



BCNET
CONNECT
HIGHER ED & RESEARCH TECH SUMMIT

RONIN
SIMPLIFYING CLOUD
FOR RESEARCHERS

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UBC ARC - Introduction

Who we are?

- We are UBC's institutionally dedicated service for researchers across all disciplines working on questions that have large data and computational needs.
- We have over 30 members ready to support research on the campus free of charge to the UBC community.

Who we support?

- Researchers from any discipline on campus access our services. From Chemistry and Physics to Bio-informatics to Forestry and Humanities, all have unique needs for computing.



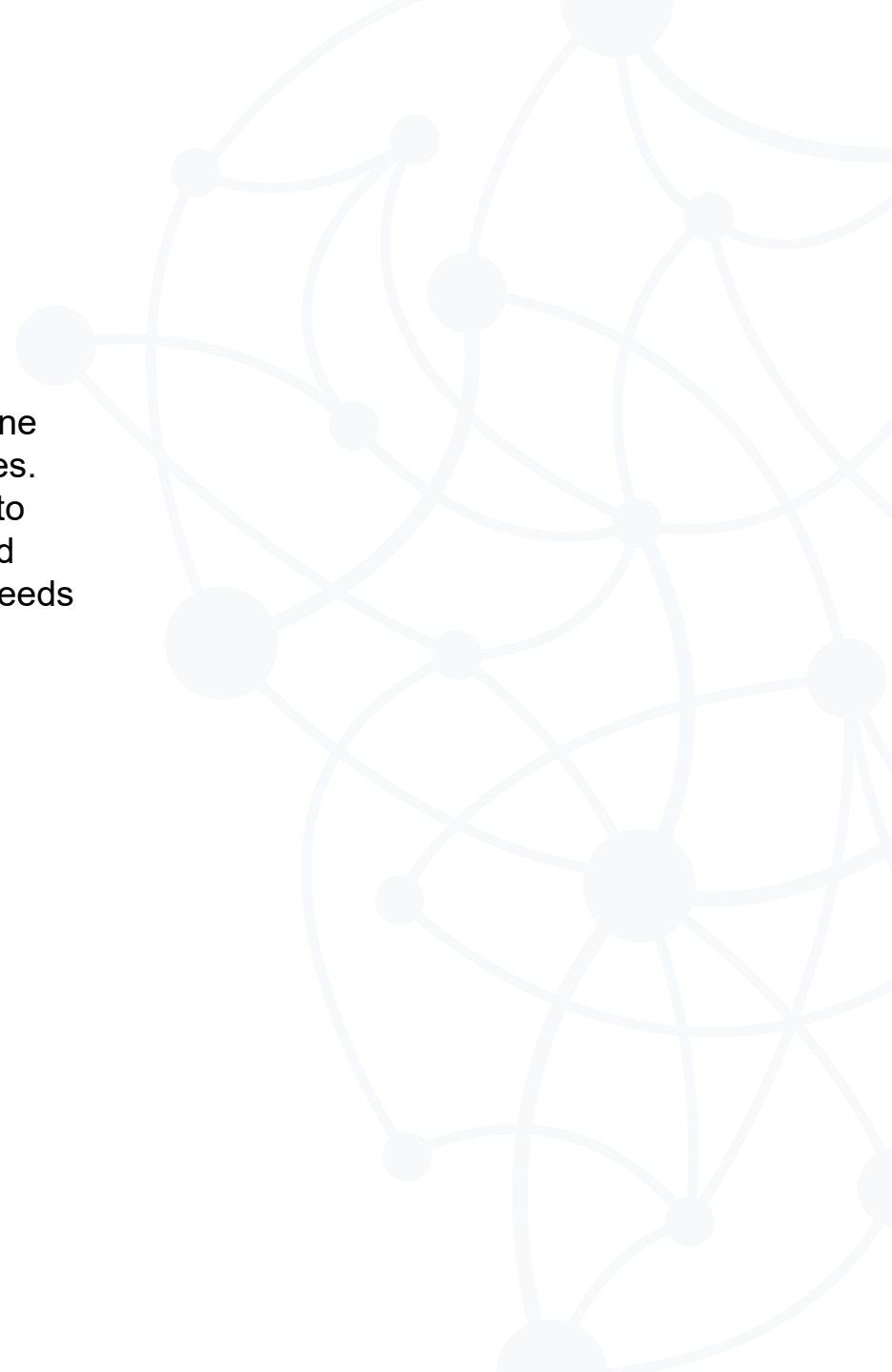
THE UNIVERSITY OF BRITISH COLUMBIA

Advanced Research Computing

VP Research & Innovation

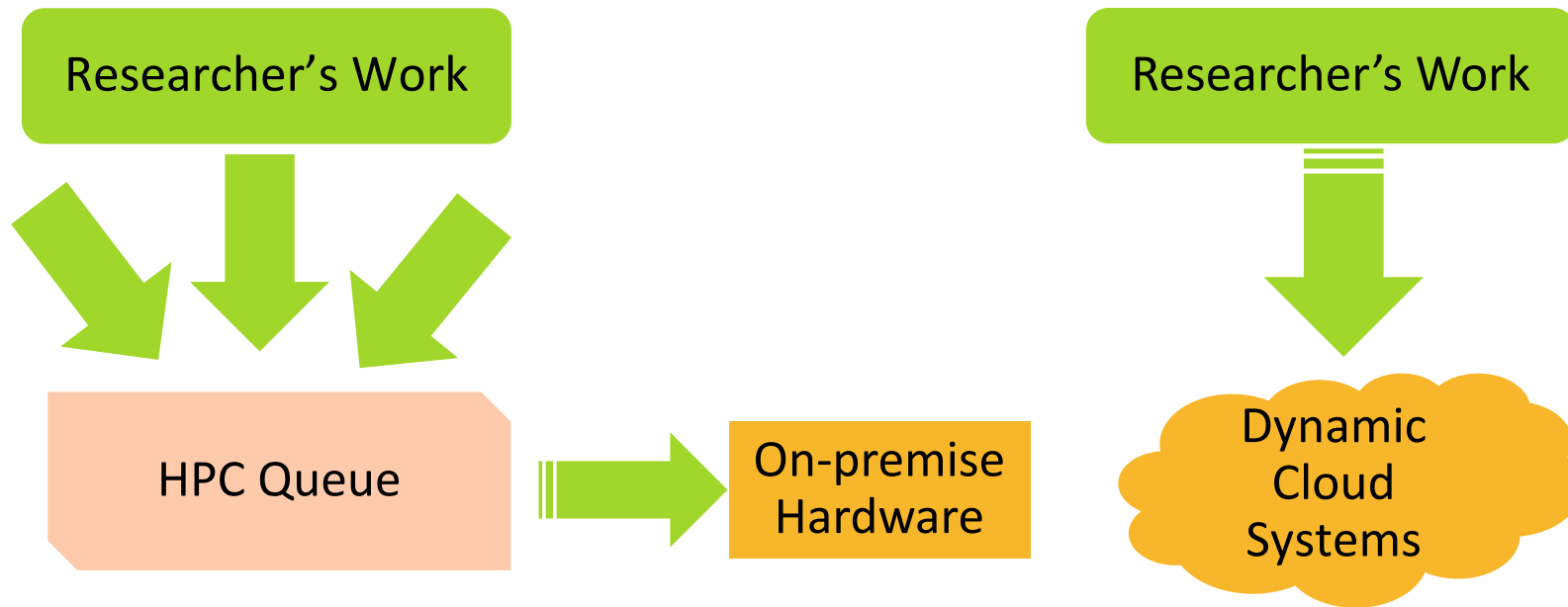


Simplifying Cloud For Researchers



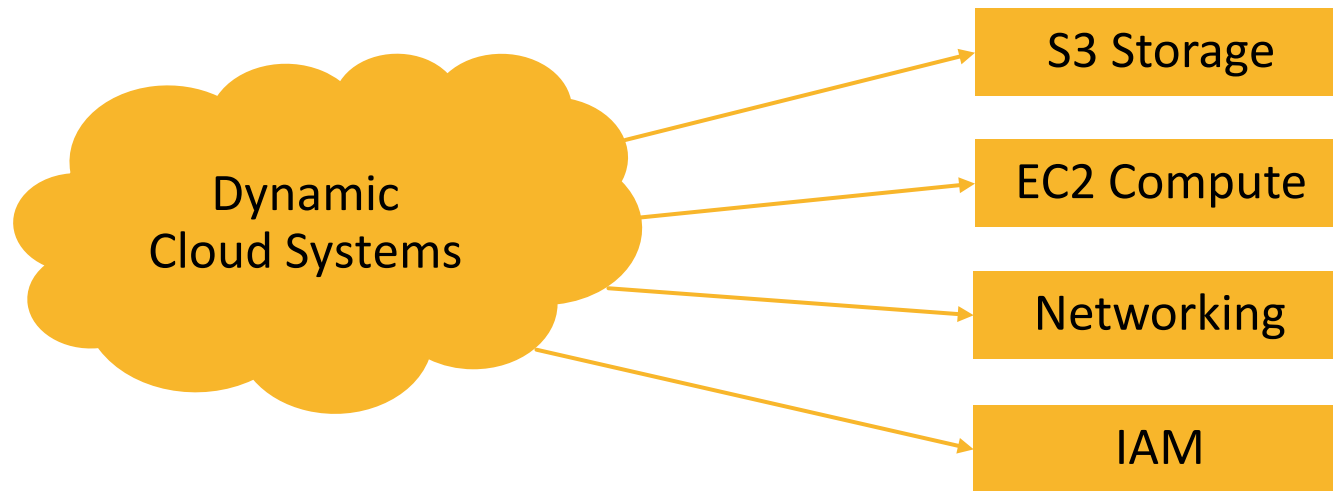
What Cloud Provides Researchers

- Near instant access to computational resources
- Ability to scale well beyond on-premises hardware
- Generous resource grants from cloud providers



Where Researchers Struggle with Cloud

- Very few researchers are experienced cloud administrators
