Licensing and Virtualizing Carbon Storage Models & Tools via EDX DisCO$_2$ver

NATIONAL ENERGY TECHNOLOGY LABORATORY

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A Need for Visibility and Usability

Questions we all ask:

- We've made a great tool; how do we get people to use it?
- Our tool is resource intensive; how can we make it more accessible if a user doesn't have the necessary resources?
- If we want a web hosted tool, how do we find a reliable host?
- We have a tool and the data for it, how can we provide easy access to both?

Many Paths to Virtualization

- Through EDX++ and the DisCO$_2$ver platform we can leverage Google Cloud resources to enable web hosted models and tools.
- Helm charts and Kubernetes allow developers access to the scalability and resiliency of distributed systems.
- Existing and future stand-alone tools on EDX and GitHub can benefit from the increased accessibility and visibility when listed alongside the web hosted tools.

Benefits on the Cloud

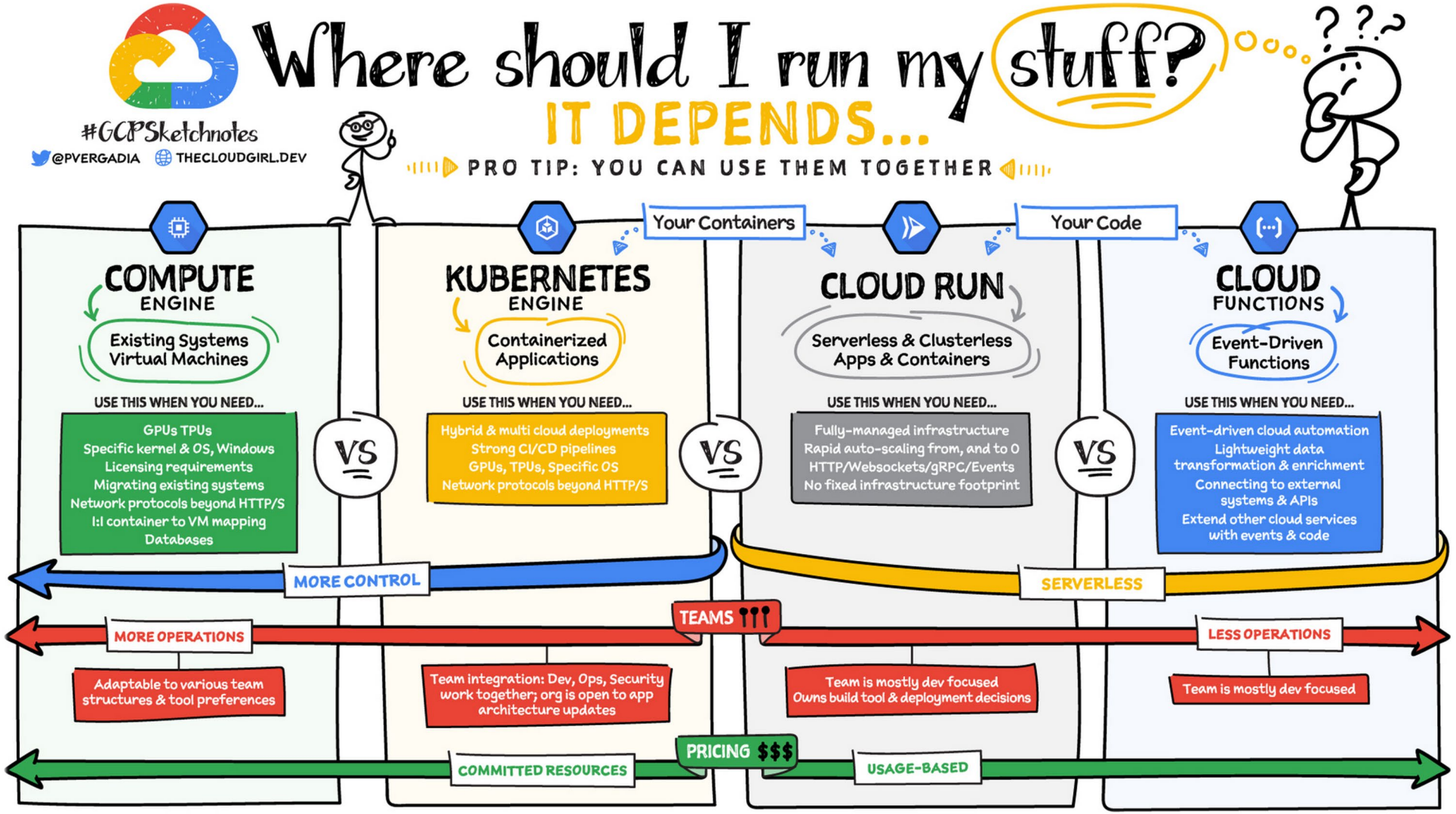
Cloud infrastructure provides access to:

- Flexibility
- Compute resources
- Storage
- Availability
- Resilience
- Security

With EDX++ there are even more benefits:

- Interoperability means we can access other cloud services (AWS, Azure, etc.) as well as on-prem resources (WATT, Joule, etc.).
- Scalability means tools can be expanded to meet user's needs.
- Online means tools can be available in more places and on more devices. A shared platform can increase visibility for all tools.

