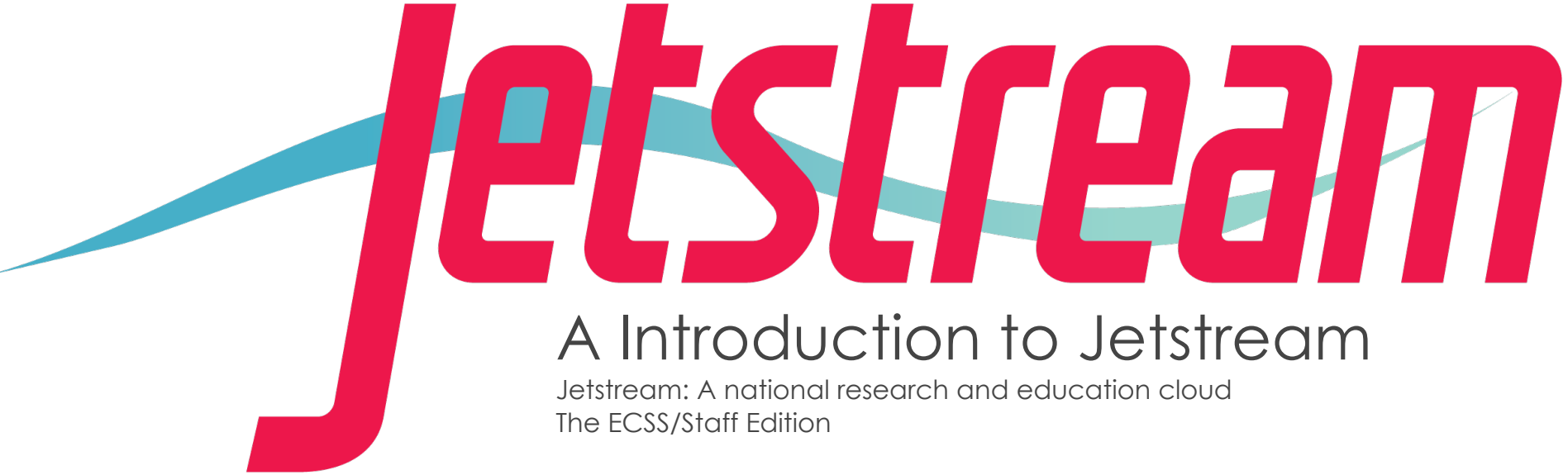

A Introduction to Jetstream

Jetstream: A national research and education cloud
The ECSS/Staff Edition

Jeremy Fischer (jeremy@iu.edu)
ORCID 0000-0001-7078-6609
Senior Technical Advisor
UITS Research Technologies

With Modifications for the CODATA/RDA Summer School in Data Science by
Rob Quick
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There is no cloud
it's just someone else's computer

What is cloud computing?

- Wikipedia says "*Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the common use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data, software and computation.*"

