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TGCCCCAGTAGAGAAGTGCTTCCAGGAGCTTTACGGGGGATGGGGGCTGAACTCCTCACCCAGTTTCTC

Lightning: the first component
of the Arvados Project to be
(re)written in Go

Alexander Wait Zaranek

GCTCTTTGAAGCGGCCGGTGTGGTGCACCACGCGGCTCTGCAGTCCCTGCAGCAAAGCCCAAGCCTC
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TGCCCCAGTAGAGAAGTGCTTCCCAGGAGCTTTACGGGGGATGGGGCTGAACTCCTCACCCAGTTTCTC

<https://my.personalgenomes.org/profile/hu34D5B9>

Arvados.org

Ask me about

Free Software



It's all about freedom.

Disclosure

Founder of Clinical Future, Inc.
(focused on enabling the clinical utilization
of whole genome sequencing and other
biomedical “big-data”)



A high-angle, wide shot of a massive crowd of people, likely at a festival or public event. The crowd is dense and diverse in age and appearance, filling the entire frame. The background is a bright, overcast sky.

5 million whole genomes

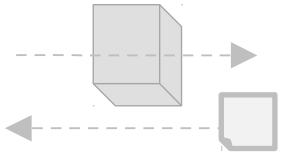
in the next 5 years

500,000 TB of raw data

*How do we organize
computational resources to
serve the combined needs of
scientists, physicians and the
general public?*







Data sharing within organizations and between organizations



Government-regulated privacy, security and compliance



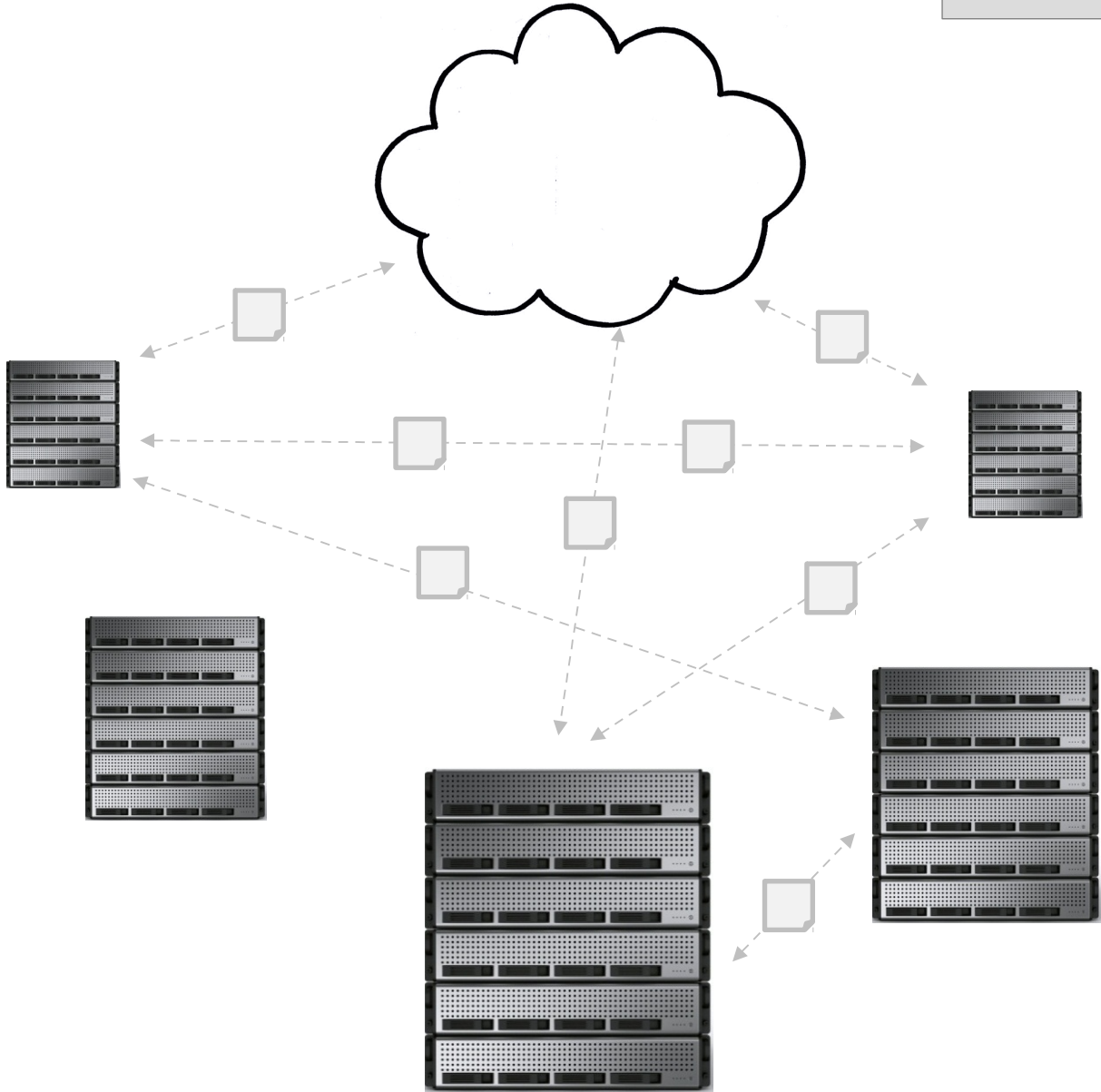
Deep reproducibility, provenance, and validation of data and computation



