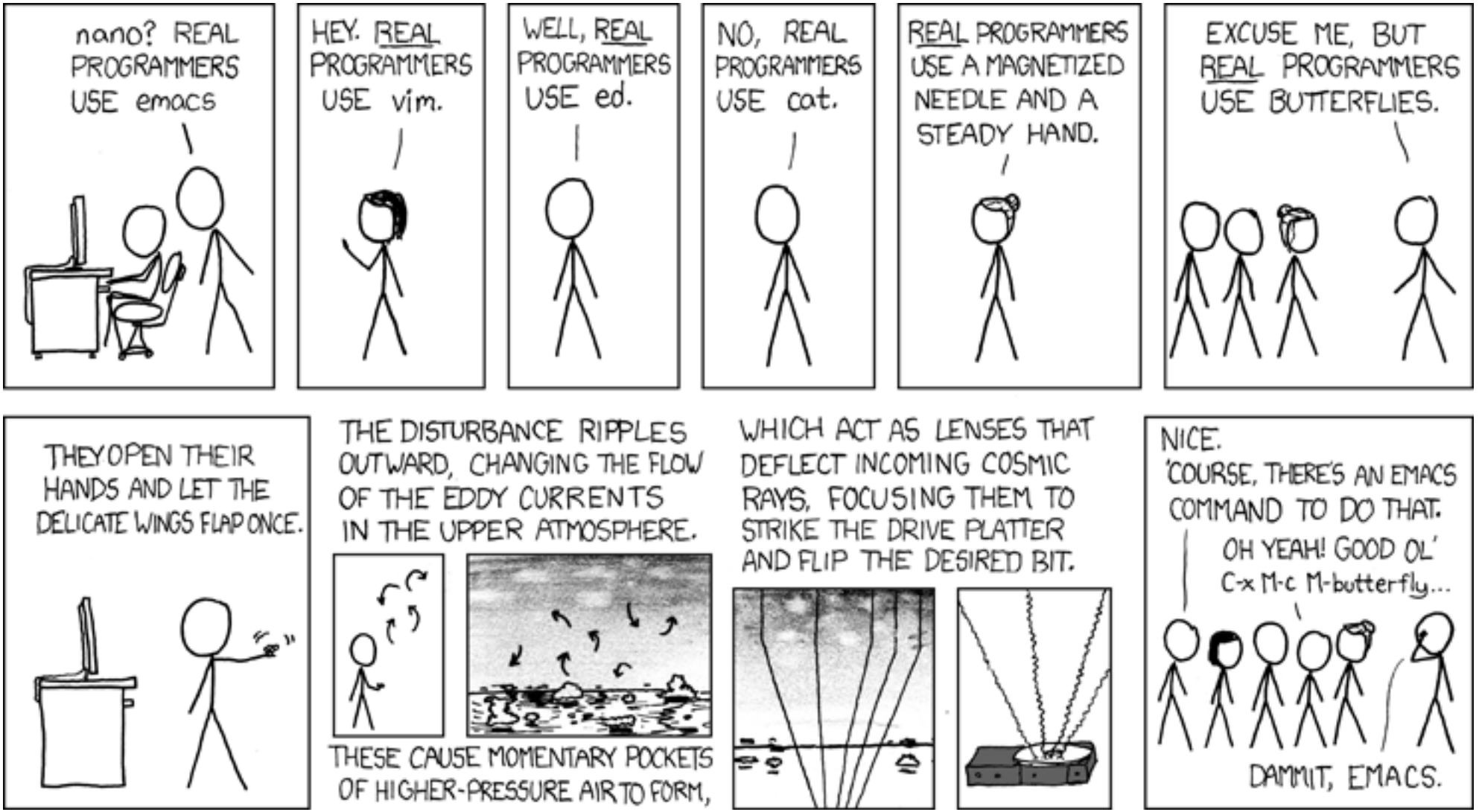