Jetstream
http://jetstream-cloud.org/

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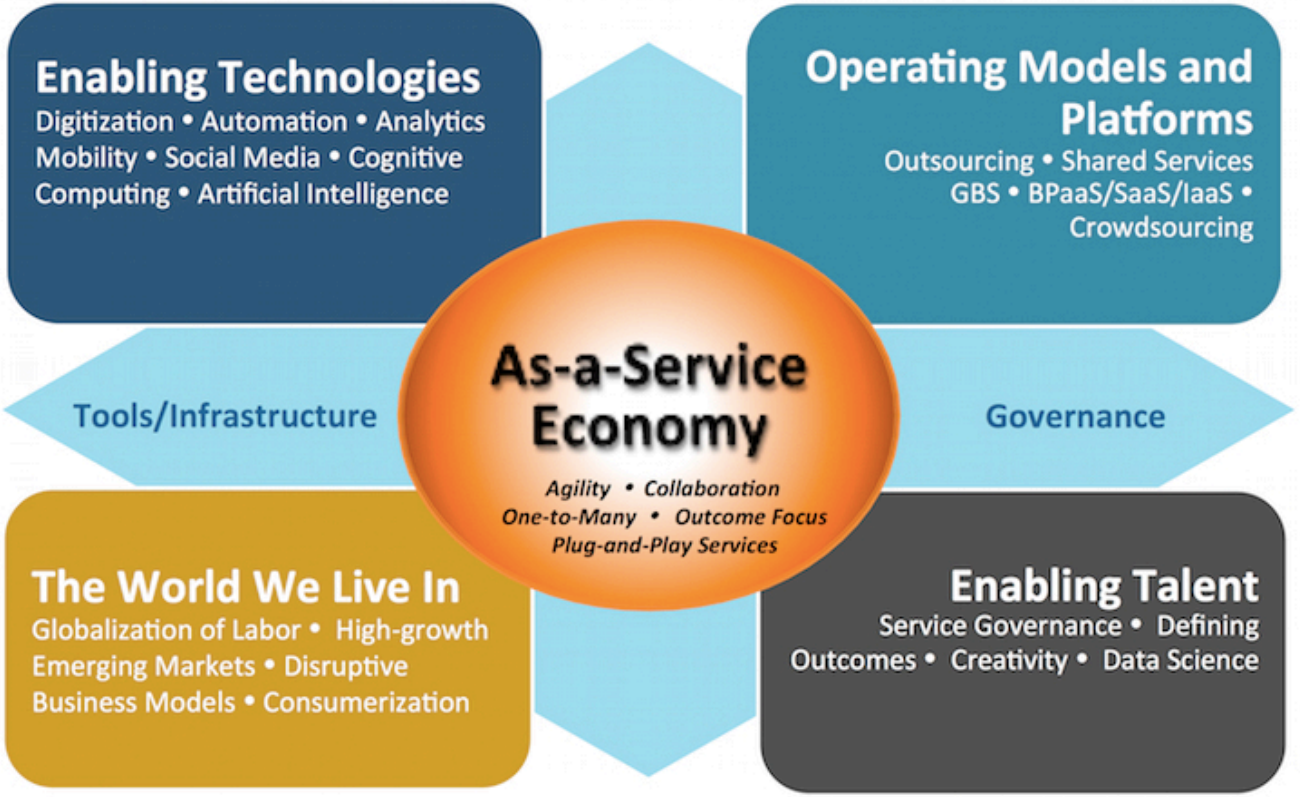
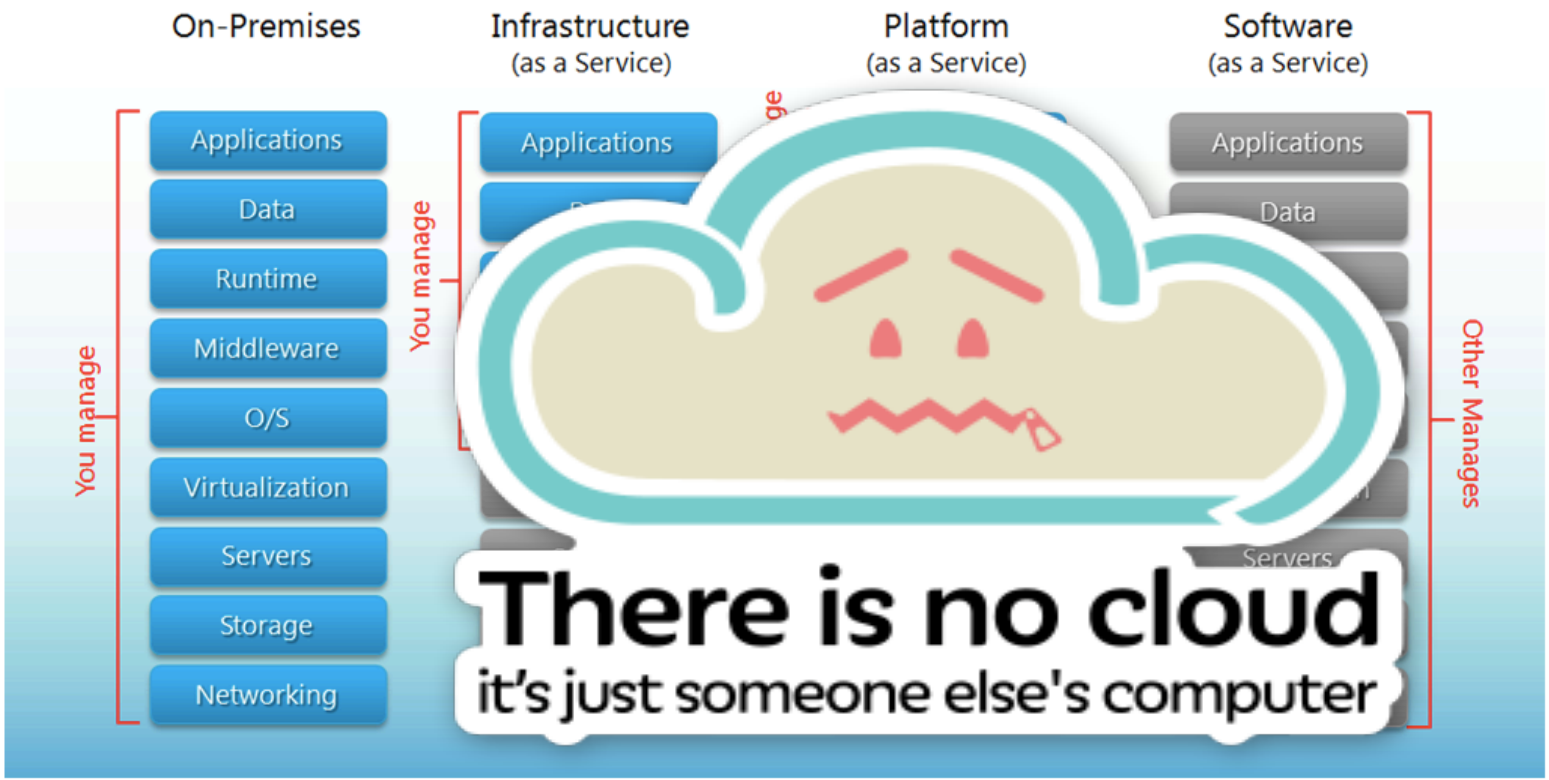
Welcome to the As-a-Service Economy



