

Collaborative web-based audiovisual systems

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<https://github.com/maniart/tadaex14>

Fall 2014 - Tehran - Mohsen Gallery

Session One

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Session One: Agenda

- . Sensorial translation
- . Precedence [analog]
- . Precedence [digital]
- . Digital tools
- . Why Web [patatap]
- . Some programming concepts
- . WebAudio API
- . Two.JS
- . WebAudio API Nodes

Sensorial Translation

A musical score consisting of three staves. The top staff is in bass clef, 3/8 time, and has a key signature of three flats. It is labeled "Violoncelli und Violen". The middle staff is in treble clef, 3/8 time, and has a key signature of one flat. It is labeled "Violinen". The bottom staff is in bass clef, 3/8 time, and has a key signature of one flat. It is labeled "Bläser" above the first section and "Streicher" below the second section. The score features various rhythmic patterns, including eighth and sixteenth notes, and dynamic markings like accents and slurs. Measure numbers 1 through 12 are indicated at the beginning of each staff.

Precedence [analog]

- Fantasia [1945]

Precedence [analog]

- John Whitney

Precedence [digital]

- Sam Aaron



Precedence [digital]

. Ryoji Ikeda



```
(λ (beat pitches dur)
  (play s (random pitches) 80 (* 1.5 dur))
  (callback (*metro* (+ beat (* .5 dur))) 'pads (+ beat dur) pitches dur)))
ads (*metro* 'get-beat 4) 8)
```

Precedence [digital]

- Andrew Sorensen

```
- xtm All (6,28) (Extempore:7098(TCP) +2 ElDoc yes Fill) 2:41PM 0.73
ded 14 files into bank#: 3
ded 71 files into bank#: 4
nd _redata_ >>> double*
piled record >>> [double,double]*
piled save-recording >>> [i64,i8*,i64]*
piled fade >>> [double,double,double]*
piled dsp >>> [double,double,double,double,double]*

Client Connection
attempting to return a string from non-symbol obj ()
ace: callback-adapter

- sh1 Bot L849 (Shell:run +1) 2:41PM 0.73
```



Digital Tools

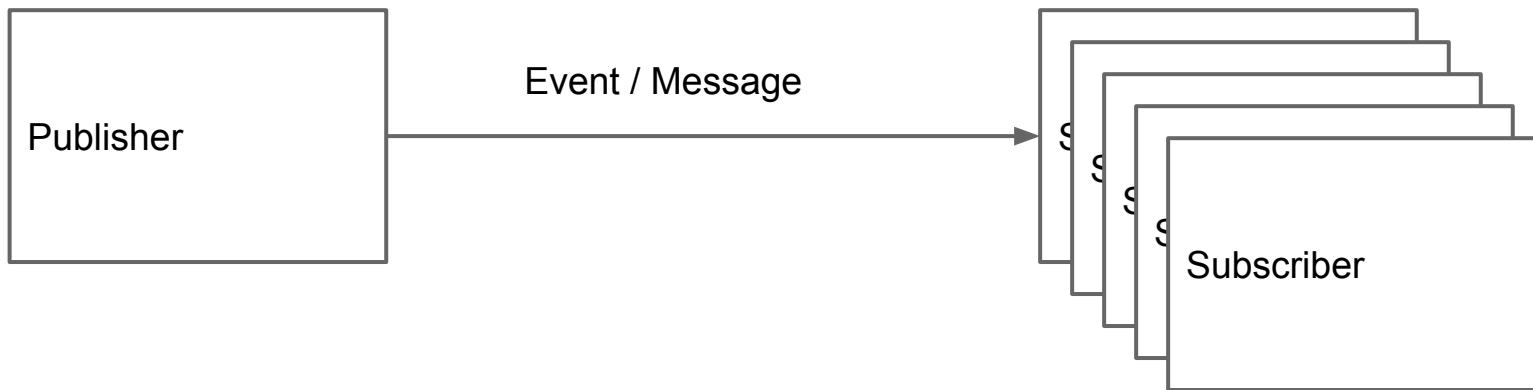
- . CSound
- . Max/MSP
- . Chuck!
- . Processing
- . OpenFrameworks
- . etc.

Why Web?

- . It's portable
- . It's real-time [well, potentially]
- . It's collaborative in nature
- . Example: patatap
- . Example: plink

