Beacon Network: A System for Global Genomic Data Sharing

Motivation

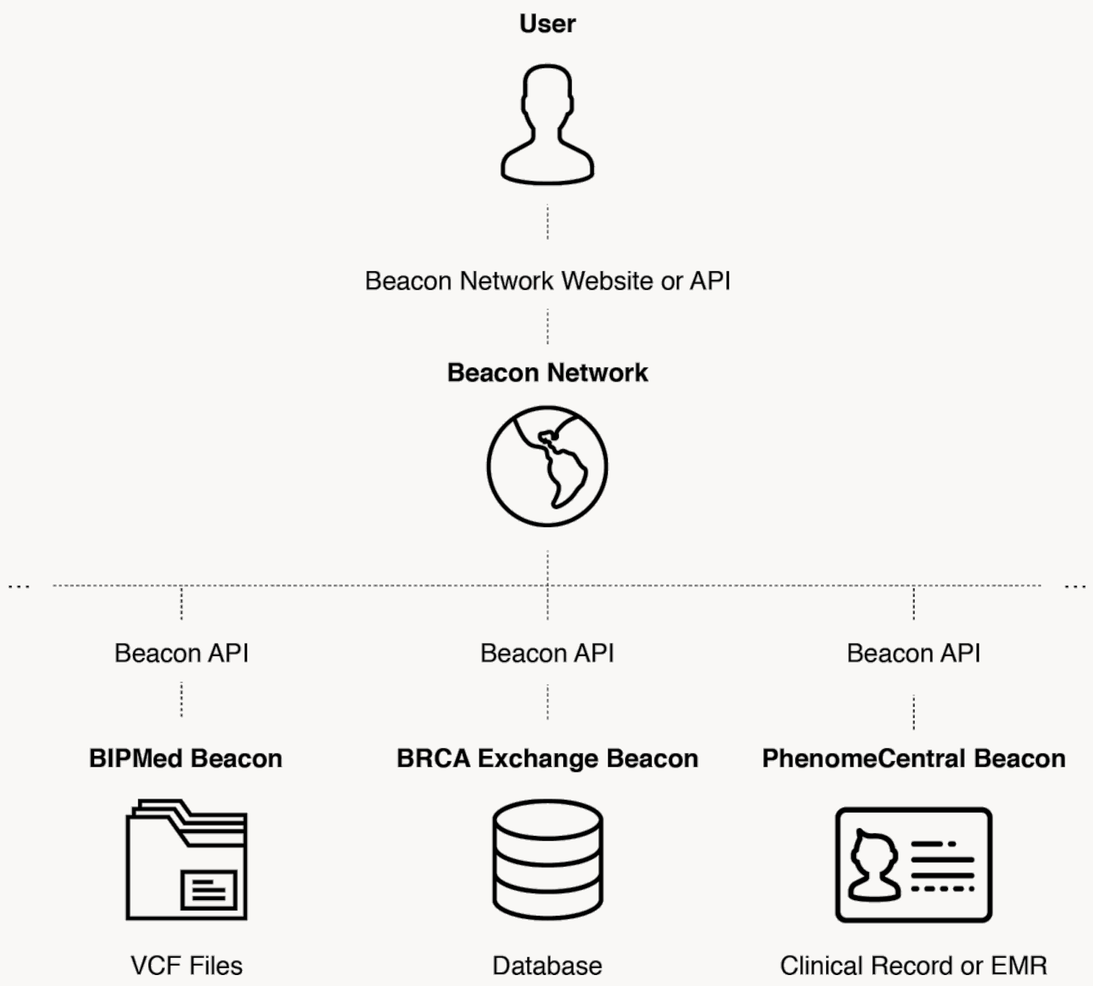
- Analysis of large volumes of genomic data has the potential to drive discoveries and applications in medicine.
- No institution has enough resources to capture all human variation.
- A global federated network of shared genomic data is needed.

Beacon

- Standard defining a web service for discovery and sharing of information about alleles.
- API:
  - Request: *Do you have information about this mutation?*
  - Response: *Yes/No (and optionally additional information).*
- Initiative of the Global Alliance for Genomics & Health.
- More information: https://ga4gh.org/#/beacon.