Source: HfS Research, 2014


On-Premises
Infrastructure
(as a Service)
Platform
(as a Service)
Software
(as a Service)
Applications
Data
Runtime
Middleware
O/S
Virtualization
Servers
Storage
Networking
You manage
You manage
Applications
Applications
Data
Servers
Other Manages
There is no cloud
it's just someone else's computer

What is Jetstream?

- A resource to *expand the community of users* who benefit from investments in shared cyberinfrastructure
- *Production cloud system* supporting all domains of science and engineering research
- Provide on-demand *interactive* computing and analysis
- Enable *configurable* environments and architectures
- Support computational *reproducibility and sharing*
- Democratizes access to *cloud-native* technology and software
- Focuses on *ease of use*, but also on *maintaining flexibility*

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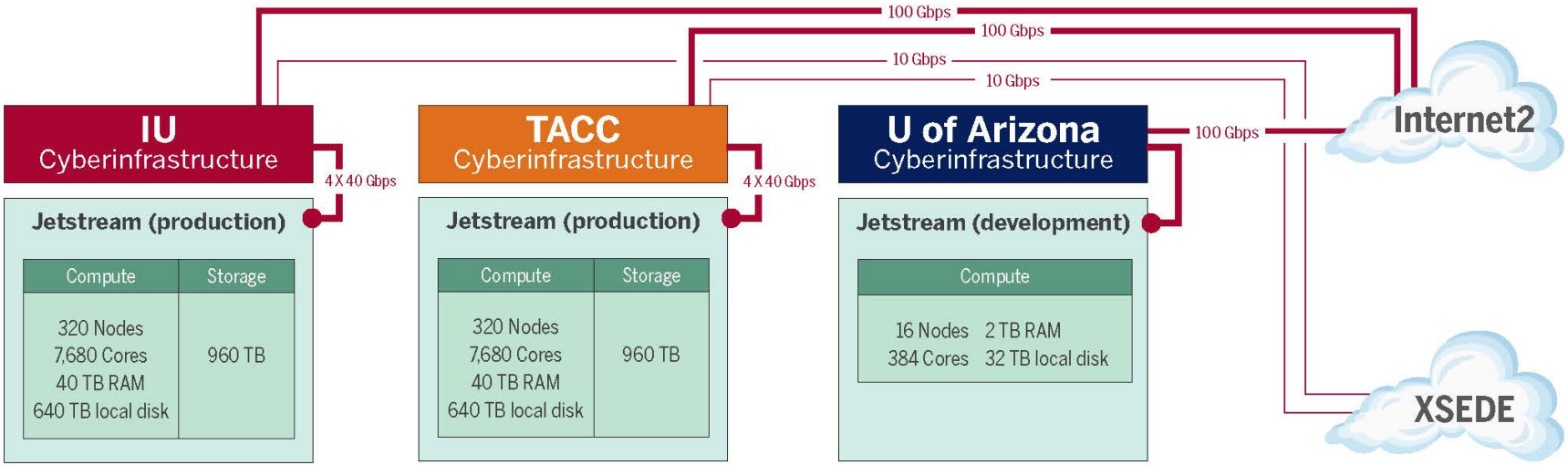
Jetstream System Overview



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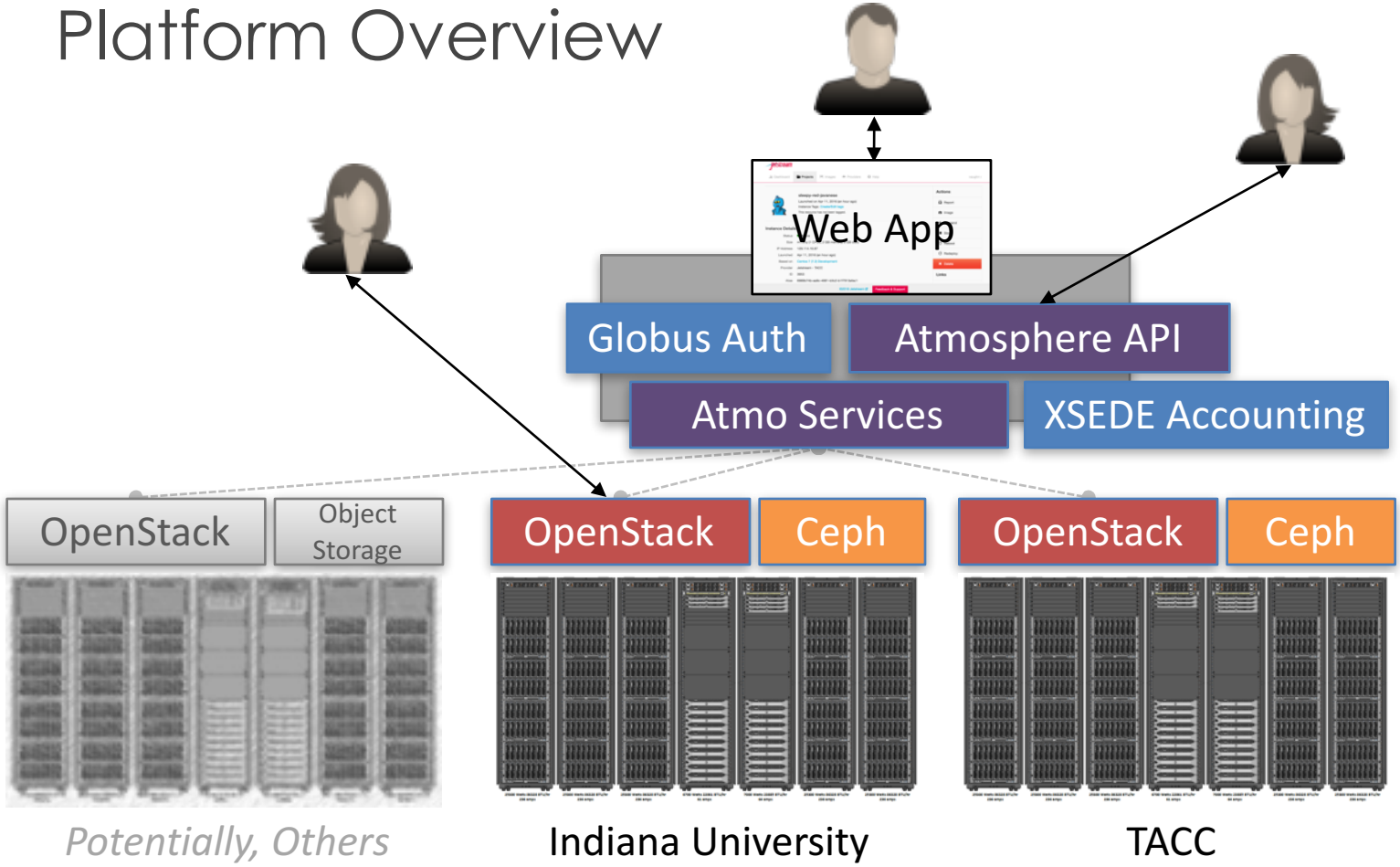
Platform Overview