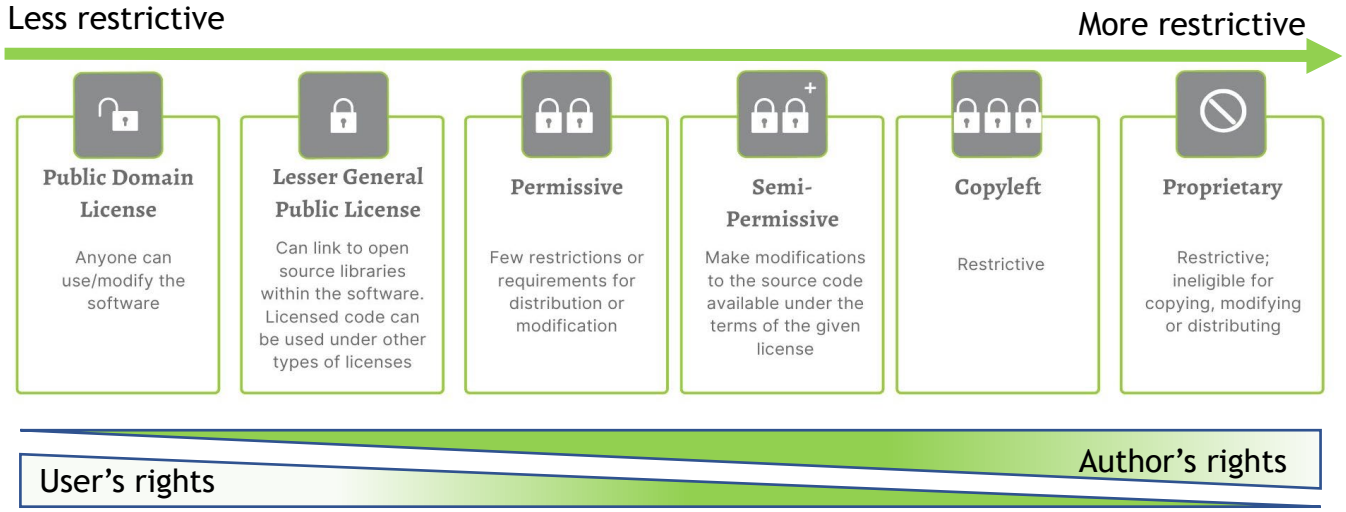
Flexible Hosting Options



Challenges and Roadblocks

Licenses – Software, Data

- Software developed wholly by U.S. federal government employees is not subject to copyright protection in the U.S.[1] Software not subject to copyright is "public domain" software.
- Software developed with contractors might be eligible for copyright assertion (dependent on contract) and release of software under an Open-Source Software (OSS) license.



- OSS licenses require users to obey certain terms/conditions.
- Licenses should be selected to permit anticipated use.

1. 17 USC § 105

Challenges and Roadblocks

Why Include a License

Tells the user what they can and can't do with your code or derived work:

- Attribution – users should cite source
- Allowances – users can/can't sublicense code or sell code
- Improvement – encourage collaboration and innovation through community development
- Liability – users can't hold you liable if code breaks

Common Licenses

Standard is to use an existing license that fits the anticipated use.

Challenges and Roadblocks – Next Steps

Licenses – Software, Data

- EDX suggests resources when selecting licenses for open-source data:
  - Conformant Licenses - Open Definition - Defining Open in Open Data, Open Content and Open Knowledge
- Licensing for code is a different challenge.
- Next steps:
  - Provide resources and unofficial guidance for choosing appropriate licenses for code.
  - Complete FAQ document for software disclosure, release and licensing.
  - Coordinate with NETL Legal, IT, and others to work towards further official guidance on open-source compliance.

Challenges and Roadblocks

- Currently we are still awaiting the integration of Google Cloud resources with EDX to allow the use of the Google Kubernetes Engine for web hosting the appropriate tools.
  - In the interim, existing tools on EDX that are related to carbon capture and carbon storage are being included on the DisCO_2ver alpha page.

