INFOCOM 2015 Panel

What should the future Internet be centered on: Information, Service, Mobility, or User?
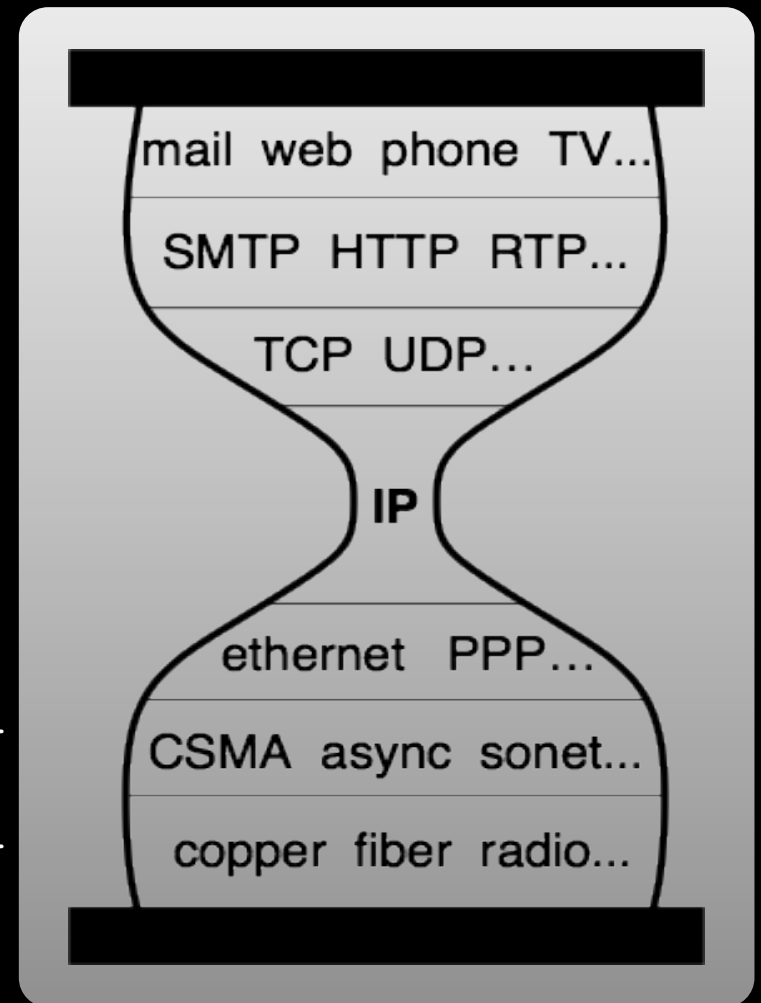