



# NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

September 24 – 26, 2018 | University of Maryland, College Park, MD

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**NSF Program (either CC or CICI): CICI**

**Program Area: Systems/Security Award Number: 1840197**

**PI: Anton Burtsev**

**co-PIs: Gene Tsudik**

**Project Title: Horizon: Secure Large-Scale Scientific Cloud  
Computing**



**Anton Burtsev**

Adjunct Assistant Professor  
University of California, Irvine  
[aburtsev@uci.edu](mailto:aburtsev@uci.edu)



**Gene Tsudik**

Professor  
University of California, Irvine  
[gts@ics.uci.edu](mailto:gts@ics.uci.edu)



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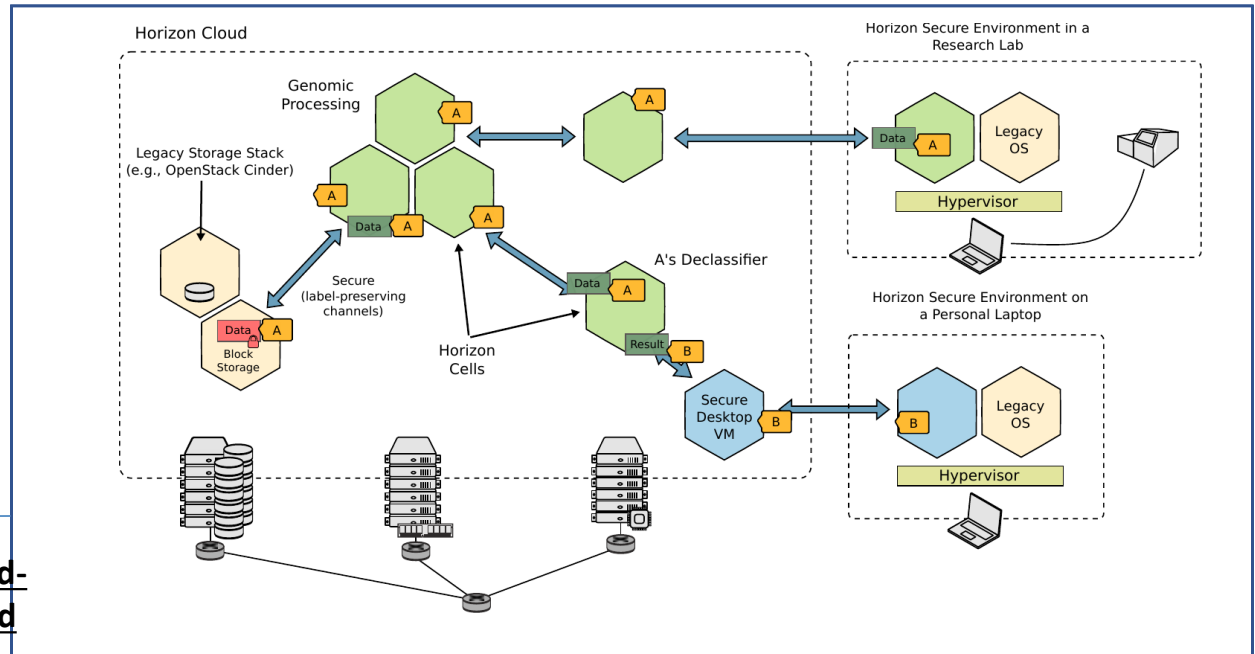
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## Quad Chart for:

### Horizon: Secure Large-Scale Scientific Cloud Computing

#### Challenge: Insecure clouds

- Vulnerable end-hosts
- Lack of isolation in the cloud network
- Users have no control over how their sensitive data is used once it's in a cloud



#### Solution(s): Strong isolation and end-to-end information flow in the cloud

- New secure hypervisor (combination of safe language, verification, and fine-grained isolation)
- Capability and labels access control in the cloud network

#### Scientific Impact:

- Practical (minimal performance impact) security for large scientific workflows
- End-to-end information flow for sensitive data, e.g., genome

#### Metadata tag:

- *Will be released as open source, and available in CloudLab testbed for testing*