Web Audio API

- Custom DSP, code sample

```
var audioContext = new AudioContext()
var osc = audioContext.createScriptProcessor(4096, 1, 1)

var phase = 0
var K = 220 * 2 * Math.PI / audioContext.sampleRate

osc.onaudioprocess = function(event) {
    var outBlock = event.outputBuffer.getChannelData(0)
    var length = outBlock.length, i = 0

    for (i = 0; i < length; i++) {
        phase += K
        outBlock[i] = Math.cos(phase)
    }
}

osc.connect(audioContext.destination)
```

Web Audio API

A pain to work with

- Limited set of nodes
- Specification changing all the time
- Bugs in implementations

{ Hope }

- **AUDIOWORKLETNODE + WebAssembly**

Communication

WebSocket

- W3C standard for full-duplex communication over internet
- Send string or binary data
- Implementation available in all major programming languages
- Implementation available in all modern web browsers

WebSocket

- Browser support

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Chrome for Android
			49			9.3		4.4	
			56			10.2		4.4.4	
14	52	57	57	10					
11	15	53	58	10.1	44	10.3	all	56	57
		54	59	TP	45				
		55	60		46				
		56	61						

Source : <http://caniuse.com/#feat=websockets> accessed 2017-05-10

WebSocket

- Code sample (client)

```
var ws = new WebSocket('ws://localhost:8080')

ws.onopen = function() {
  console.log('open!')
  ws.send('GREETINGS!')
}

ws.onmessage = function(message) {
  console.log('received: ' + message.data)
}
```

- See full example client/server in EXAMPLES/WEBSOCKET

OSC

- Open Sound Control, communication protocol
- Types : str, number, array, etc ...
- Widely supported : SuperCollider, Pure Data, Processing, ...
- See Pure Data example in EXAMPLES/OSC