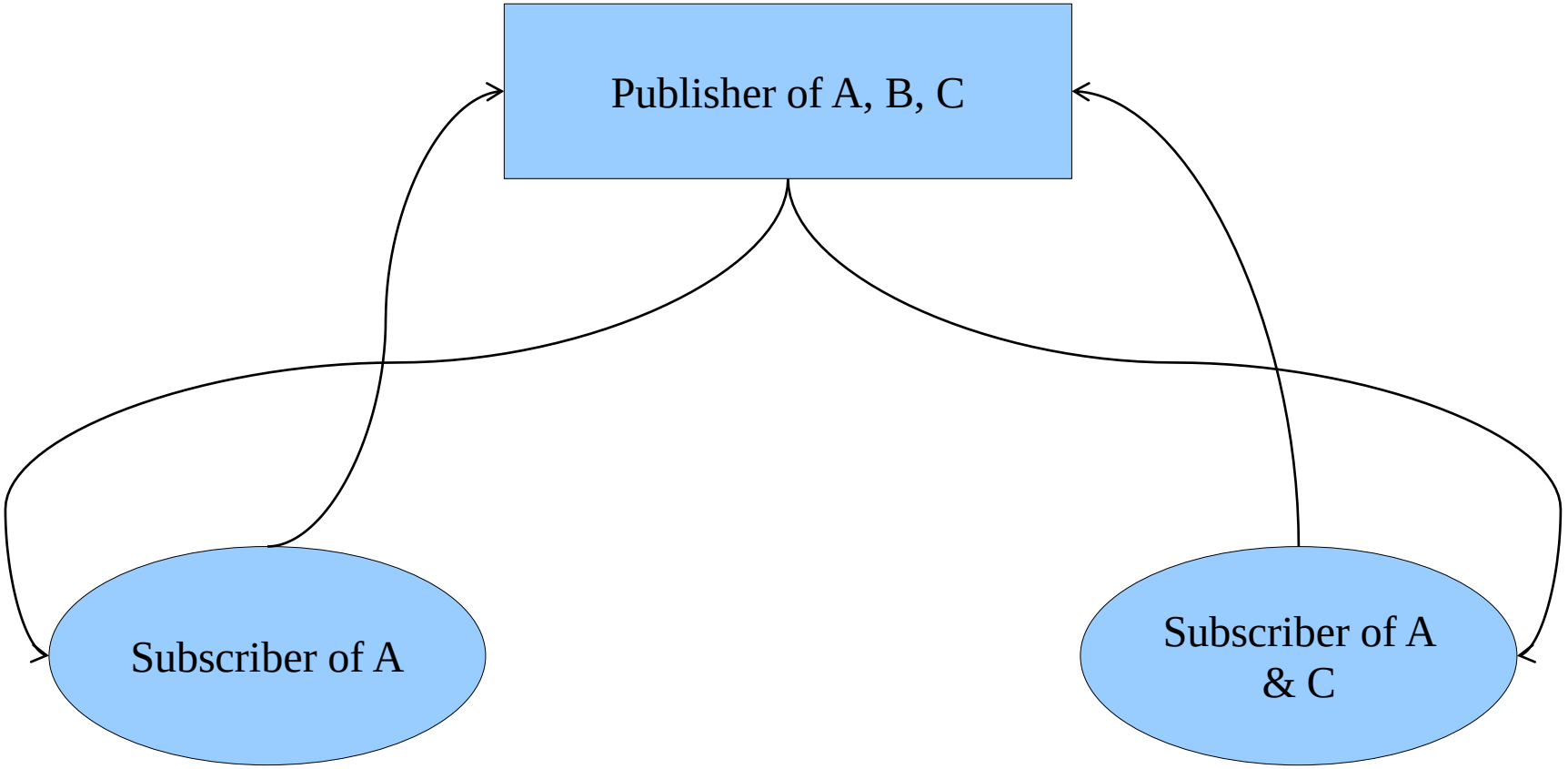
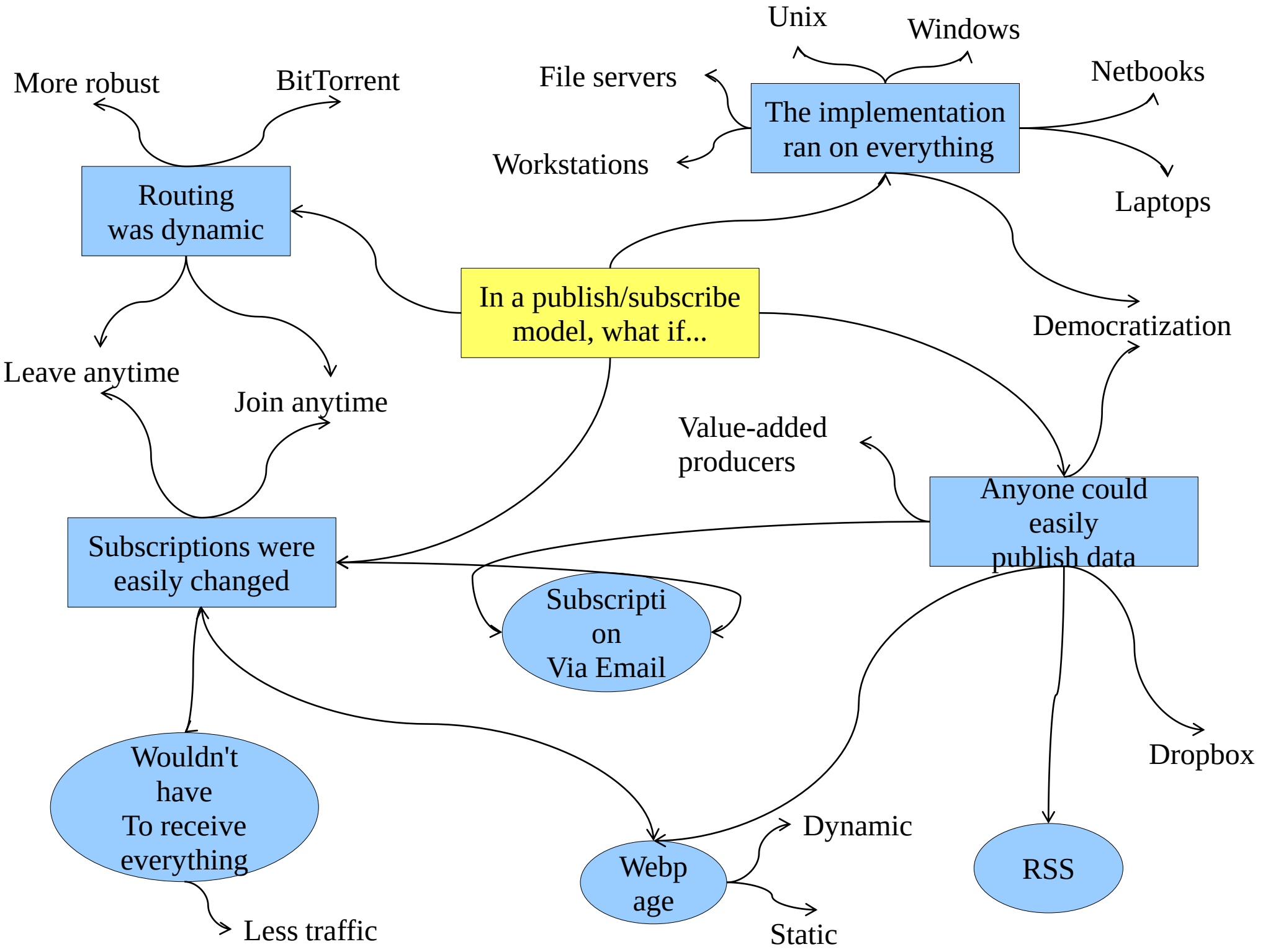