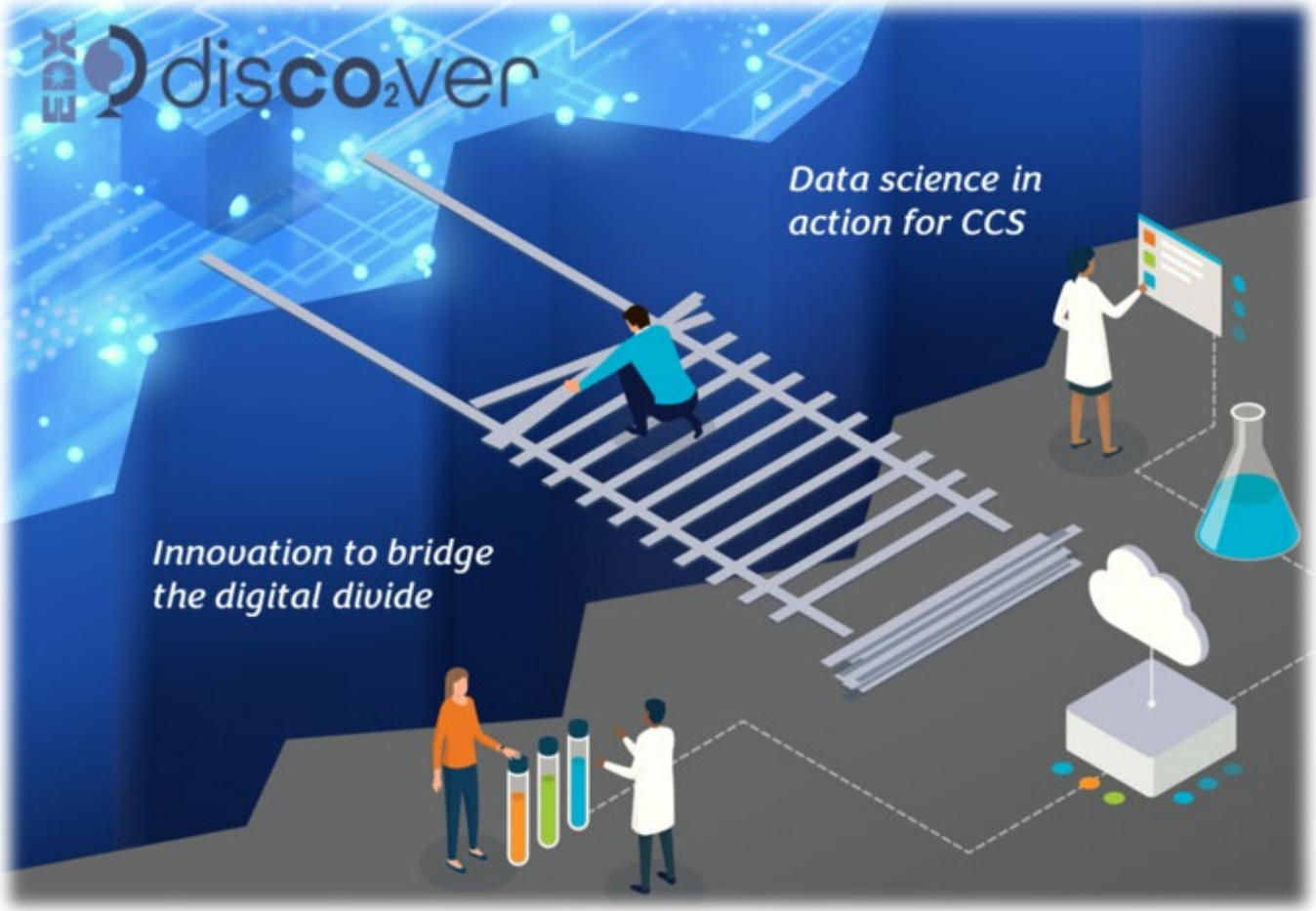
Tuesday Evening - Live Tool Demos!

When: **5:45 - 7:45 p.m.**

Where: **The Ballroom Foyer and East/West Atriums**

What:

- **Environmental Justice and Social Justice** for CS Systems
- The **international offshore CS** and web-database and tool
- RokBase, Virtualizing **CS Rock Property Data** platform
- **Class VI Data Support Tool** for regulatory requirements
- **CO2 Pipeline Routing** Smart Tool
- Co2Locate - **Class II Well Reuse and Regional Evaluation Tool**
- **Carbon Storage Planning Framework Dashboard**
- **3D Data Viewer** and Preview Capability
- AIIM Model, **Assessing Infrastructure Reuse Potential** for CS
- **EDX disCO$_2$ver,** a one-stop tool for CO_2 digital resources



In demo "theater room" EDX Energy Data eXchange **support team** will offer **in person demos & Q&A**

NETL RESOURCES

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