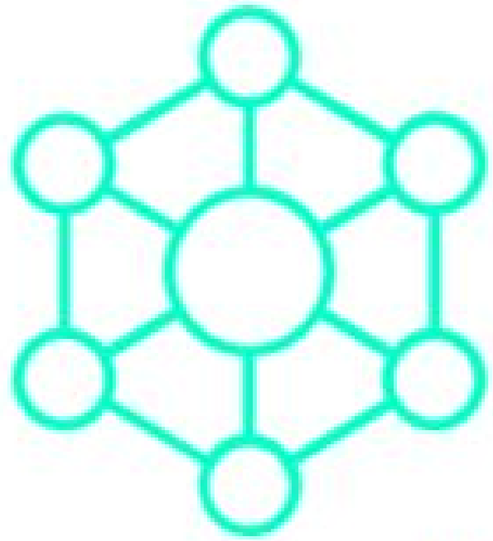


Bramble

A Blockchain Powered Information Sharing Network and Computation Engine

Interoperational Gaps in Today’s Health Data System

Growth of NGS

NGS technologies are creating new collaborative opportunities across all healthcare fields but data sensitivity could lead to ethical challenges for data sharing between institutions and researchers

Data Ownership

The existing initiatives that aim to create an interoperability network for health data sharing are using a centralized approach on how the data are stored, which is less transparent and has full ownership of individual’s data

Confidentiality

Data providers prefer to keep data private with big silos before publications or due to reasons like IP, commercialization, patient data control and regulation, which is against the rapid sharing protocols of NGS

Time and Resources

Since current databases have to withhold release of new data due to confidentiality, the appearance of data available to other researchers have to be delayed and resources can be wasted during this period of time