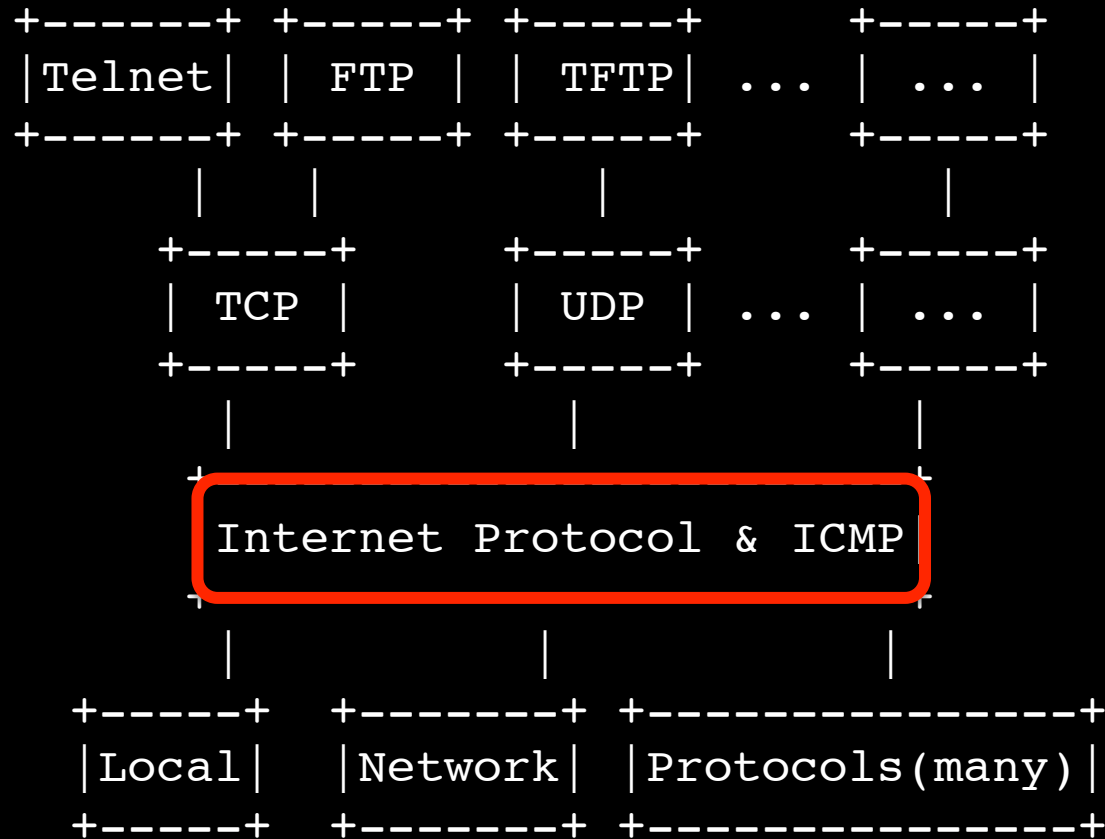
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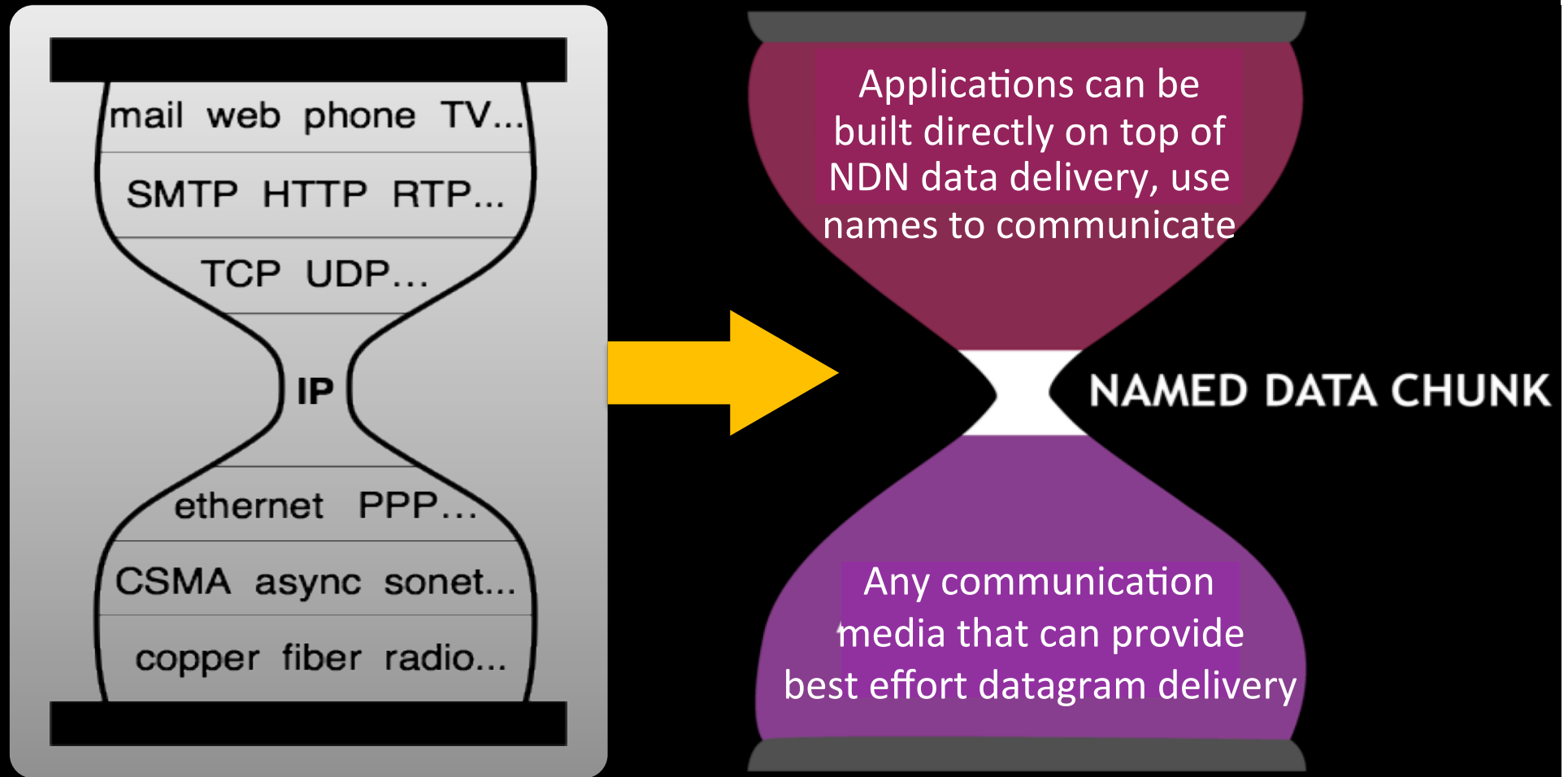Different perspectives → different views