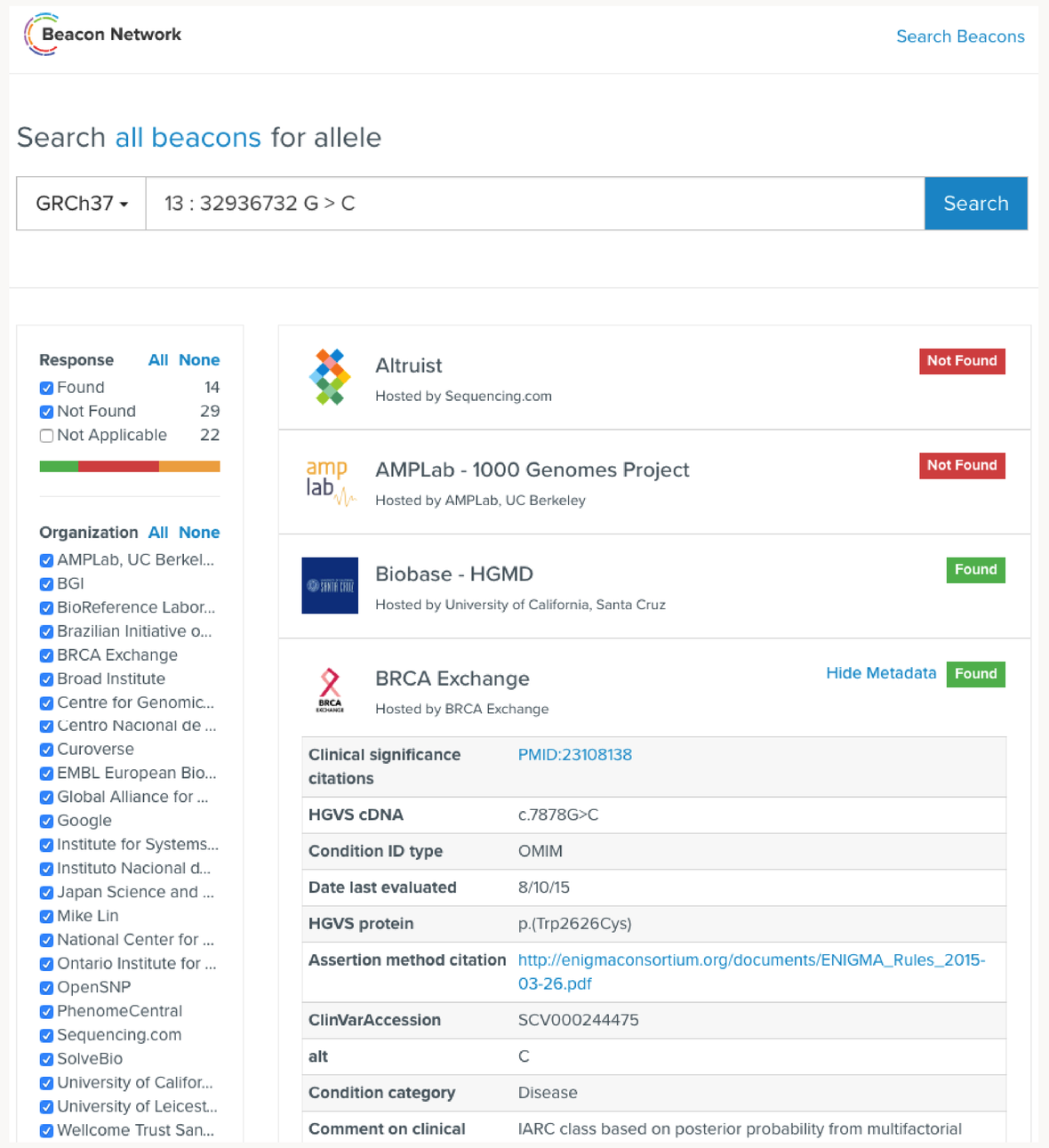
Beacon Network

- Search engine across the world's beacons.
- Translates genomic queries for each beacon, intelligently distributes the queries through the network, and aggregates the results.
- API:
  - Request: *Who has information about this mutation?*
  - Response: *List of beacons and their responses.*