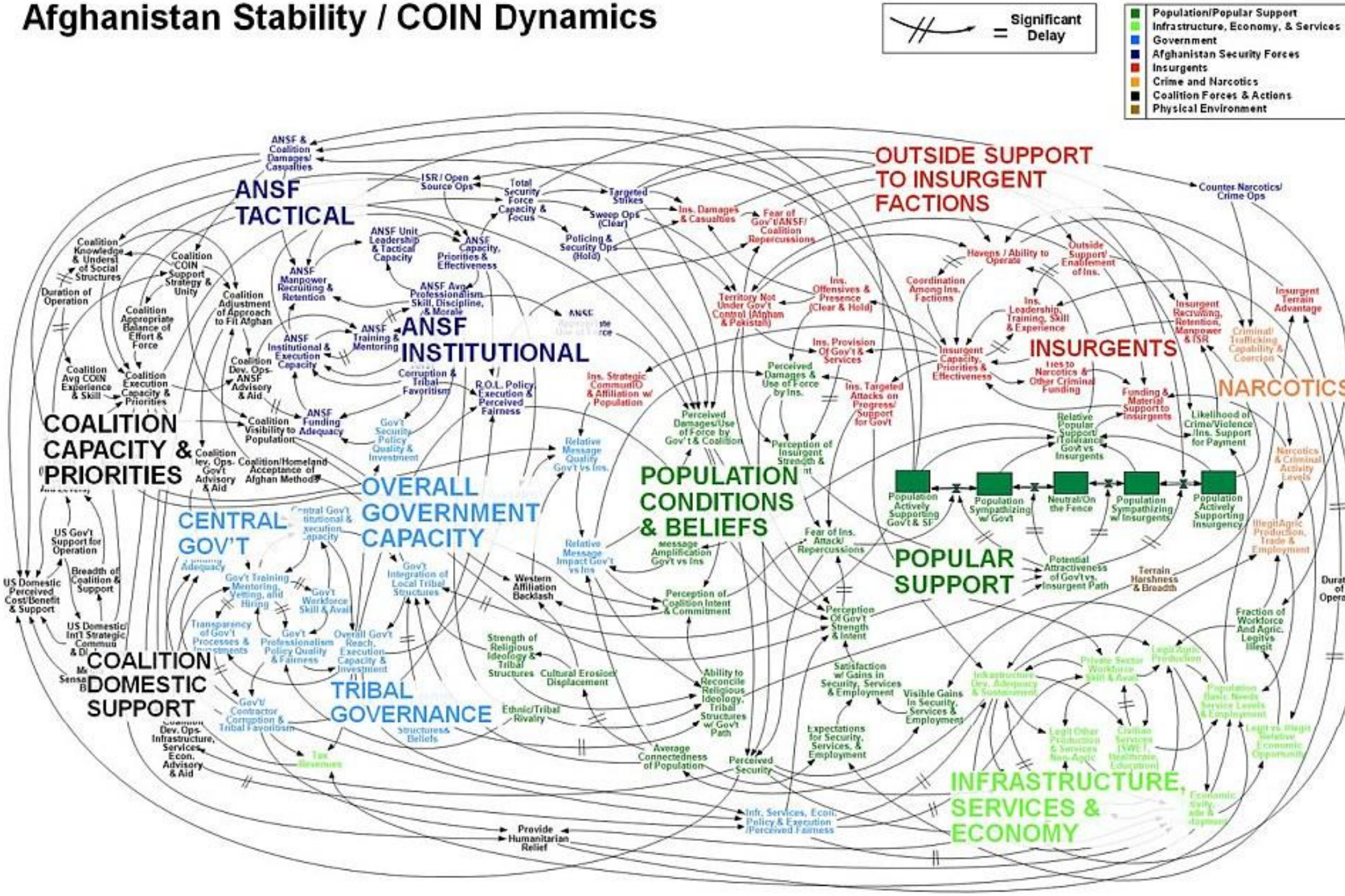