Specific metadata and core data structures unique to biomedical



1. Sharing





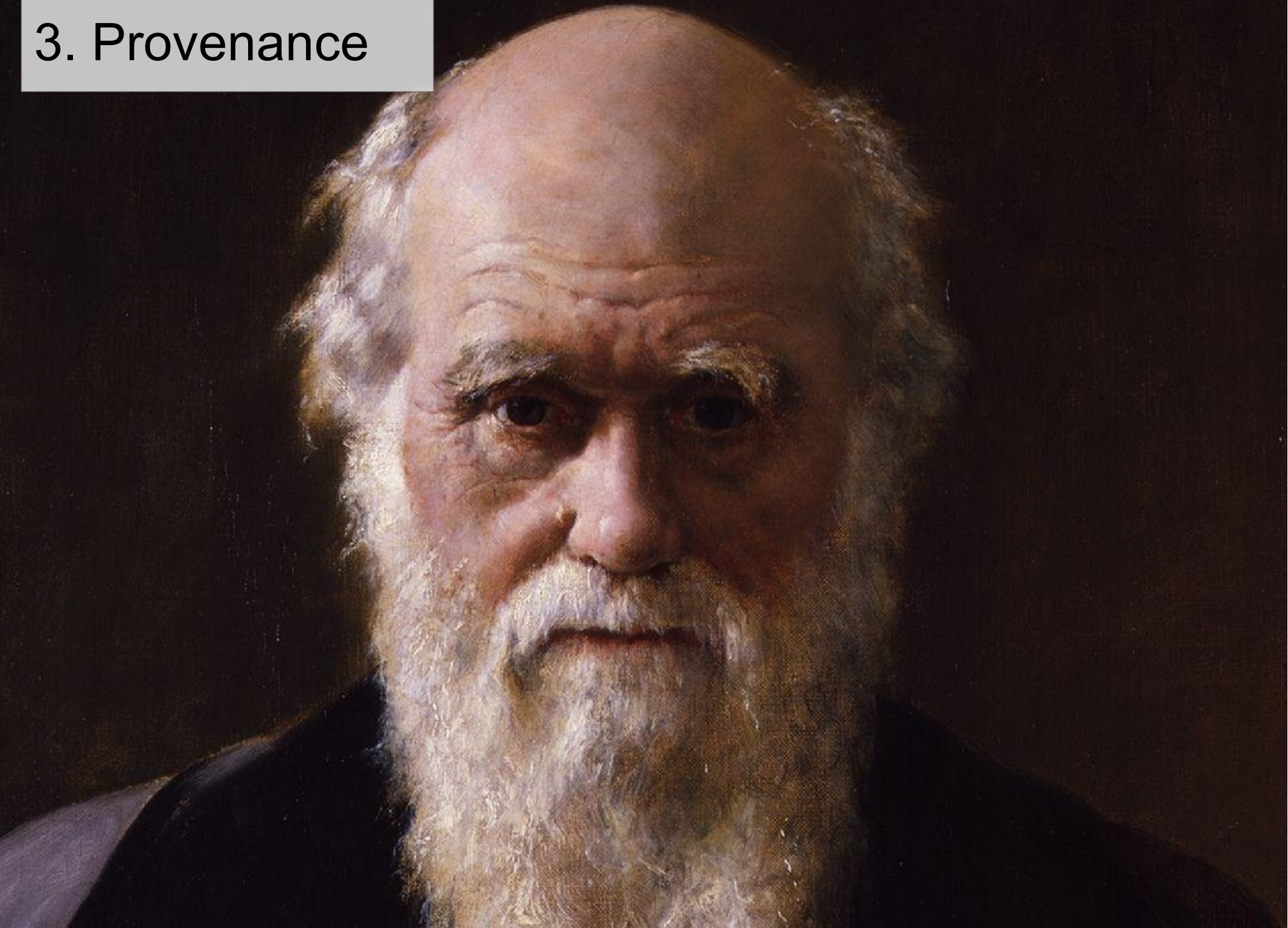


VAULT DOOR

WEIGHT: 22 1/2 Tons
THICKNESS: 22 Inches
STEEL: 11 Layers of Special
Cutting and Drill Resistant
LOCKS: 4 Hamilton Watch
Movements for Time Locks