From the architecture perspective:

```
+------+ +-----+ +-----+      +-----+
|Telnet| | FTP | | TFTP| ... | ... |
+------+ +-----+ +-----+      +-----+
   |    |           |           |
   +-----+       +-----+      +-----+
   | TCP |       | UDP | ... | ... |
   +-----+       +-----+      +-----+
     |             |            |
   +-------------------------------+
   |  Internet Protocol & ICMP     |
   +-------------------------------+
     |             |            |
+-----+       +-------+    +-----------------+
|Local|       |Network|    |Protocols(many)  |
+-----+       +-------+    +-----------------+
```

mail web phone TV...

SMTP HTTP RTP...

TCP UDP...

IP

ethernet PPP...

CSMA async sonet...

copper fiber radio...

RFC791: Internet Protocol Specification

3

What Does the Network Do?

Shipping bits (=data=info)

- o unfornately the existing TCP/IP architecture, designed 30+ years ago, no longer fits *today's* job well

Named Data Networking:
A Conceptually Simple Change

mail web phone TV...

SMTP HTTP RTP...

TCP UDP...

IP

ethernet PPP...

CSMA async sonet...

copper fiber radio...

Applications can be built directly on top of NDN data delivery, use names to communicate

NAMED DATA CHUNK

Any communication media that can provide best effort datagram delivery

Named Data Networking:
A new narrow waist

Applications can be built directly on top of NDN data delivery, use names to communicate

INTEREST →

← DATA

Any communication media that can provide best effort datagram delivery

Had we were all running NDN today

You (and the projector) would have been able to get my slide deck for this talk:

/Thisroom/lixia/presentations/1504infocom

◇ My laptop WiFi can reach all your laptop/phones in this room
  ○ the existing protocol stack is the hurdle

Named Data Networking:
A new narrow waist

Applications can be built directly on top of NDN data delivery, use names to communicate

Any communication media that can provide best effort datagram delivery

intelligent fabric

INTEREST

DATA

◇ Consumer driven, best-effort data fetching

◇ *Leave to the system* to figure out where to get nearest copy of requested data

    o from transmission, storage, processing

◇ **Every data packet carries a crypto signature**

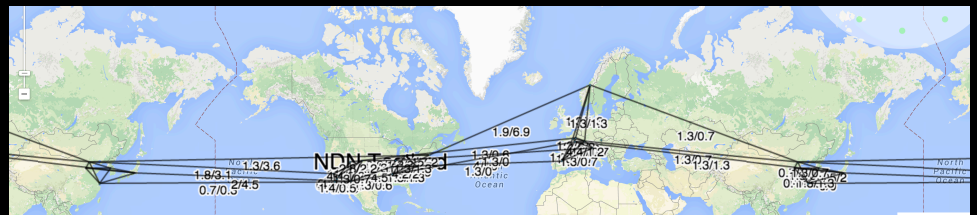# Get the narrow waist right → enable all desired functions

by *naming data* instead of its containers

◇ Service centric: directly enabled

◇ Mobility centric: enabled (by removing IP address)
  o ship bits bits from mobile devices to mobile devices

◇ User centric: by putting control in users hand
  o remove consumer info from data exchange (unless needed)
  o control data access via encryption

◇ **Security centric**: built right into the narrow waist

The new architecture needs your help

NDN research: still in early stage

◇ NDN architecture design: needs a global collaboration effort
  o Mailing list ndn-interest@lists.cs.ucla.edu

◇ NDN prototype development: a global open source effort
  o https://github.com/named-data
  o http://redmine.named-data.net/projects

◇ NDN testbed: open to all interested parties

http://named-data.net/

*Lets join hands to
move Internet architecture forward*