nano? REAL PROGRAMMERS USE emacs
HEY. REAL PROGRAMMERS USE vim.
WELL, REAL PROGRAMMERS USE ed.
NO, REAL PROGRAMMERS USE cat.
REAL PROGRAMMERS USE A MAGNETIZED NEEDLE AND A STEADY HAND.
EXCUSE ME, BUT REAL PROGRAMMERS USE BUTTERFLIES.
THEY OPEN THEIR HANDS AND LET THE DELICATE WINGS FLAP ONCE.
THE DISTURBANCE RIPPLES OUTWARD, CHANGING THE FLOW OF THE EDDY CURRENTS IN THE UPPER ATMOSPHERE.
THESE CAUSE MOMENTARY POCKETS OF HIGHER-PRESSURE AIR TO FORM,
WHICH ACT AS LENSES THAT DEFLECT INCOMING COSMIC RAYS, FOCUSING THEM TO STRIKE THE DRIVE PLATTER AND FLIP THE DESIRED BIT.
NICE.
'COURSE, THERE'S AN EMACS COMMAND TO DO THAT.
OH YEAH! GOOD OL' C-x M-c M-butterfly...
DAMMIT, EMACS.

Publish/Subscribe Model




Unix
Windows
File servers
Netbooks
More robust
BitTorrent
The implementation ran on everything
Workstations
Laptops
Routing was dynamic
In a publish/subscribe model, what if...
Democratization
Leave anytime
Join anytime
Value-added producers
Anyone could easily publish data
Subscriptions were easily changed
Subscription Via Email
Wouldn't have To receive everything
Dropbox
Webpage
Dynamic
RSS
Static
Less traffic