Levels of access

Two levels of access

- Interactive user access via web interface and vnc/ssh
- Persistent access for Science Gateways and other "always on" services or services launched programmatically on demand; e.g. elastic compute techniques

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Hardware and Instance "Flavors"

VM Host Configuration

- Dual Intel E-2680v3 "Haswell"
- 24 physical cores/node @ 2.5 GHz (Hyperthreading on)
- 128 GB RAM
- Dual 1 TB local disks
- 10GB dual uplink NIC
- Running KVM Hypervisor

Flavor	vCPUs	RAM	Storage	Per Node
m.tiny	1	2	8	46
m.small	2	4	20	23
m.medium	6	16	60	7
m.large	10	30	120	4
m.xlarge	24	60	240	2
m.xxlarge	44	120	480	1

- Short-term storage comes as part of launched instance
- Long-term storage is XSEDE-allocated
- Implemented on backend as OpenStack Volumes
- Each user gets 10 volumes up to 500GB total storage
- Piloting object storage as well after recent update

Where can I learn more?

- Production:
  - Wiki: http://wiki.jetstream-cloud.org
  - User guides: https://portal.xsede.org/user-guides
  - XSEDE KB: https://portal.xsede.org/knowledge-base
  - Campus Champions: https://www.xsede.org/campus-champion

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Questions to this point?

Project website: http://jetstream-cloud.org/
Project email: help@jetstream-cloud.org Direct email: jeremy@iu.edu

License Terms

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Accessing Jetstream

- First time, you should log into Atmosphere and accept the terms from Globus and XSEDE
- See the GUI – know what most end users might see
- The other reason(s)? It's good to know the GUI so you can disregard it? ☺
- GUI vs API in terms of use

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Data and the ins and outs

- Moving data in and out…well, that's up to you
  - Globus on Atmosphere
  - Globus on API VMs
- Backups
  - Punchcards
  - Jetstream proper
  - VMs
  - Snapshots
- Let's talk about storage in general...

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Image preservation and publication

- Part of the "what makes Jetstream unique" design is the plan for long term image storage
- When you're ready:

  http://www.jetstream-cloud.org/request-doi-test.php
- The result (a sample):

  http://doi.org/10.5967/P9H59R (Old style IUSW)

  https://scholarworks.iu.edu/iuswrdemo/handle/123456789/20894

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Thank you for your attention

Please feel free to contact me any time and ask questions. If you'd like access to OSG or to know more about JetStream or one of the other international infrastructures I'd be happy to connect you to my contact points. (rquick@iu.edu)

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