Infrastructure: Data Dissemination, Submission, On-Premise Private Cloud

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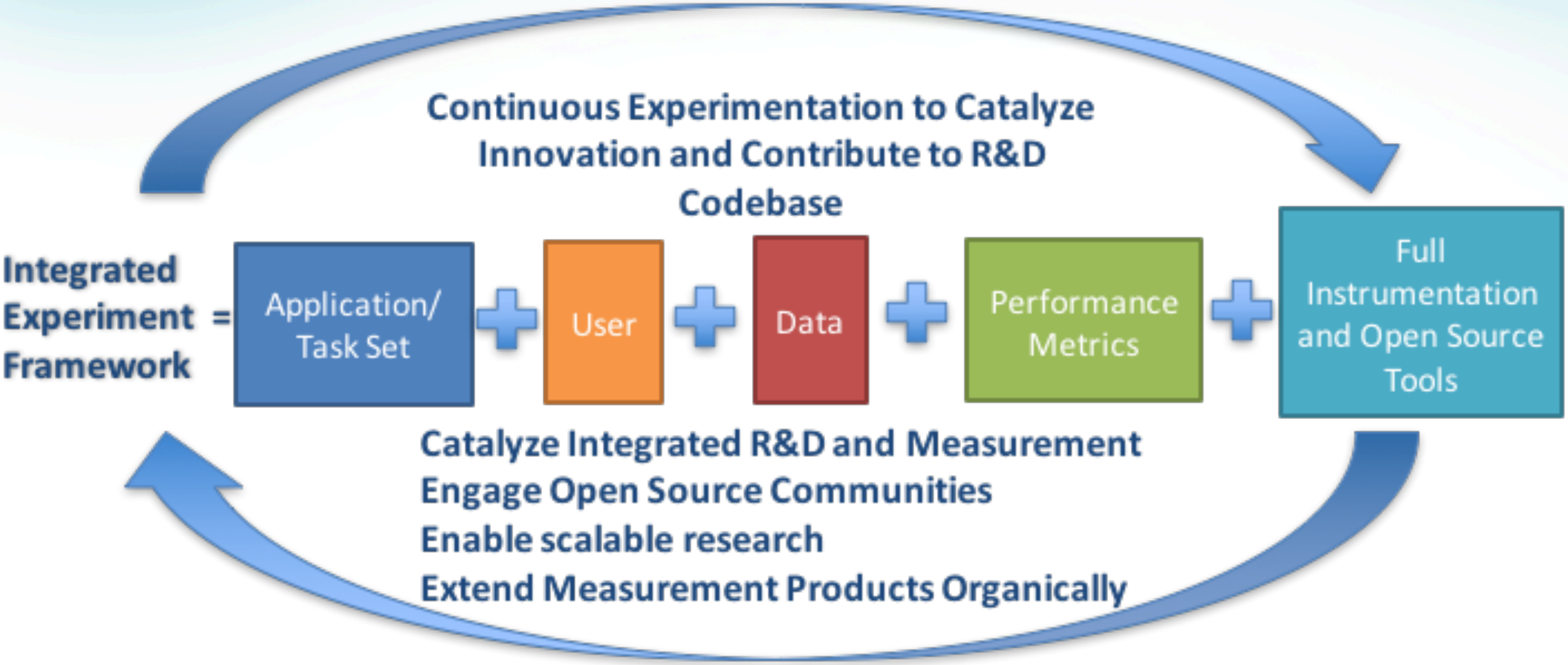
Open Science Big Data Analytic Technology R&D Model ("Bring the experiment to the data")



Continuous Experimentation to Catalyze Innovation and Contribute to R&D Codebase

Integrated Experiment Framework = Application/ Task Set + User + Data + Performance Metrics + Full Instrumentation and Open Source Tools

Catalyze Integrated R&D and Measurement
Engage Open Source Communities
Enable scalable research
Extend Measurement Products Organically