Mission & Vision

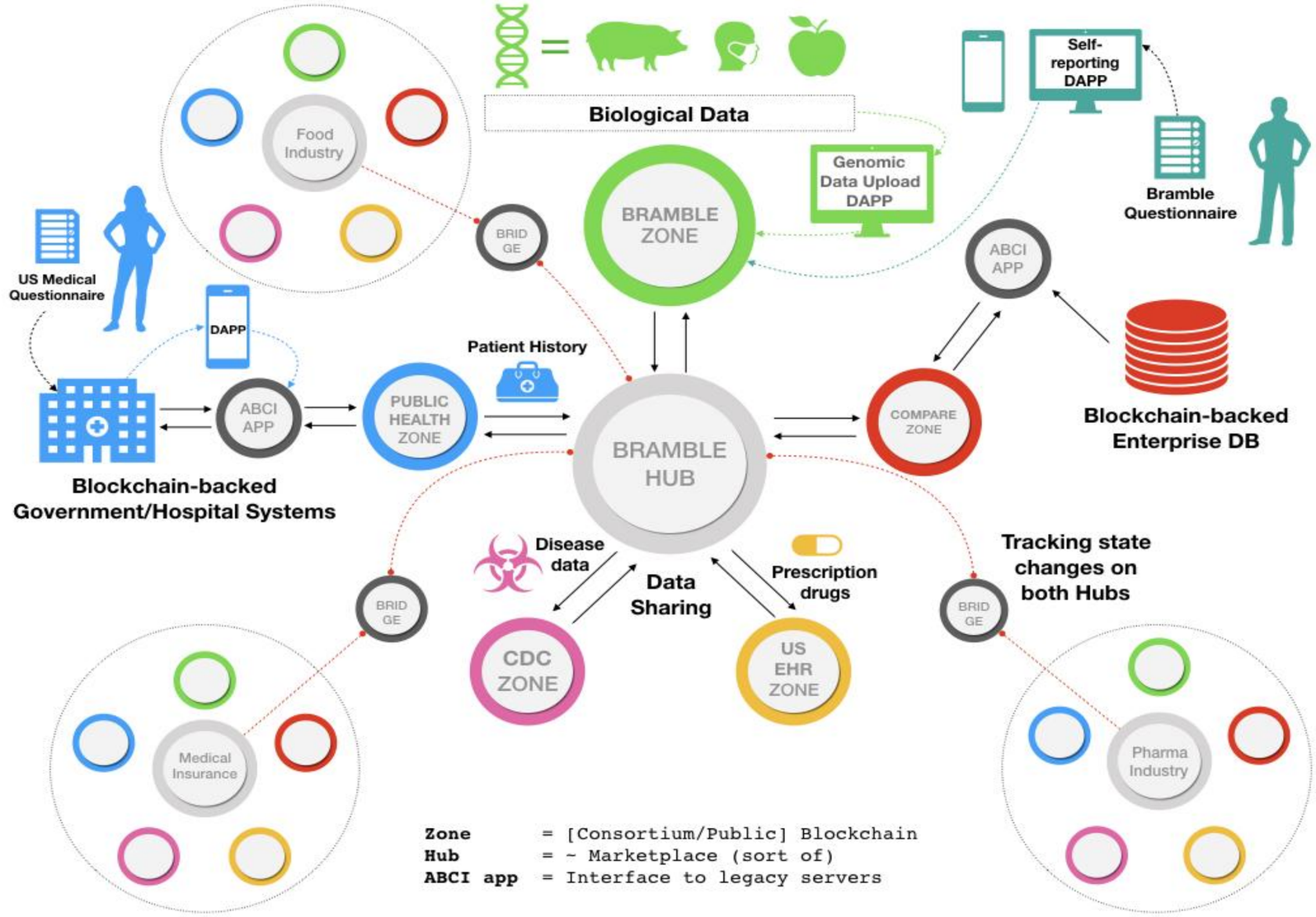
MISSION

We aim to create a marketplace for health data that can be interoperated across different healthcare disciplines and professionals, powered by the Cosmos network.