2. Governance

3. Provenance



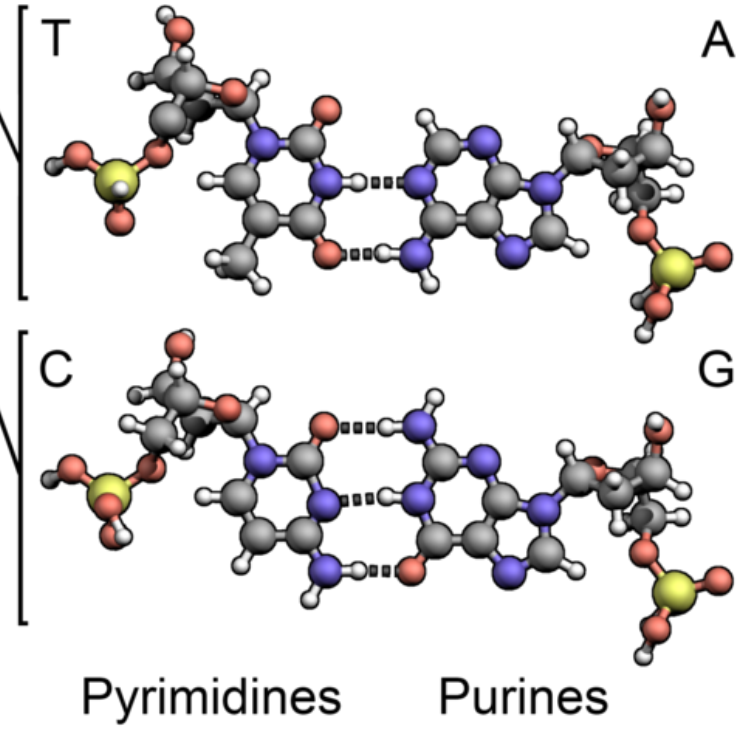