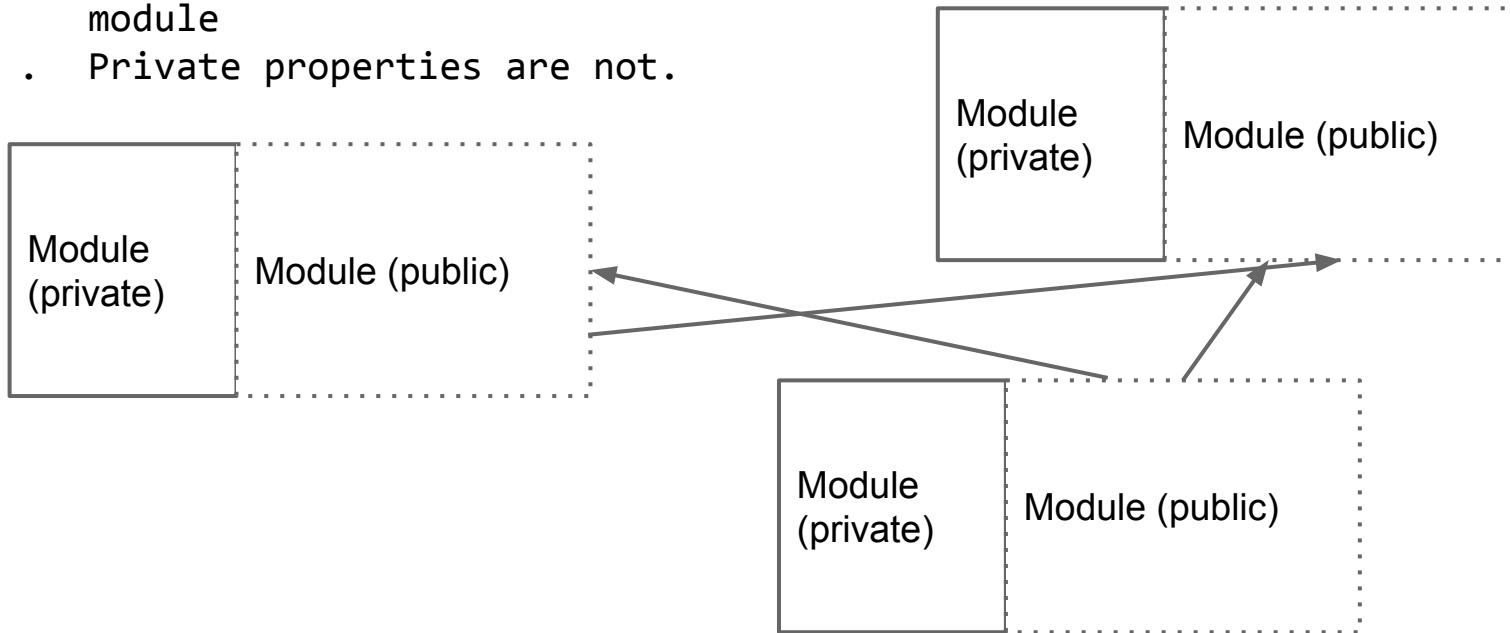
Some programming concepts

- . Communication between different components of program



Some programming concepts

- Modular design - programming
- Public properties are available from outside each module
- Private properties are not.

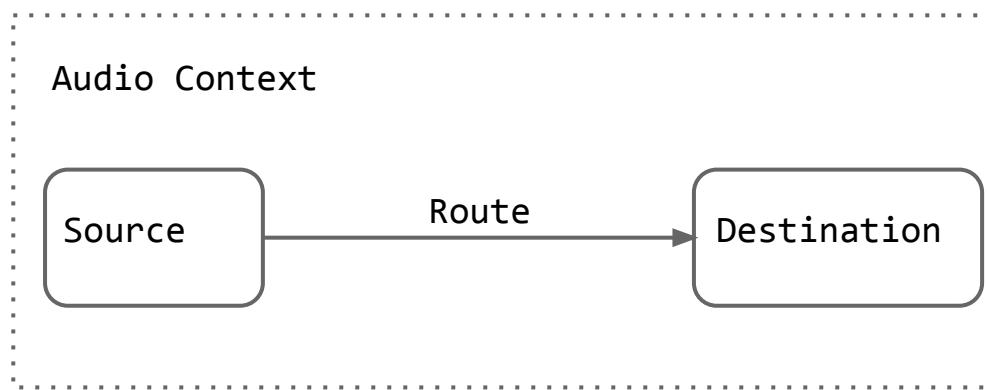


Audio : Web Audio API

- . Before, it used to be Quick Time or Flash
- . Web Audio API is used for Audio loading, playing and synthesis in the web
- . Made for gaming
- . W3C standard
- . Still not compatible with all browsers, but work in progress.
- . [Learn more](#)
- . [Learn even more](#)
- . [even more](#)

Audio : WebAudio API: Playing basic sound

- . Create a audio context : new webkitAudioContext()
- . Load the audio buffer : request.responseType = 'arraybuffer';
- . Connect a buffer source to the context destination : src.connect(ctx.destination);
- . Trigger a play : source.noteOn(0);
- . **CODE EXAMPLE ONE**



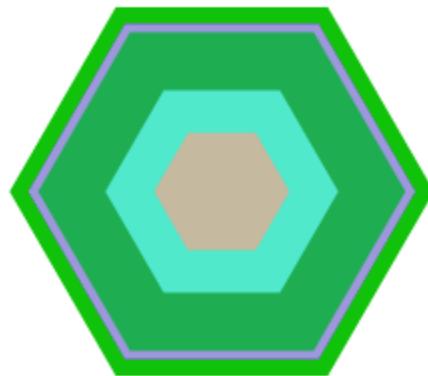
Visual : Two.js

- Easy to use
- Rendered-agnostic (WebGL, SVG, Canvas)
- Abstraction for drawing and animation
- [Learn more](#)
- [Learn even more](#)
- CODE EXAMPLE TWO



Shape of a note

- How do we decide to translate sound into shape?
- What do you think a C, or an A looks like?
- **CODE EXAMPLE THREE**



WebAudio API: nodes

- Node Types:
- Positional: AudioPannerNode and AudioListener JS
- signal processing: JavascriptAudioNode
- Volume: AudioGainNode
- Environment: ConvolverNode
- Common Filters: BiquadFilterNode
- [Learn More](#)
- **CODE EXAMPLE FOUR**

Audio Context

