Welcome to LAC 2013
What is netpd?

Collaborative
Realtime
Networked
Musik
Making
Environment

written in Pure Data
What is netpd really?

* a framework written in Pure Data
* shares patches/abstractions among clients
* synchronizes state among clients
* all participants have control over everything
* by transmitting control data
* does not stream audio
* doesn't know anything about sound or music
Users can:

* chat with each other
* participate in an online jam
* enjoy their ego session
* play with pre-made instruments
* write their own instruments
* share their instruments
* ...
chat.pd

* manages connection to the server
* sends and receives messages over network
* lets the user chat with other users
* launches unpatch
* requests client ID from server

{show chat.pd}
unpatch

* loads/closes instruments
* keeps list of instruments in sync
  * checks version of instrument
  * resolves dependencies
  * transfers instruments/abstractions between clients (p2p for patches)

{show unpatch}
netpd

netpd-abstractions

* help netpd-izing instruments
* synchronize state of instruments
* different types for different data sets
* state initialization
netpd

- state management
- anything message
- float (built-in s/r for iemguis)
- table
- simple send (broadcast)
- simple receive

{show code of bassist}
netpd metatags

* part of any instr / abs
* specify instrument properties
* parsed by unpatch at loading time
* required for instrument synchronicity
netpd metatags

```
{pd NETPD 2 0
  {version 0 3 1
   {singleton
    {pd abslist
      {synthvoice
        - dependency (abstraction)
      }
   }
  }
}

{show code of bassist}
```
netpd

netpd server

* implements netpd protocol
* acts as OSC relay
* is stateless
* assigns client IDs
* runs on netpd.org:3025
netpd

protocol stack:

netpd
OSC
SLIP
TCP
OSC address scheme

receiver ID

  instrument ID

    instrument name

      parameter name

/b/7/megasyth/freq 50

reserved namespaces:

/*/chat/
/*/unpatch/
/s/server/

{show DEBUGPROTO}
netpd

Server

/b

/3/yoursynth/amp 0.8

Client 8

Client 3

/b/yoursynth/amp 0.8

/3/yoursynth/amp 0.8
* used for state initialisation

/netpd

/l

Server

Client 8

/l/mysynth/att 10

Client 3
server methods:
==============

/s/server/socket
/s/server/ip
/s/server/num_of_clients
/s/server/protocol_version
netpd

showcase

{show neptd in action}
issues

* security (remote code execution by design)
* audio drop outs
* no sync verification
* limited GUI possibilities (in Pd)
alternative usage scenarios:

* OpenGL visuals jam (with Gem)
* networked Pd based games
* remote teaching
* ...
resources

* web: http://www.netpd.org
* code: https://github.com/reduzent/netpd2.git
* sound: http://www.netpd.org/sessions/
questions?