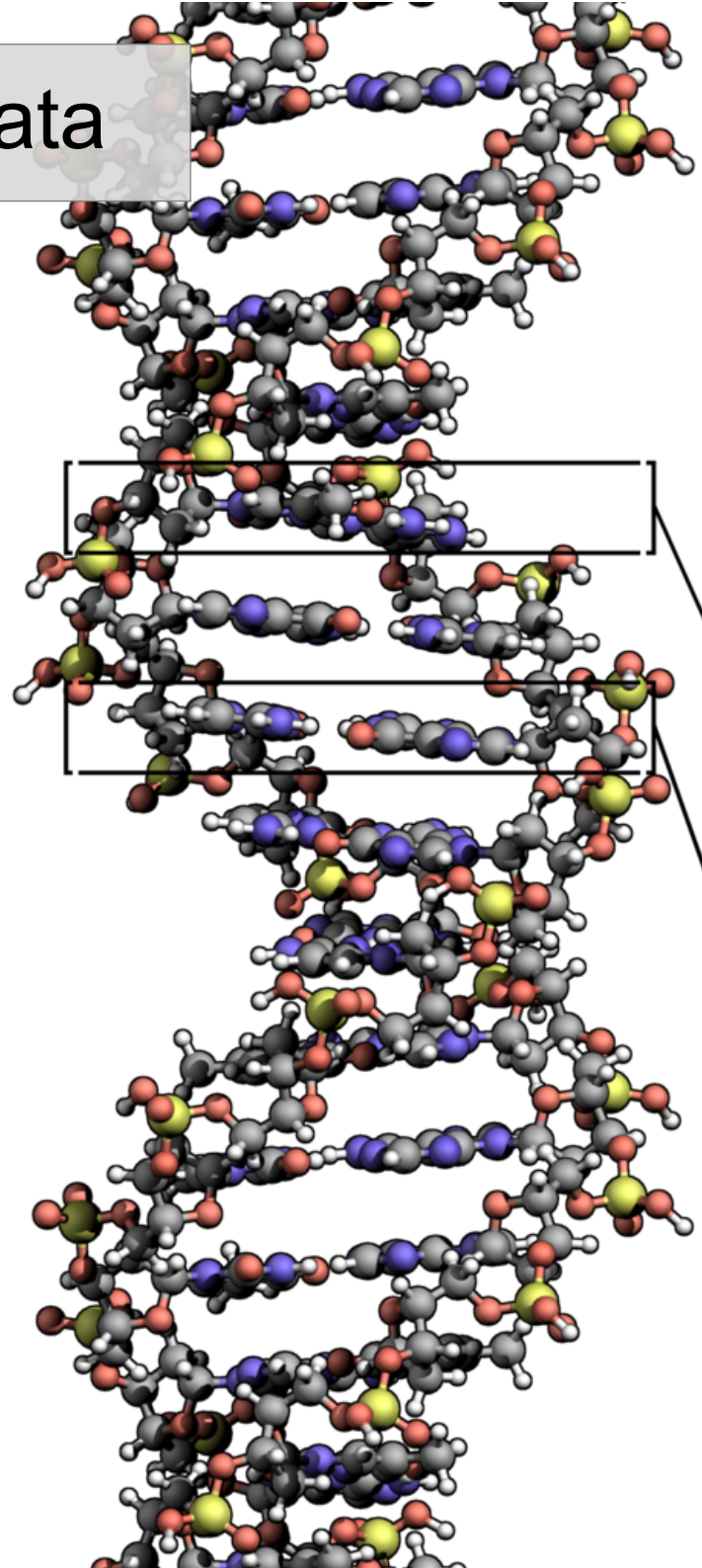


