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

*Discover*

*Integrate*

*Validate*

*Explain*

These needs live outside traditional data/info architectures
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