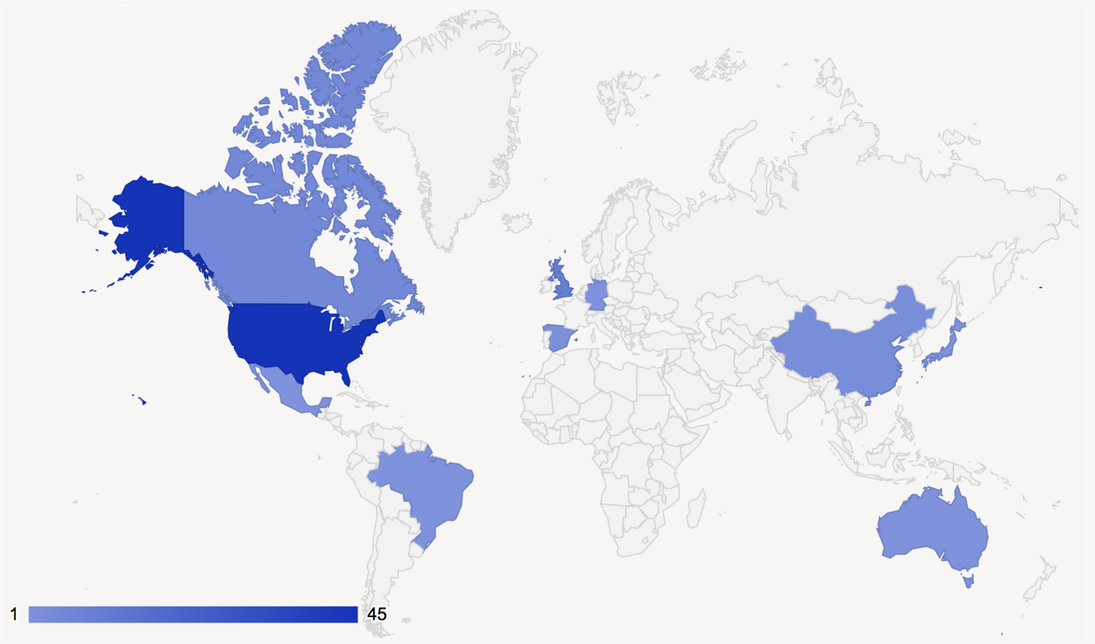
- Provides REST API, web client, command line client, query library, compatible beacon implementations in multiple programming languages, and adapters for various sources of genomic data.
- More information: http://beacon-network.org.

User interface

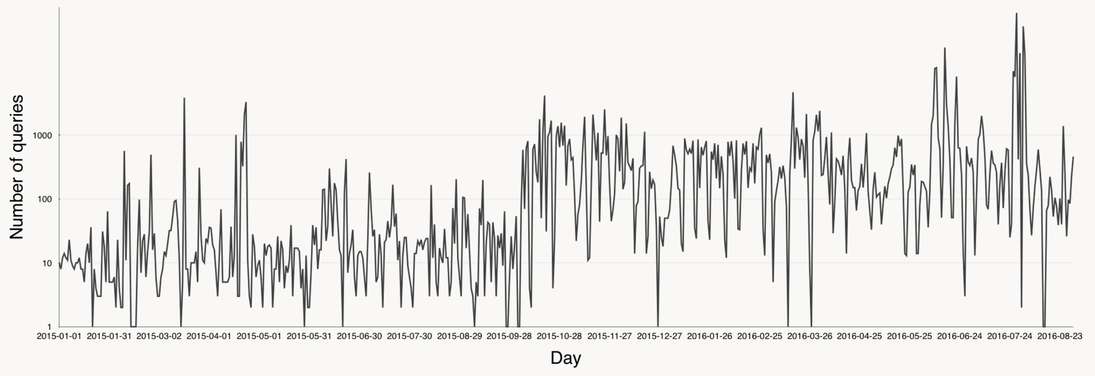


Adoption

- 25+ of the world's top genomic organizations, 60+ beacons.



- Served 400K+ queries from 6K+ users in 100+ countries, resulting in 2M+ queries dispatched to the participants of the network.



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