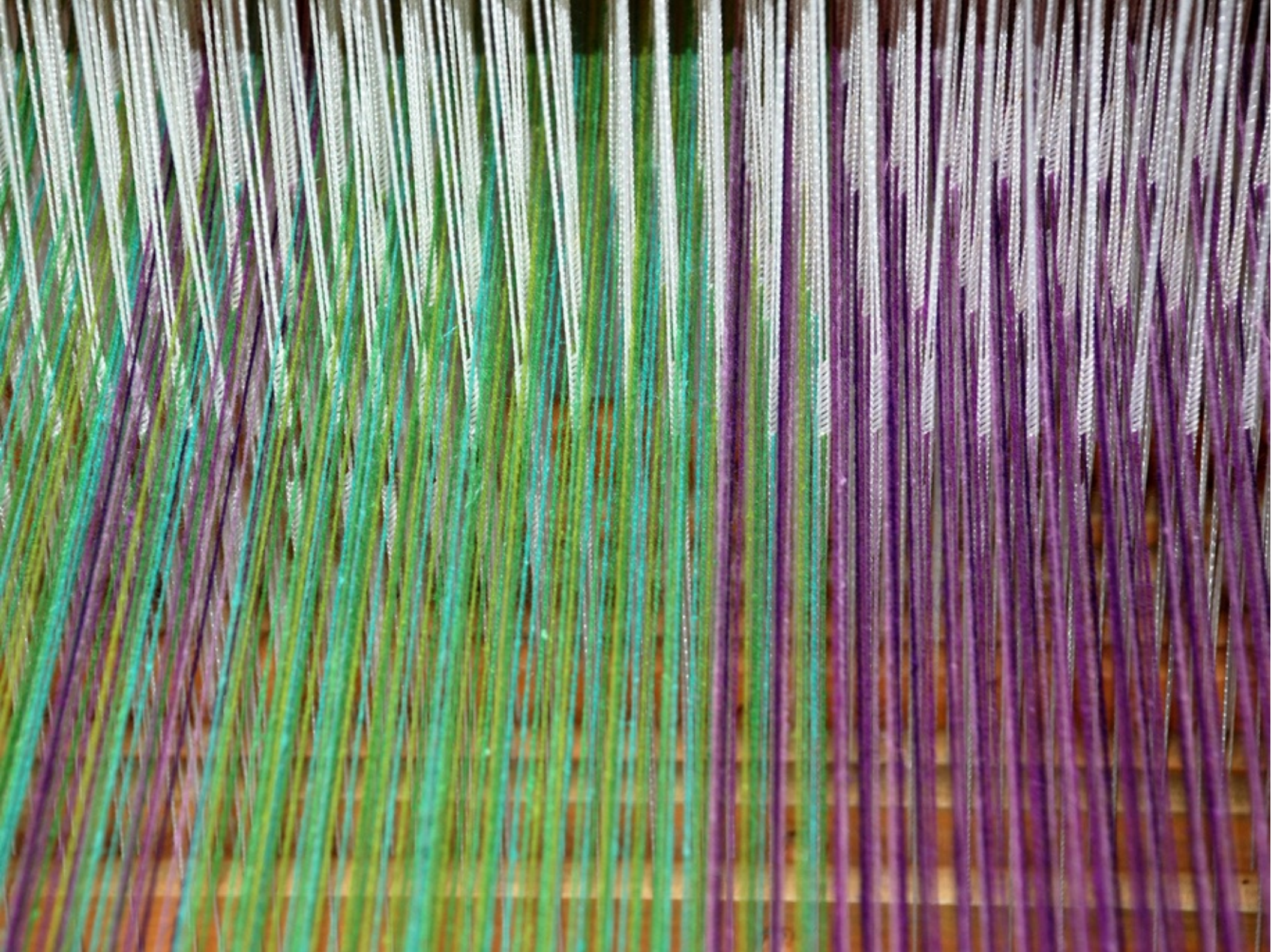
4. Unique Data

Minor groove

Major groove

- Hydrogen
- Oxygen
- Nitrogen
- Carbon
- Phosphorus



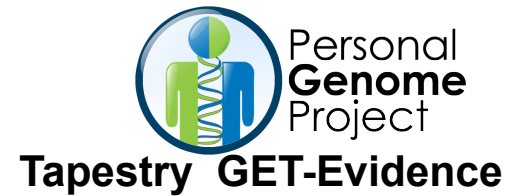


ARVADOS

an open source platform for
managing and analyzing
biomedical big data.



