Federal Support for Bio-Informatics

Robert J. Robbins
Bioinformation Infrastructure Program
U.S. Department of Energy, ER-72 (GTN)
Washington, DC 20585

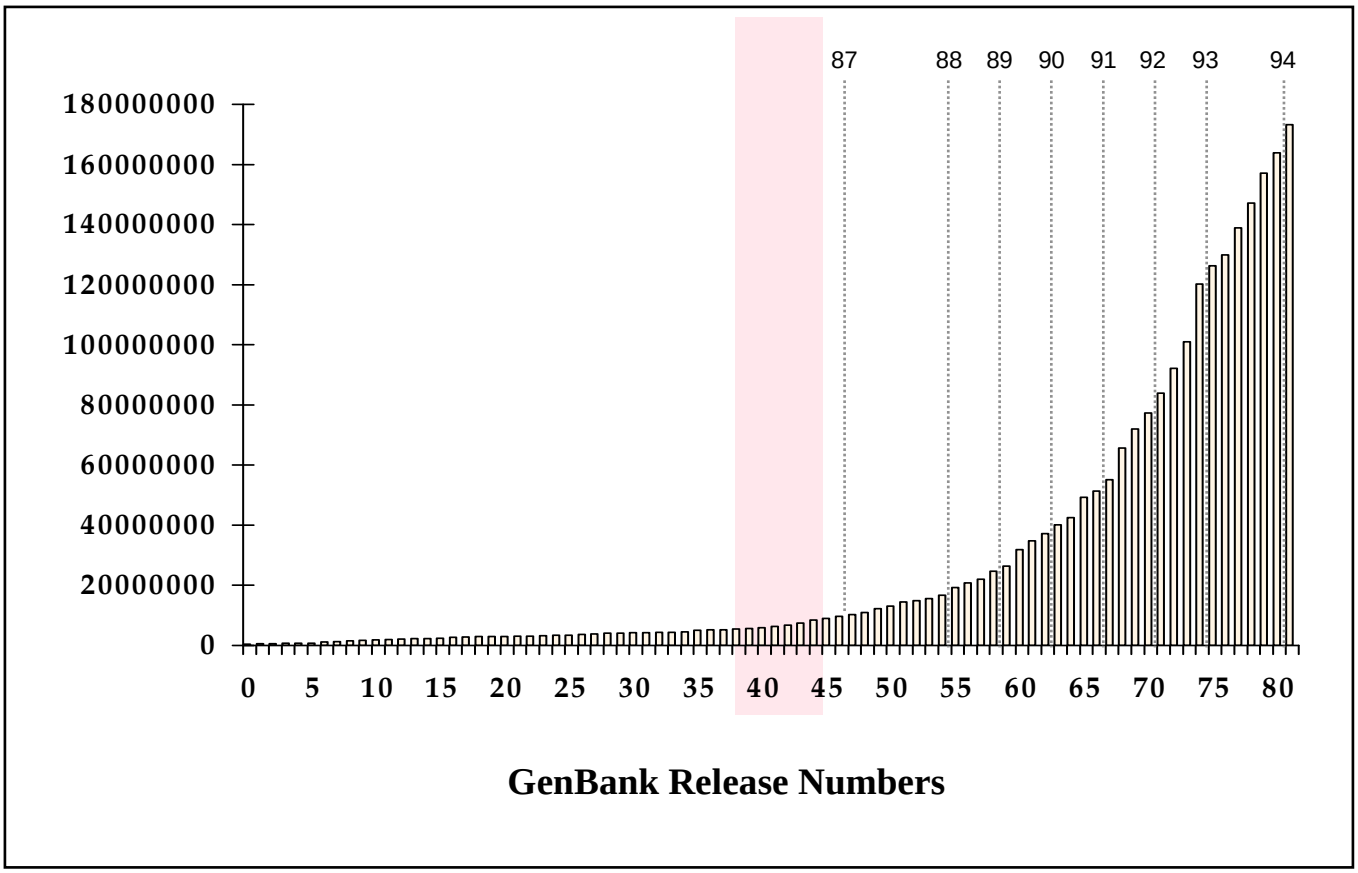
robbins@er.doe.gov
(301) 903 6488

Infrastructure and the HGP

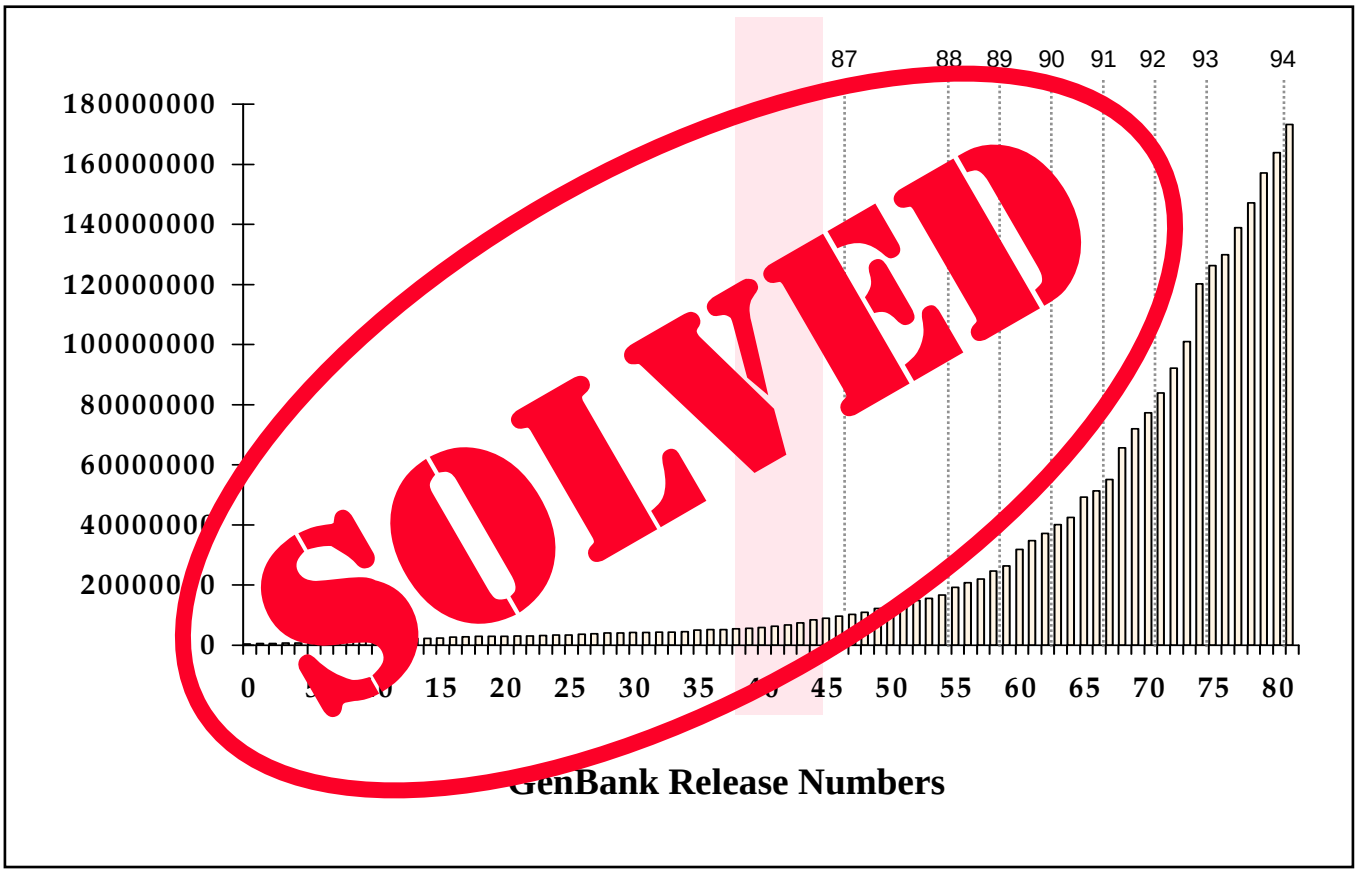
Progress towards all of the [Genome Project] goals will require the establishment of well-funded centralized facilities, including a stock center for the cloned DNA fragments generated in the mapping and sequencing effort and a data center for the computer-based collection and distribution of large amounts of DNA sequence information.

National Research Council. 1988. *Mapping and Sequencing the Human Genome*. Washington, DC: National Academy Press. p. 3

Data Acquisition Crisis



Data Acquisition Crisis



Data Integration Crisis

An embarrassment to the Human Genome Project is our inability to answer simple questions such as:

How many genes on the long arm of chromosome 21 have been sequenced?