Afghanistan Stability / COIN Dynamics



WORKING DRAFT – V3

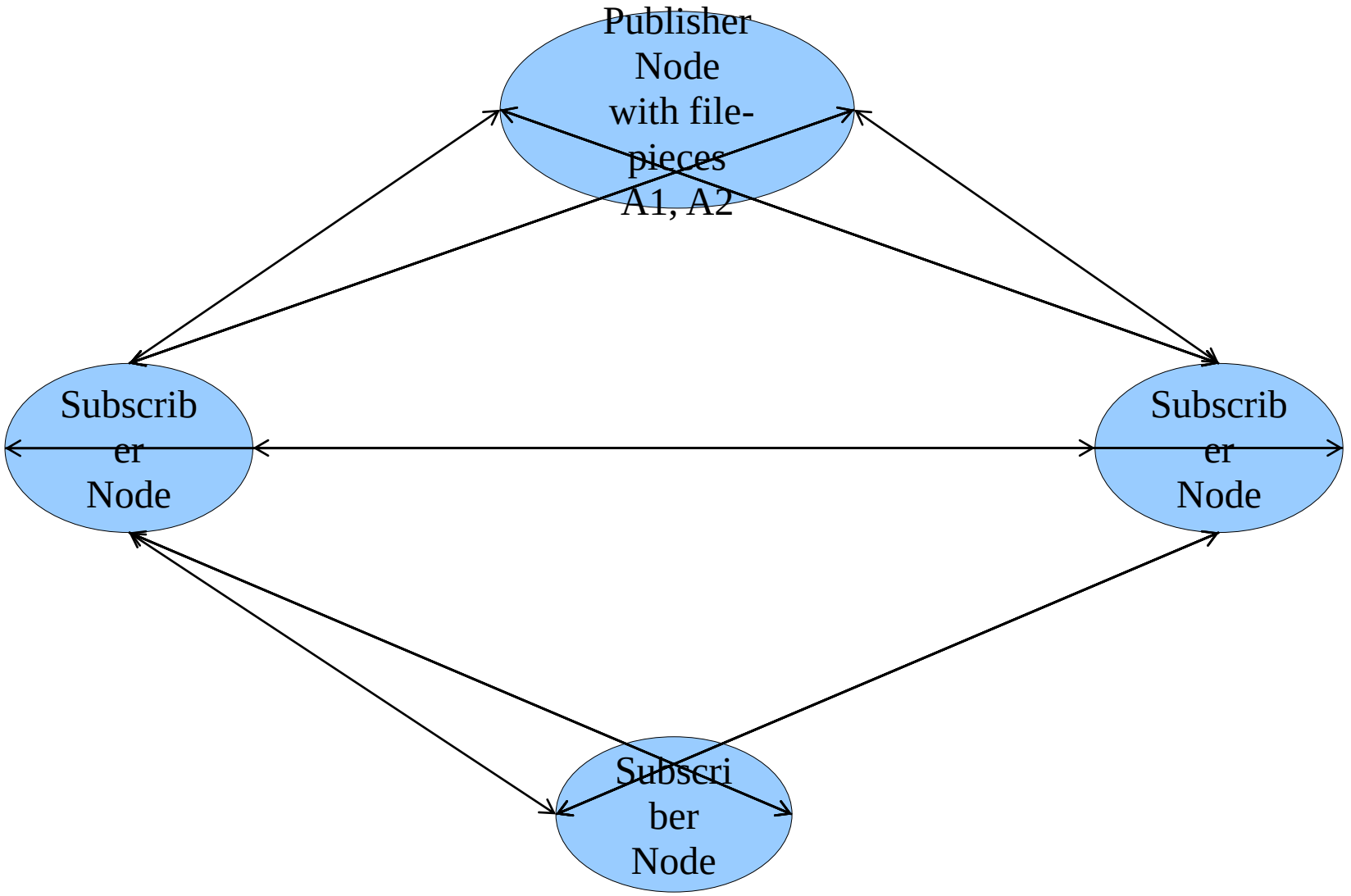
Organize Data Products into Files

- For example:
  - NOAA/NCEP/NAM/20100607/12/06/SurfacePres.nc
  - NOAA/ROC/level2/KFTG/20100607/RadialVel/1345.nc
- Allows subscriptions based on globbing, e.g., “NOAA/ROC/level2/**”
- Problematical for numerous small data-products (e.g., WMO bulletins)?