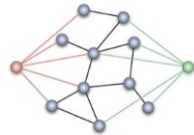
**Precision Medicine
Applications**



ARVADOS



**Data
Mgmt.**



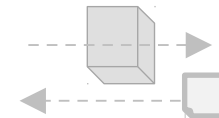
Analysis



Provenance



Governance



Sharing



Cloud
OS



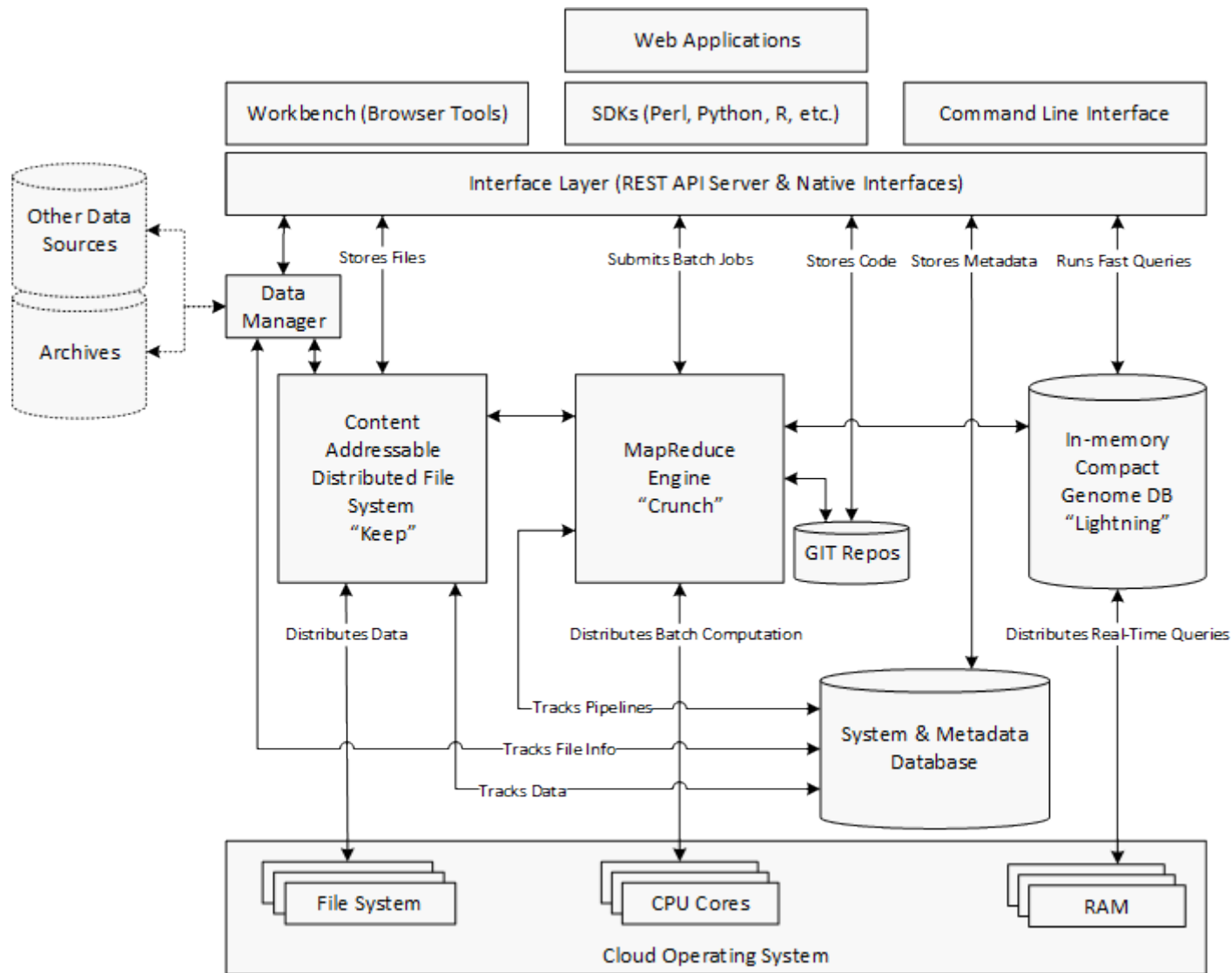
Google Cloud Platform



Private Cloud



Public Cloud



<https://arvados.org>



Open

By building on Arvados as a foundation, clinicians and researchers can focus where they are most needed — on the development of new diagnostics and cures!



**Harvard PGP Participants and Staff at the 2012 GET
(Genomes—Environments—Traits) Conference**

An aerial photograph capturing a sunset over a vast, undulating sea of white clouds. The sun is positioned in the upper center, partially obscured by a thick layer of dark, horizontal clouds. Golden light radiates from the sun, creating a bright glow and casting long, soft shadows across the cloud tops. The sky transitions from a deep blue at the top to a lighter, hazy blue near the horizon. The overall mood is serene and majestic.

Thank You!

Alexander (Sasha) Wait Zaraneck

awaitz@post.harvard.edu

Get paid to write free software: <http://clinicalfuture.com/engineer>

October 22nd: <https://arvados.org/summit>