Summary Points (mostly)

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FAIR is winning

- Easy to say, connotes a lot
- Harder to operationalize
  - For machines
    - Formats
    - Standards
    - …
  - For humans
    - Incentives
    - Trust
    - Training
    - …
- Need models, best practices, lessons learned, etc.

Cultural Differences in Science(s)

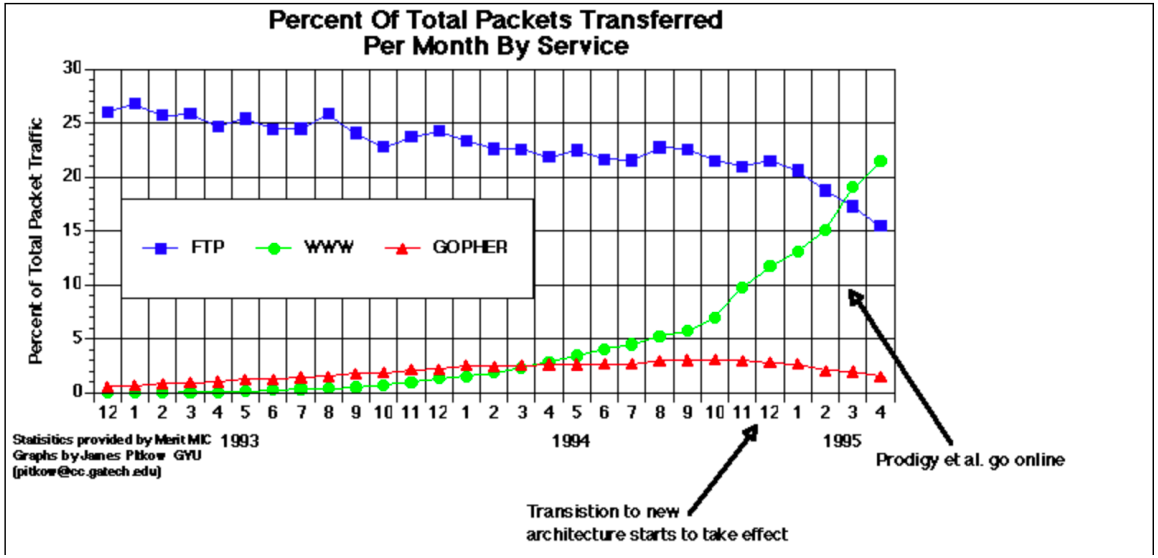
- In most countries, including US, over half of research funding comes from “health” (life sciences)
  - What about everyone else
- Biologists hate to admit it, but culturally biology is different from many other disciplines
  - (as is true for any other discipline in the above)
  - Astronomy, culture of sharing, lots of open data
  - Manufacturing, sharing materials information (common) but not process/device information (IP)
  - Etc, etc. etc
- Infrastructure to span disciplines must span cultures
  - Cultural change even harder than technological change
  - But technology change can drive cultural change (cf. WWW)

The big challenges are INTERDISCIPLINARY

- Example climate science
  - Best models span disciplines
  - People live in different departments at different universities
  - But compelling scientific challenge forcing function for people to work together
    - Created incentives
- Funding is still largely by discipline
  - Infrastructure for cross-discipline work: expensive
  - Infrastructure for interdisciplinary work: priceless
- Short- to mid- term solutions likely to require interoperability between discipline-funded efforts
  - But see previous slide: cultural differences

Interoperability

- One reason the Web beat its competitors…
  - Gopher
  - Archie
  - FTP
  - …
- Provided a lightweight standard that allowed interoperability between these and more
  - Web was built on “coop-etition”
- How do we learn this lesson for data sharing?



Metadata Is Critical

Data Semantics Challenges

DIVE into data

***D**iscover*

***I**ntegrate*

***V**alidate*

***E**xplain*

These needs live outside traditional data/info architectures

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