Report of the Invitational DOE Workshop on Genome Informatics, 26-27 April 1993, Baltimore, Maryland

Data Integration Goals

Achieve conceptual integration of genome data.

Provide technical integration of both data and analytical resources to facilitate conceptual integration.

Data Integration Impediments

Technical: Integrating distributed, heterogeneous databases is not easy.

Sociological: Local incentives encourage competition, not cooperation.

Conceptual: Semantic mismatches exist among databases.

The Vision

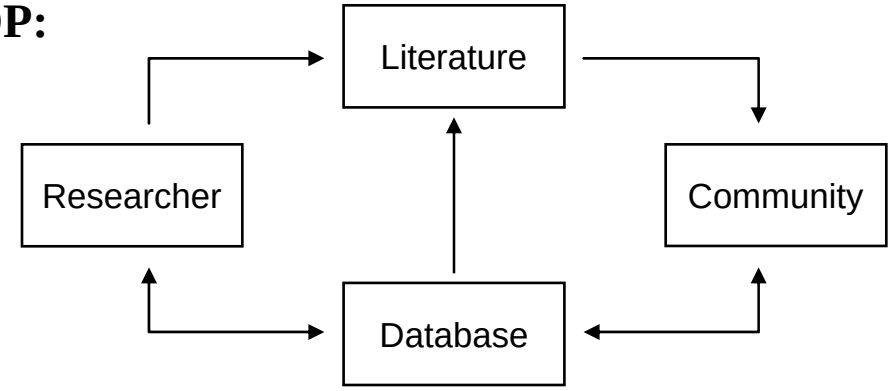
We must begin to think of the computational infrastructure of genome research as a federated information infrastructure of interlocking pieces.

Report of the Invitational DOE Workshop on Genome Informatics, 26-27 April 1993, Baltimore, Maryland