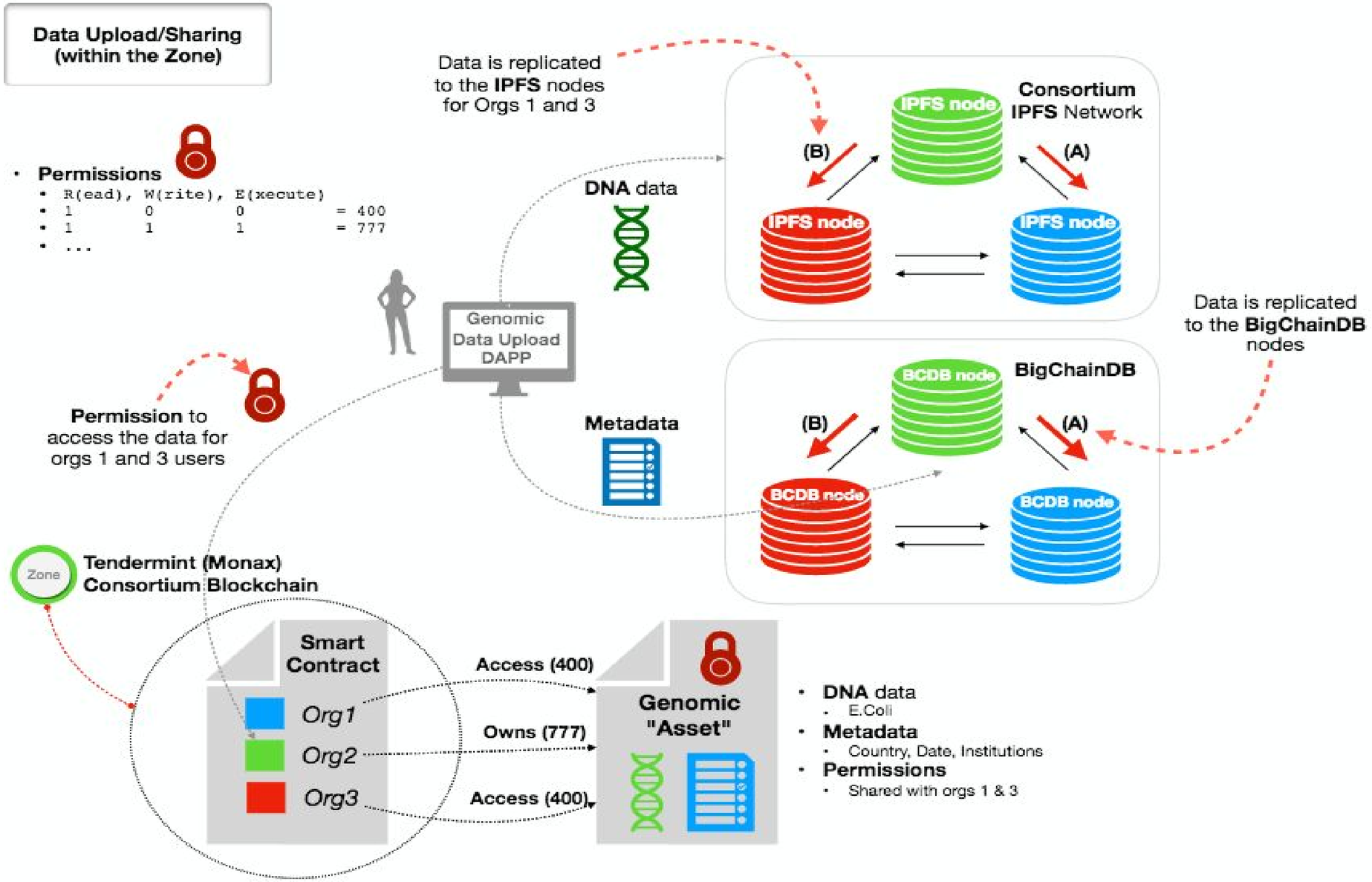
VISION

The Bramble Hub will provide infrastructure for data sharing across healthcare fields and potentially all industries, connecting to other data zones and implementing a governance mechanism to coordinate all participants in the network of a trustless computational environment.

Bramble Hub Overview



Bramble Hub - Interoperability Features



Value Proposition

Decentralized Storage Network

Provides transparency and shared ownership of data

Interoperation between Zones

Researchers from different fields of healthcare can now collaborate more efficiently and effectively

Permission Management

Researchers can join with their current infrastructure but still being able to deal with other players in a trustless way

Real-Time Monitoring

Users access computational data in real time while exchanging data securely

Use Cases

Trustless Data Aggregation

Use aggregated primary source data for experimentation, simulation, and visualization. Aggregated data can be used but not obtained.

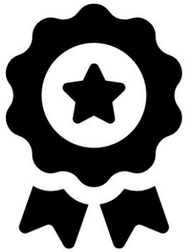
Examples

Research: Sharing of institutional real-world patient genomic data. Data from each institution aggregated in shielded Bramble network. Shielded and anonymized aggregated data can be used for simulation/experimentation without worry of data leakage.

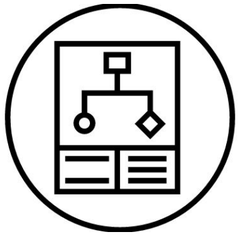
Disease Monitoring: Separate institutions contribute disease information from different data storage types and different networks. Relevant aggregated public health related disease monitoring information can be visualized and accessed on the bramble hub

Business Model

Silver Token Crowdsale



Premium Subscription (Silver Token)

