Welcome!

Open Sound Control (OSC) Conference, July 30, 2004

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Open Sound Control Conference 2004
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- Peter Nyboer, Technical Support
- Andy Schmeder, Webmaster
- David Wessel, Director of CNMAT and Prof. of Music
- Matthew Wright, Conference Director, Proceedings Editor, OSC Architect
- Michael Zbyszynski, Technical Support
Conference Schedule

- ...is printed in the proceedings
- Intro/Keynotes
- Paper Session I: Implementations of OSC
- Paper Session II: OSC Hardware
- Lunch
- Paper Session III: OSC-related research
- Poster Session: OSC Project Gallery
- Presentation of Draft Proposals from standardization working groups
Where is…?

- Bathroom: outside auditorium, to left
- Lunch: served in hallway, eat outside
- Reception after conference (6-8pm): CNMAT (1750 Arch St.)
Brief Overview of OSC and its Application Areas

Matthew Wright
Musical Systems Designer
CNMAT
What is OSC?

- Networking protocol for real-time musical control information
- Introduced by CNMAT in 1997
- Transport-independent (today used with UDP, TCP, WiFi, serial connections, and within applications)
Goals of OSC

- Lightweight
- Easy to implement
- Flexible
- Simple
- Temporal semantics supporting sound control
- Reasonably space-efficient
OSC Overview: Messages

- Address: URL-style
- Arguments: strings, binary numbers, “blobs”, etc.

/filters/3/center-freq 3123.45
OSC Overview: Address Patterns

- Address of an OSC message can be a regular expression pattern
- E.g., /filters/[2-4]/cutoff-freq 2354.1
- Semantics: as if separate messages (with the same arguments) were sent to each matching address
- Small regexp language: *, ?, {a,b,c}, [a-h]
# OSC Overview: Argument Types

<table>
<thead>
<tr>
<th>i</th>
<th>int32</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>float32</td>
</tr>
<tr>
<td>s</td>
<td>OSC-string</td>
</tr>
<tr>
<td>b</td>
<td>blob (binary data)</td>
</tr>
<tr>
<td>h</td>
<td>int64</td>
</tr>
<tr>
<td>t</td>
<td>Time Tag</td>
</tr>
<tr>
<td>d</td>
<td>float64 (“double”)</td>
</tr>
<tr>
<td>S</td>
<td>symbol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c</th>
<th>ASCII character</th>
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<tbody>
<tr>
<td>r</td>
<td>RGBA color</td>
</tr>
<tr>
<td>m</td>
<td>MIDI message</td>
</tr>
<tr>
<td>T</td>
<td>true</td>
</tr>
<tr>
<td>F</td>
<td>false</td>
</tr>
<tr>
<td>N</td>
<td>nil</td>
</tr>
<tr>
<td>I</td>
<td>infinitum</td>
</tr>
</tbody>
</table>
OSC Overview: Address Spaces

• Every address space is application-specific
  – Symbolic names of features, parameters…
  – Arbitrary arrangement into tree structure
• OSC standard proscribes nothing
  + Utterly flexible
  – No automatic “plug and play”
OSC Address Space Example

*(Constellation synthesis server)*

```
/bell1/cutoff-freq
/glockies/midinote-off
/glockies/midinote-on
/ronbells/mute
/ronbells/play/bell2a
/ronbells/play/bell2b
/ronbells/play/bell2c
/ronbells/play/bell2d
/ronbells/play/bell3a
/ronbells/play/bell3b

/harmtones/osc[1-8]/glissdir
/harmtones/osc[1-8]/glissmag
/harmtones/osc[1-8]/init
/harmtones/osc[1-8]/mute
/harmtones/osc[1-8]/play
/harmtones/osc[1-8]/speaker
/harmtones/osc[1-8]/volume-pedal
/sampler/midinote-on
/sampler/midinote-off
/sampler/multisample
/sampler/speaker
/sampler/master-volume
```
OSC Overview: Time

• “Bundle” - group of messages
  – Transmitted together
  – Must take effect atomically
• Bundles have time-tags saying when messages should take effect
OSC Terminology

- client/server: sender/receiver
- message: unit of OSC data
- address: target of OSC data within receiver
- address pattern: regular expression
- address space: tree of msgs. server recognizes
- schema: address space + semantics
- argument: data in a msg. (number, string...)
- bundle: collection of msgs. with a time tag
OSC’s Application Areas

http://cnmat.berkeley.edu/OSC/application-areas.html
Keynote Address:
OSC and Digital Lifestyle Aggregation

Marc Canter
CEO, Broadband Mechanics