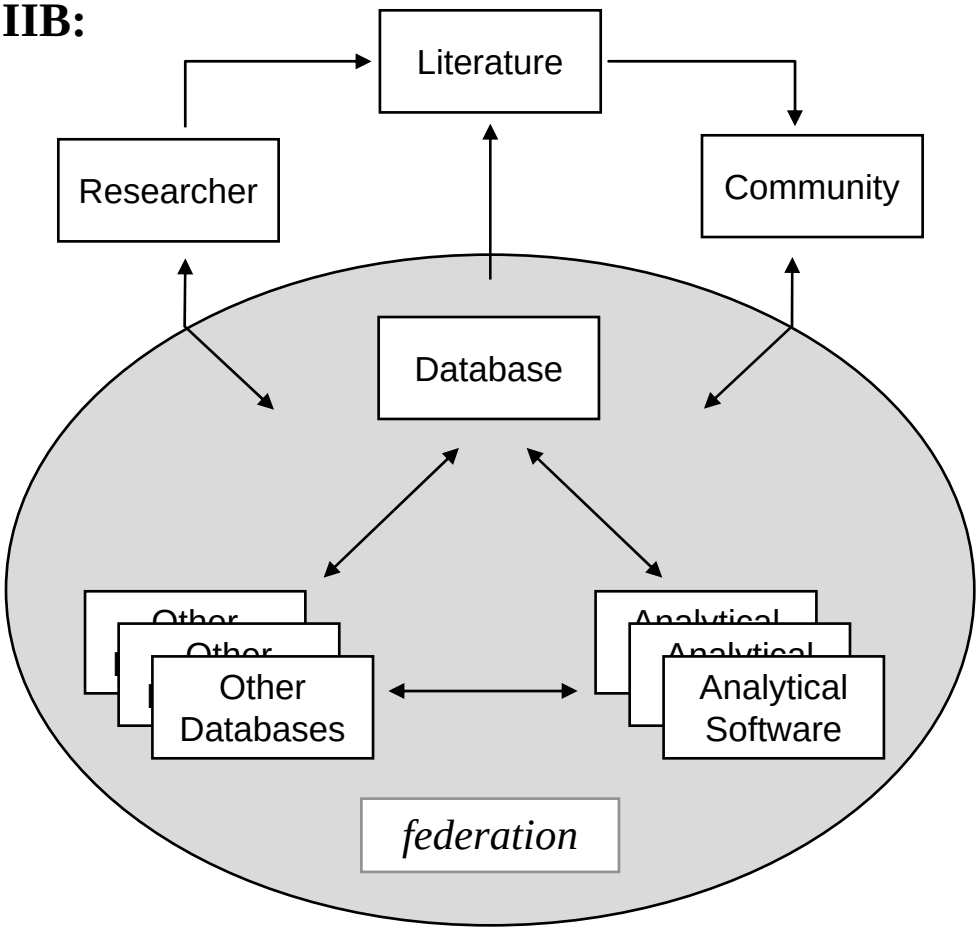
Federated Information Resources

Data Publishing

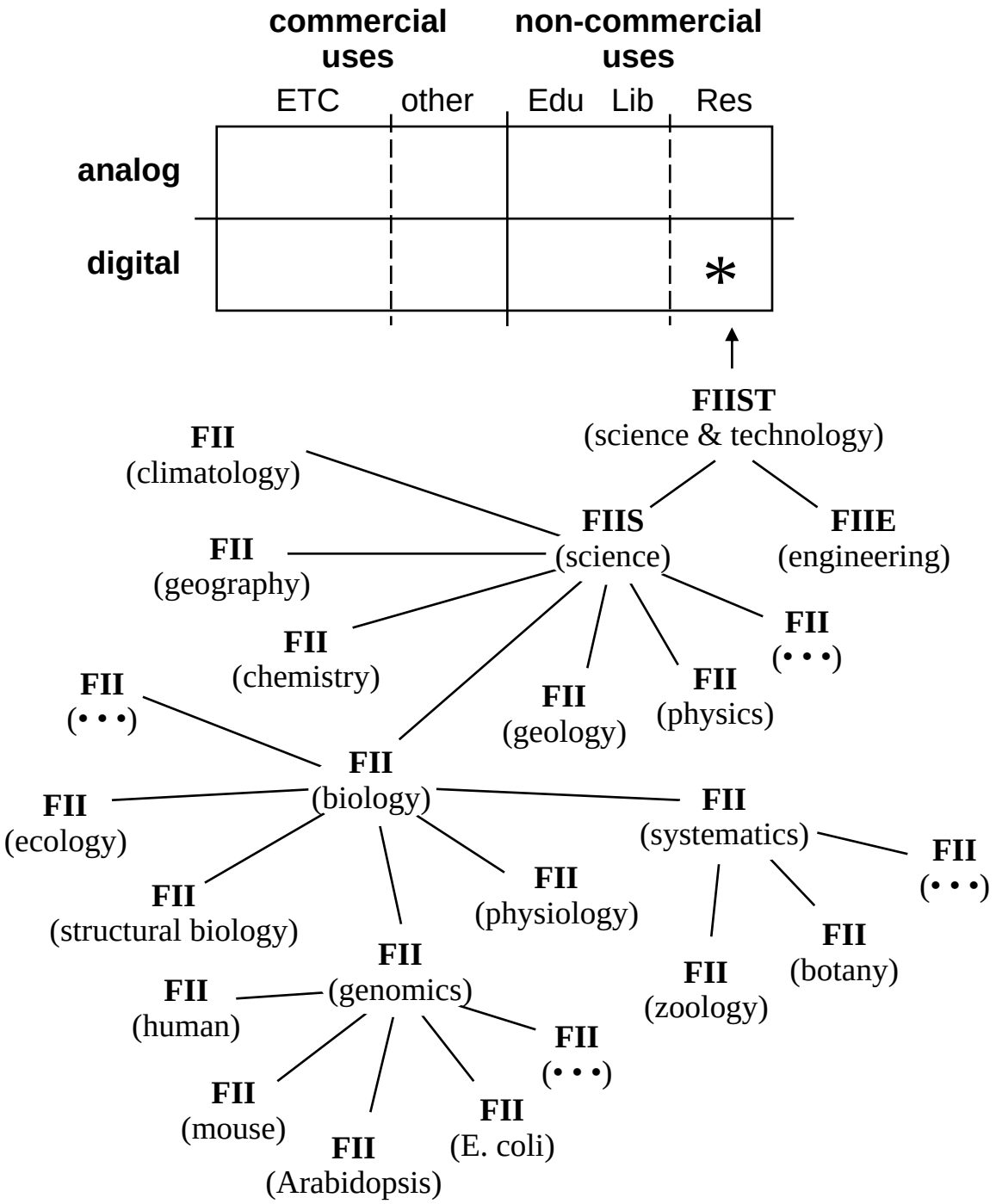
EDP:



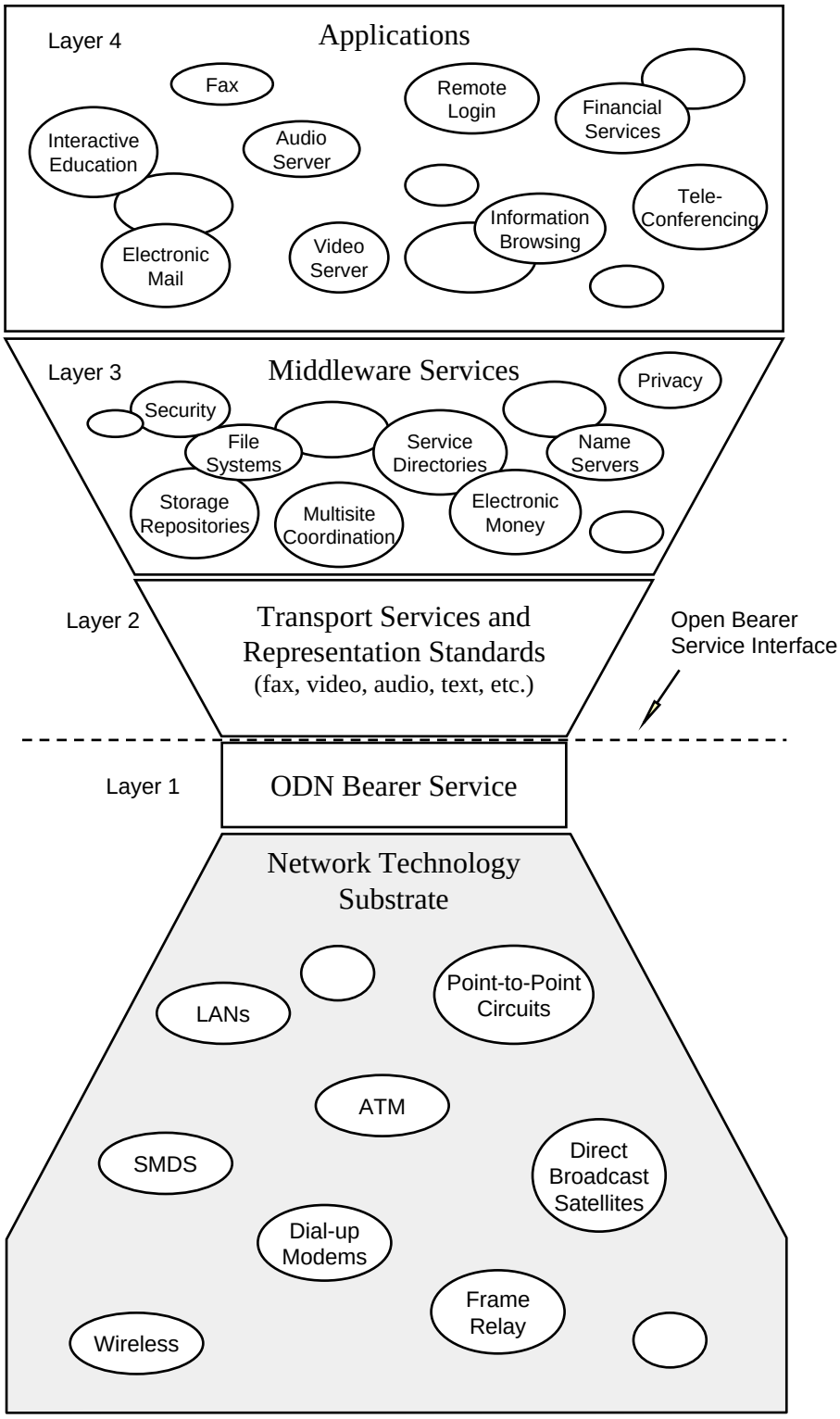
FIIB:



National Information Infrastructure



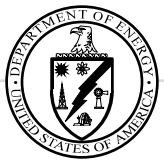
Open Data Model



Federal Funding of Databases

Stand-alone Criteria:

- Is there a need?
- Will this meet the need?
- Can they do it?
- Is it worth it?