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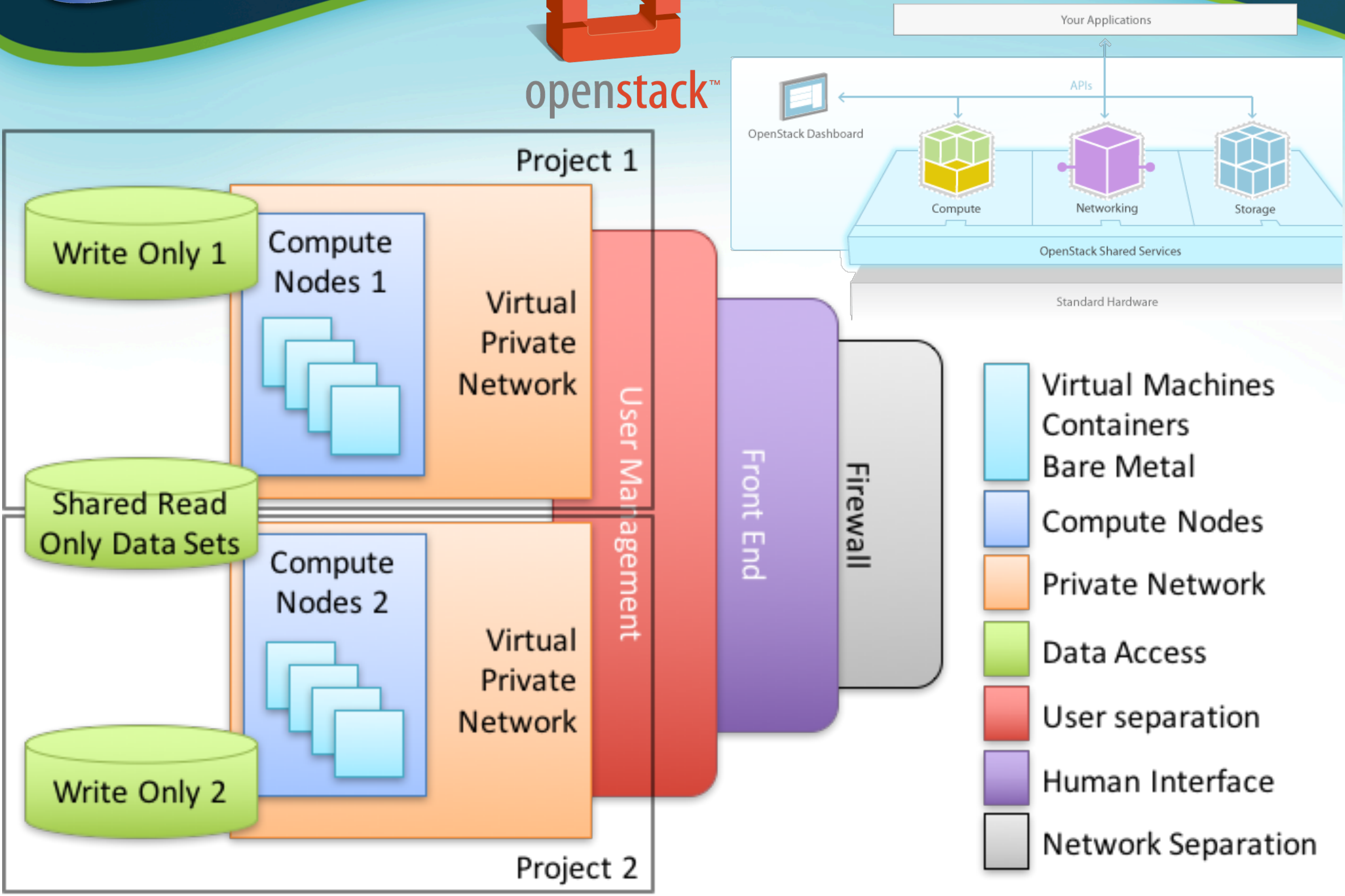
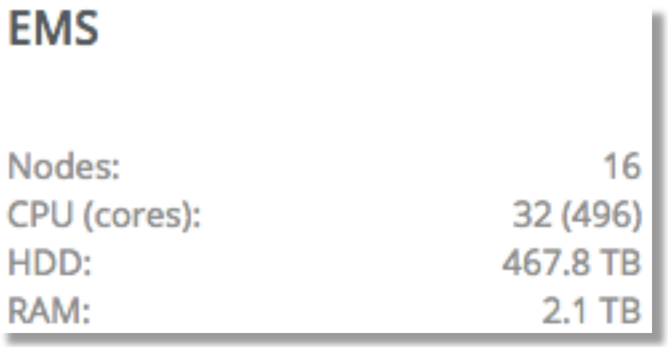


- 🟦 Virtual Machines Containers Bare Metal
- 🟦 Compute Nodes
- 🟧 Private Network
- 🟩 Data Access
- 🟥 User separation
- 🟪 Human Interface
- ⬜ Network Separation

Discussion

- VM vs Containers vs Bare Metal ?
- Benchmark model ?
- Data access methodology ?
- Compute paradigm ?
- Data reusability if given …



EMS

Nodes:	16
CPU (cores):	32 (496)
HDD:	467.8 TB
RAM:	2.1 TB

How to push my code?

- We provide a template VM that runs with Virtual Box and has sample data (Ubuntu, CentOS)
  - Instructions on where to pull the data from (local to VM, will be "mounted" on the fly in production)
- Other option: Docker containers (easier use of accelerators)
- No Bare Metal option because of security concerns
- No interactivity/network access because of NIST regulations and data exfiltration concerns
  - Facilitate protection of Intellectual Property
- No Windows or Mac OS, (hypervisor compatibility and licensing are a limitation)

How to test and upload my VM?

- Upload using secure file transfer or upload it via sharing a link
- Testing can be done on AWS, Virtual Box, etc.

How to use specialized cloud software?

- Hadoop – user can create a template using OpenStack Sahara configurations to deploy it on EMS
- OpenStack App catalog
- Docker has GPU and CPU images for Tensorflow

Issues with Dataset Access

- A small dataset can be made available for download
- Big dataset for training is problematic (can be shared on S3), needs further discussion

Is there a development mode allowing to get back experimental data?