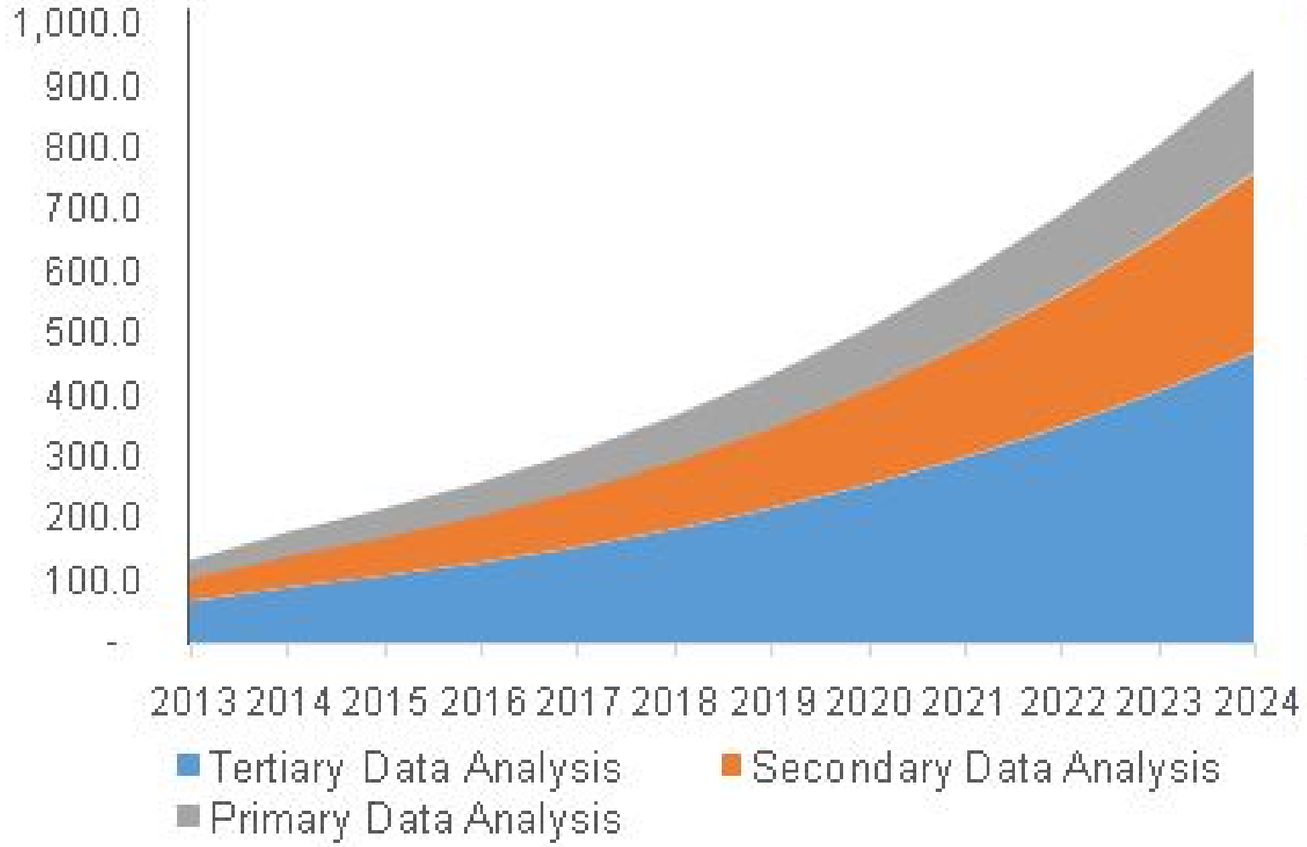


Data to Gold Token Exchange

Token Type	Data Sharing	Analytics	Voting System	Token Transfer
Gold	✔	✔	✔	
Silver	✔	✔		✔

MARKET SIZE

North America NGS data analysis software storage & management market, by workflow, 2013 - 2024 (USD Million)



Market Research Scope

Attribute	Details
Base year used for market estimation	2015
Historic Analysis	Actual data from 2013 to 2015
Forecast	2016 to 2024

Reported by Grand View Research, Inc.

CUSTOMER SEGMENTS

Patients/ Individual Users

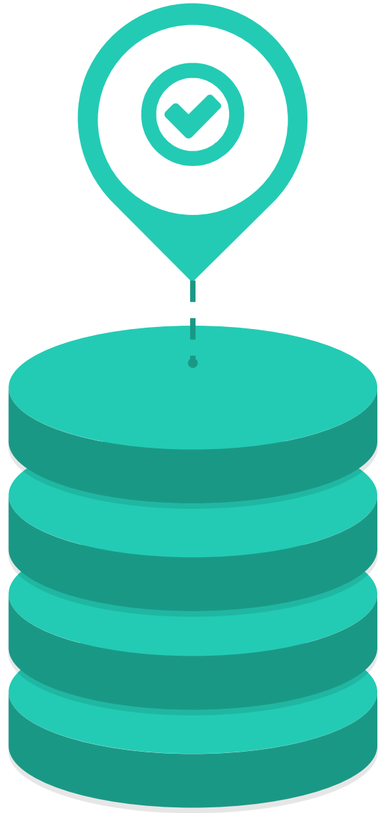
Enables single users to participant in various ongoing research project and get instant token rewards

Small Research Institutions

Helps save time and resources on data gathering

Large Research Institutions

Enables researchers to propose more research questions and projects across more fields



R&D Laboratories

Saves time and resources spent on data gathering across different institutions

Competitive Advantage

- Cross-Source and Multidisciplinary Data
- Allow Release of Siloed Data Without Compromising Privacy
- Oracled Analytics and One Click Automatic Insights
- Easy Search-Driven Experience