Federal Funding of Databases

Global Criteria:

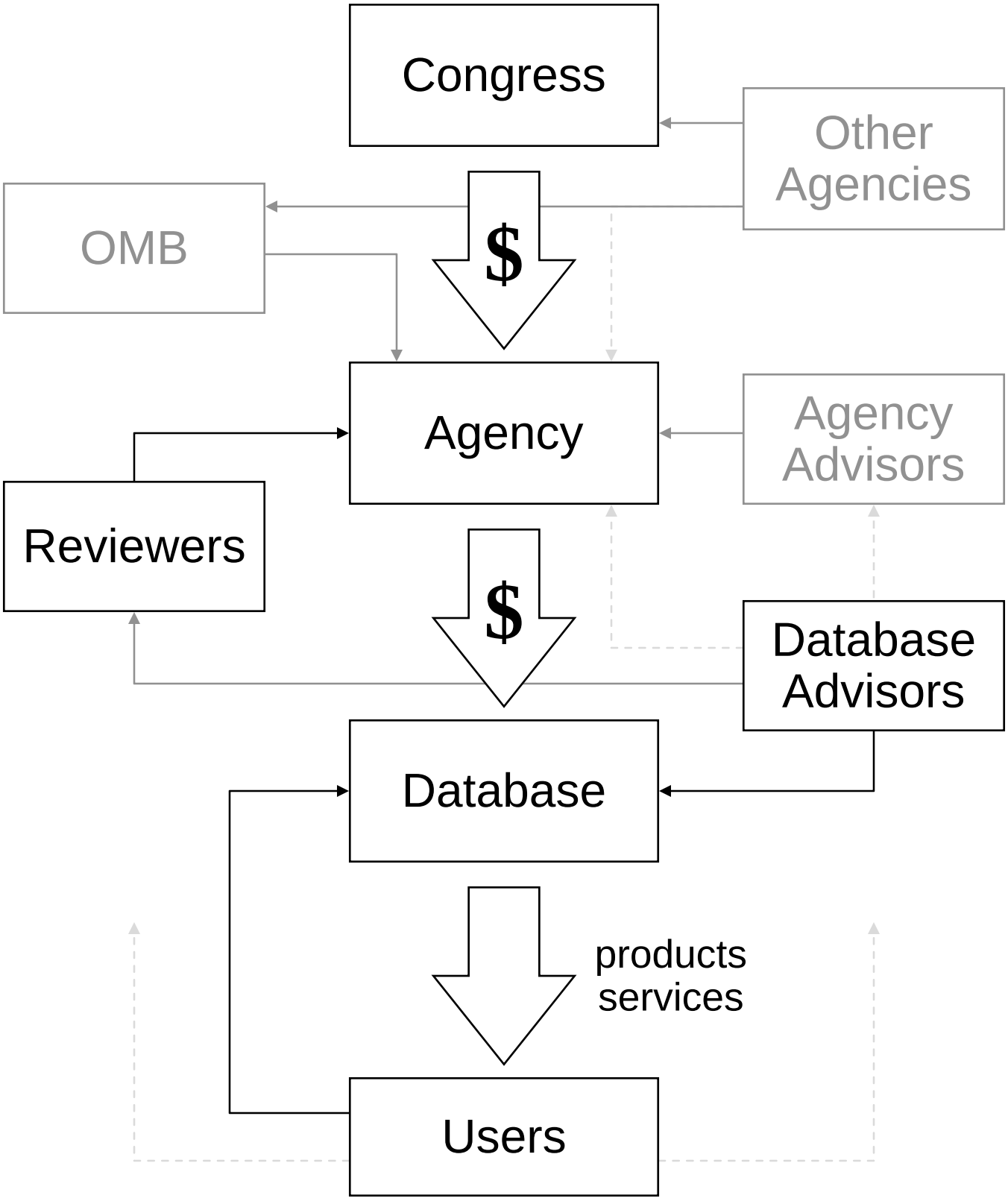
- Does it adhere to standards?
- Will it interoperate?
- Is there commitment to federation?
- Is it worth it?

Information Resources and the NII

Guiding Principles:

- Global value explosion
- Componentry
- Anonymous interoperability
- Technical scalability
- Social scalability
- Value additivity

Federal Funding of Databases



Availability of Slides

http://www.gdb.org/rjr/fed-fund.pdf