Break Files into Pieces

- Piece-size set by publisher
- Default size about 128 kilobytes

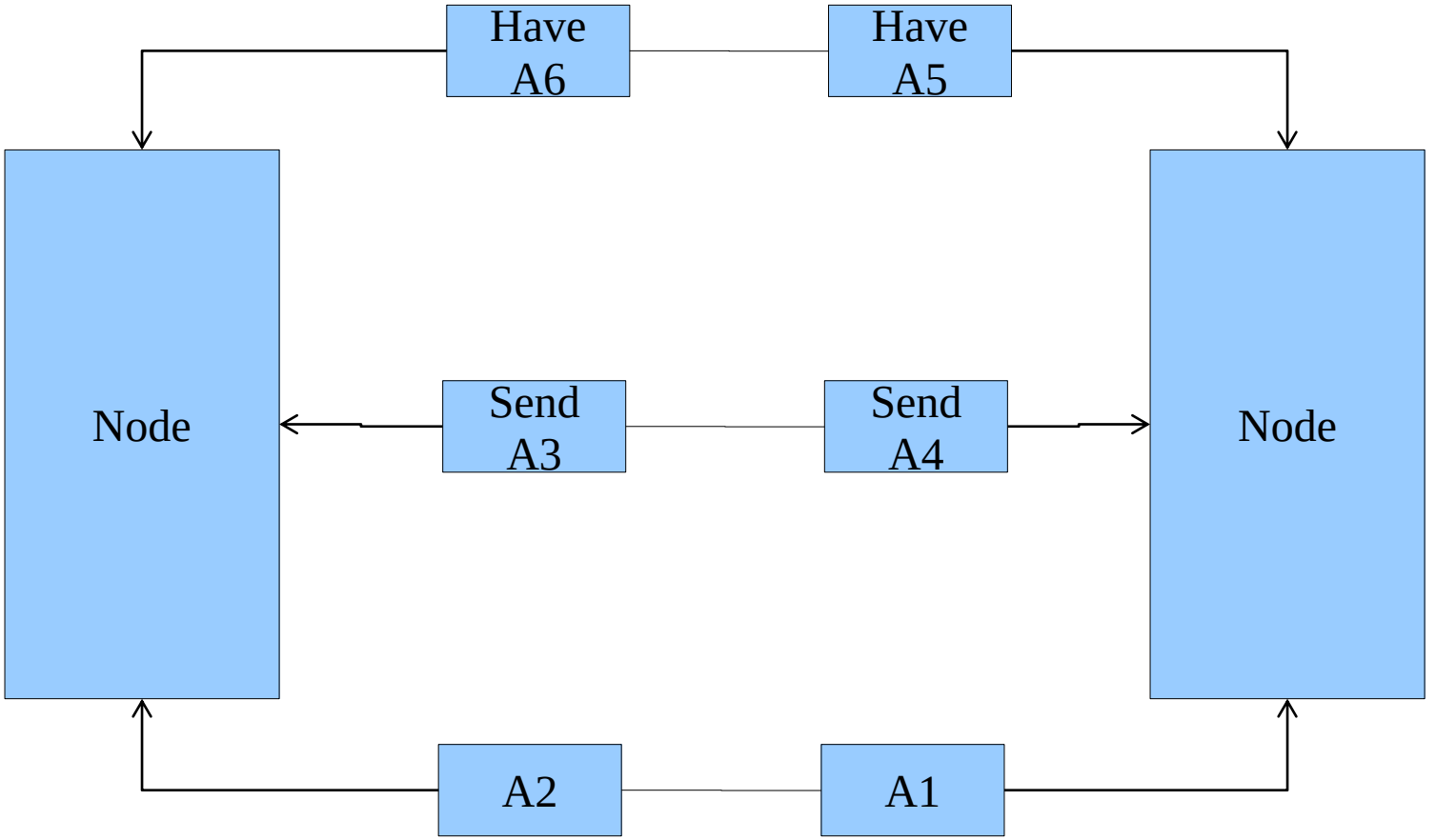
BitTorrent-Like Dynamic Routing



Advantages & Disadvantages

- Advantages
  - Very robust in the face of network congestion and node outages
  - Automatic load balancing on the node connections
- Disadvantages
  - Tripling of latency (from 50 ms to 150 ms, for example) on each node-to-node connection

High Throughput Despite Additional Latency due to Multiple Asynchronous Connections



Dropbox Like Simplicity

- Subscriber-nodes are notified when a file (i.e., product) on the publisher-node is
  - Created
  - Removed
- All a publisher has to do is add and remove files from a file-tree

Tracker

- Run by the publisher
- Contacted by a subscriber-node to discover other nodes
- Keeps track of subscriber-nodes and their subscriptions
- Similar to BitTorrent (except for subscriptions rather than single files)
- Single point of failure (duh!)

Technology Details

- Java 7 (need `java.nio.file` for watching file-trees)
- Highly multi-threaded

When Done?