Mobile Phones as Ubiquitous Instruments: Towards Standardizing Performance Data on the Network

What will the next generation of mobile instruments be like?

Ubiquitous instruments (UbIs) describe a class of digital mobile instruments that demonstrate cultural characteristics similar to traditional analog instruments such as piano and guitar. The following list describes circumstances that anticipate the arrival of a new class of handheld digital musical instruments.

Cultural and Economic Presence. Compelling body of artistic output and achievement. Steady repertoire of works, in a range of difficulties. Social rewards for performance virtuosity. Shared notions amongst educated listeners and practitioners about excellence in form and performance.

Social and Personal Presence. Interface is intuitive for performers at all levels. Performance practice plays functional role in community building. Skill advancement is cultivated and reinforced through institutional traditions.

Structural and Compositional Presence. Interfaces and musical complexity enable virtuosity in performance. Compositions in a variety of styles and genres are known and available. Interface accommodates performance execution of broad gestures and smallest possible granularity of human movement. Leverage operating system services including data storage and network. Share musical objects between UbIs via instrument profiles and programming interfaces, similar to MIDI control change messages.

Open Sound Control (OSC) is capable of supporting a new language of musical objects, enabling data exchange and interoperability between ubiquitous instruments (UbI). We suggest adapting OSC in the following manner:

- Standardize public and private OSC Address Patterns for global context;
- Define OSC Packet exchanges in stateful protocols to support node registration and synchronization, and other uses of information sharing including network and routing configuration;
- Establish conventions for when OSC Packets should be read as protocol packets (header plus payload) in a negotiated exchange;
- Send OSC Packets via broadcast and multicast as well as point-to-point;
- Enable OSC Methods and third-party APIs as data processing engines and/or data sources;
- Establish conventions for negotiating OSC version, allowing graceful fallback to OSC version 1.0 in case of error.

LET'S CHANGE OSC!

WHY?

Ubiquitous hardware lacks ubiquitous software layer for music.

We are approaching a singularity in digital instrument sharing.

Like MIDI, OSC needs standardization across apps and instruments.

OSC v1.0 does not support instrument profiles or zero-configuration.

LET'S TALK!

Please join our mail list! Details at:
mobilesound.org/ubi

Find our paper online:
mobilesound.org/ubi-osc.pdf

HOW?

OSC as Protocol

- exchange of state
- management of services
- header + data
- zero-configuration

OSC as Global Namespace

- exchange data from standardized sources
- retreive unique vendor-specific data
- support API development
- musical objects

OSC as URL

osc://192.168.1.1:1234/public/sensor/accelerometer

- canonical format for OSC messages
- real-time OSC interpretation and transmission
- depend upon browser implementation of OSC
- independent of development cycle

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