PUBLIC HEALTH/CLINICAL DATABASES

MEDLINE®

PubMed

GMI
Global Microbial Identifier

GENOMIC DATABASES

mpare

illumina®

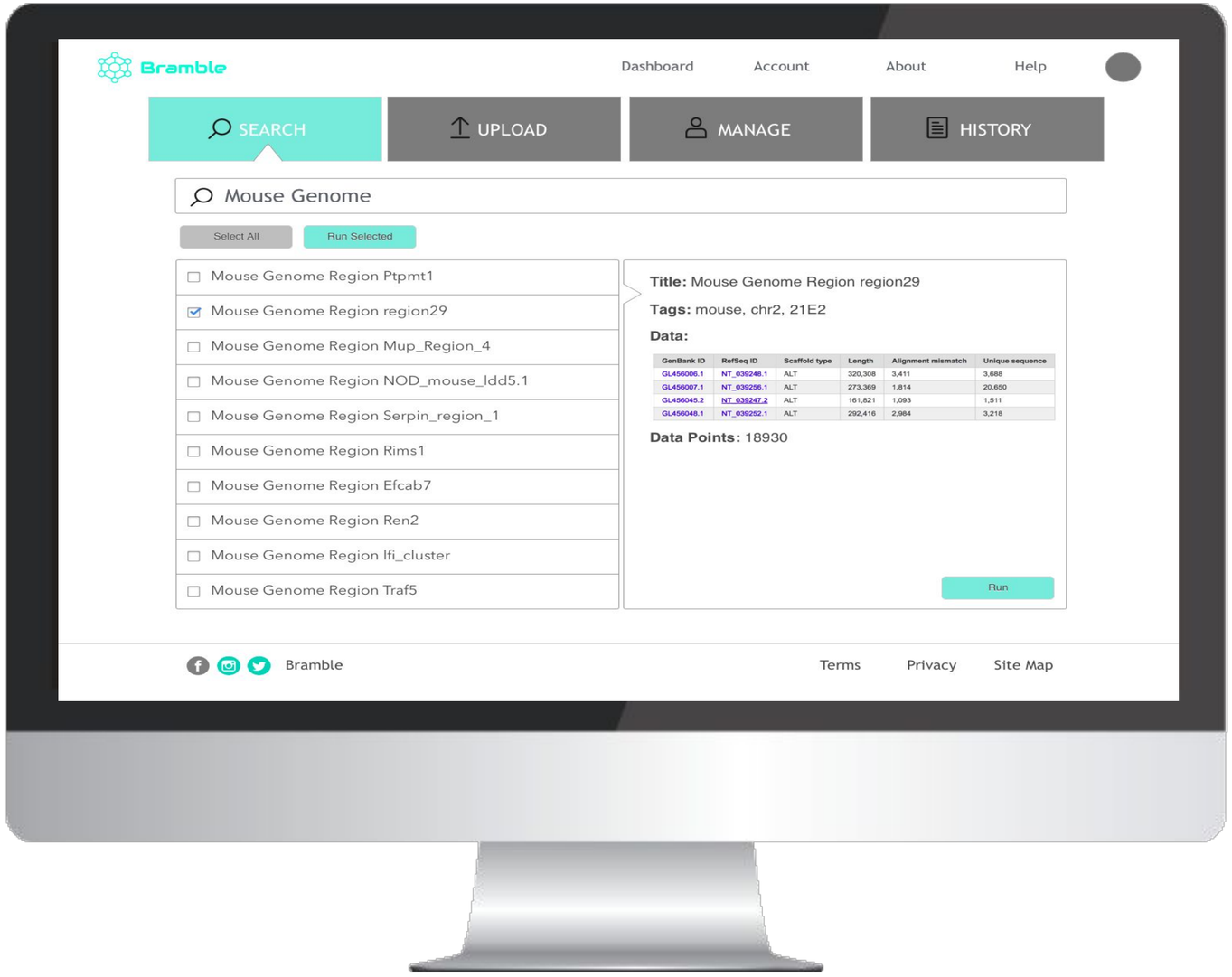
DDBJ
DNA Data Bank of Japan

NCBI

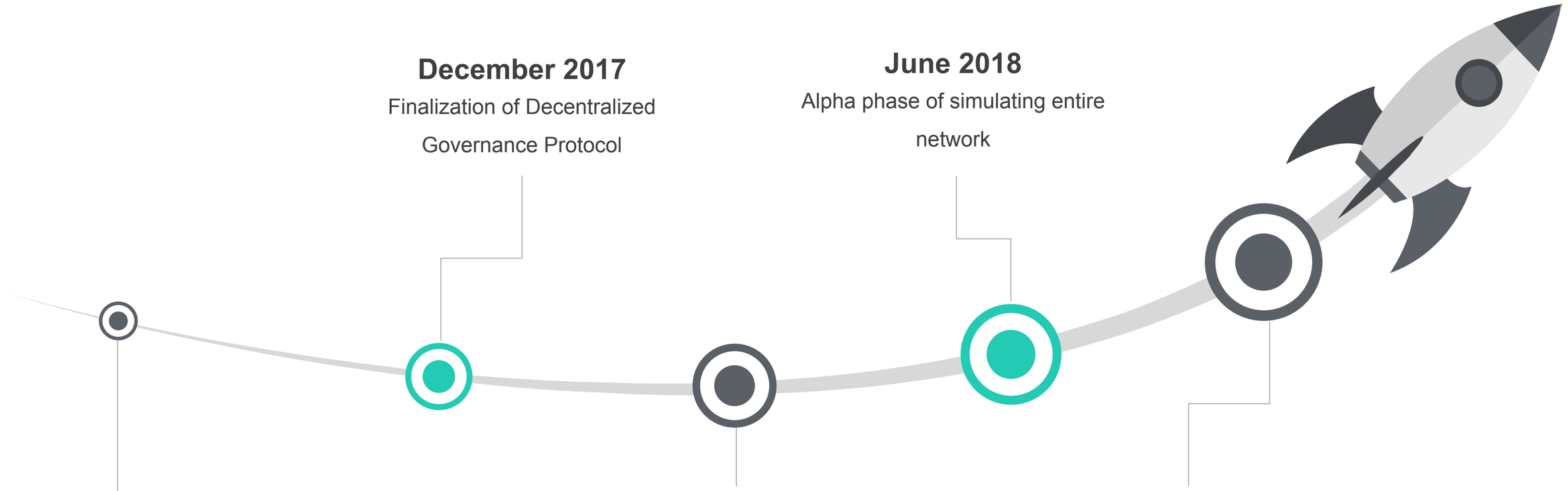
CONGENICA

ENA
European Nucleotide Archive

User Interface



Roadmap



Sept 2017

Bramble team formation BSIC Hackathon

December 2017

Finalization of Decentralized Governance Protocol

February 2018

Creation and Testing phase of Bramble Computation Engine with Automated Audit Mechanism

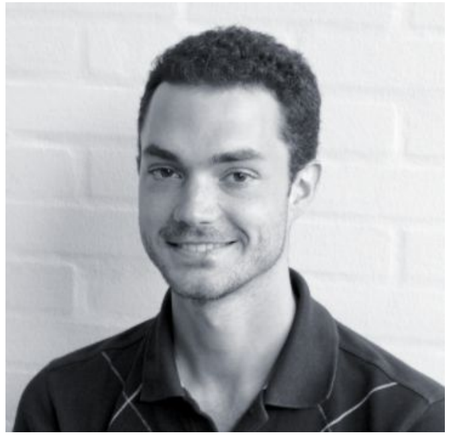
June 2018

Alpha phase of simulating entire network

September 2018

Beta release of project to institutions

BRAMBLE TEAM



Jose Luis Bellod Cisneros

Daniel Hwang

Vin Lay

Vasile Tivadar

Alexander Zhang

Nicholas Park

Appendix

Competitor Analysis

PUBLIC HEALTH/CLINICAL DATABASES

PubMed

Public searchable database of references and abstracts on life sciences and biomedical topics from *MEDLINE, life science journals, and online books*

GMI
Global Microbial Identifier

DNA database for microbial and infectious disease identification and diagnostics

Bramble

First decentralized genomic and public health *database* that provides a way to release siloed data that the community has without compromising privacy and an infrastructure of analytical framework

GENOMIC DATABASES

Compare

Multidisciplinary research network that provides analytical framework and globally linked data sharing platform for rapid identification, containment and mitigation of emerging infectious diseases and foodborne outbreaks

NCBI

DDBJ
DNA Data Bank of Japan

ENA
European Nucleotide Archive

Public databases that provide publicly available nucleotide sequence and annotation data

Competitor Analysis

International Nucleotide Sequence Database Collaboration

- The International Nucleotide Sequence Database Collaboration (INSDC) is a long-standing foundational initiative that operates between DDBJ, EMBL-EBI and NCBI. INSDC covers the spectrum of data raw reads, though alignments and assemblies to functional annotation, enriched with contextual information relating to samples and experimental configurations.

Data type	DDBJ	EMBL-EBI	NCBI
Next generation reads	Sequence Read Archive	European Nucleotide Archive (ENA)	Sequence Read Archive
Capillary reads	Trace Archive		Trace Archive
Annotated sequences	DDBJ		GenBank
Samples	BioSample		BioSample
Studies	BioProject		BioProject