- Not every group has direct IT support
- Researchers should be focused on their work and not managing systems



Too Much Complexity

1-15 (239)

Sort by Launch Date (oldest first) ▼

<p>Storage Free Trial</p> <p>Amazon Simple Storage Service (S3)</p> <p>Object storage built to retrieve any amount of data from anywhere</p>	<p>Application Integration</p> <p>Amazon Simple Queue Service (SQS)</p> <p>Managed message queues</p>	<p>Storage 12 Months Free</p> <p>Amazon Elastic Block Store (EBS)</p> <p>EC2 block storage volumes</p>
<p>Compute Free Trial</p> <p>Amazon EC2</p> <p>Virtual servers in the cloud</p>	<p>Networking & Content Delivery 12 Months Free</p> <p>Amazon CloudFront</p> <p>Global content delivery network</p>	<p>Management & Governance</p> <p>AWS Management Console</p> <p>Web-based user interface</p>
<p>Analytics</p> <p>Amazon EMR</p> <p>Hosted Hadoop framework</p>	<p>Compute</p> <p>Amazon EC2 Auto Scaling</p> <p>Scale compute capacity to meet demand</p>	<p>Networking & Content Delivery 12 Months Free</p> <p>Elastic Load Balancing (ELB)</p> <p>Distribute incoming traffic across multiple targets</p>



Focus on Core Services

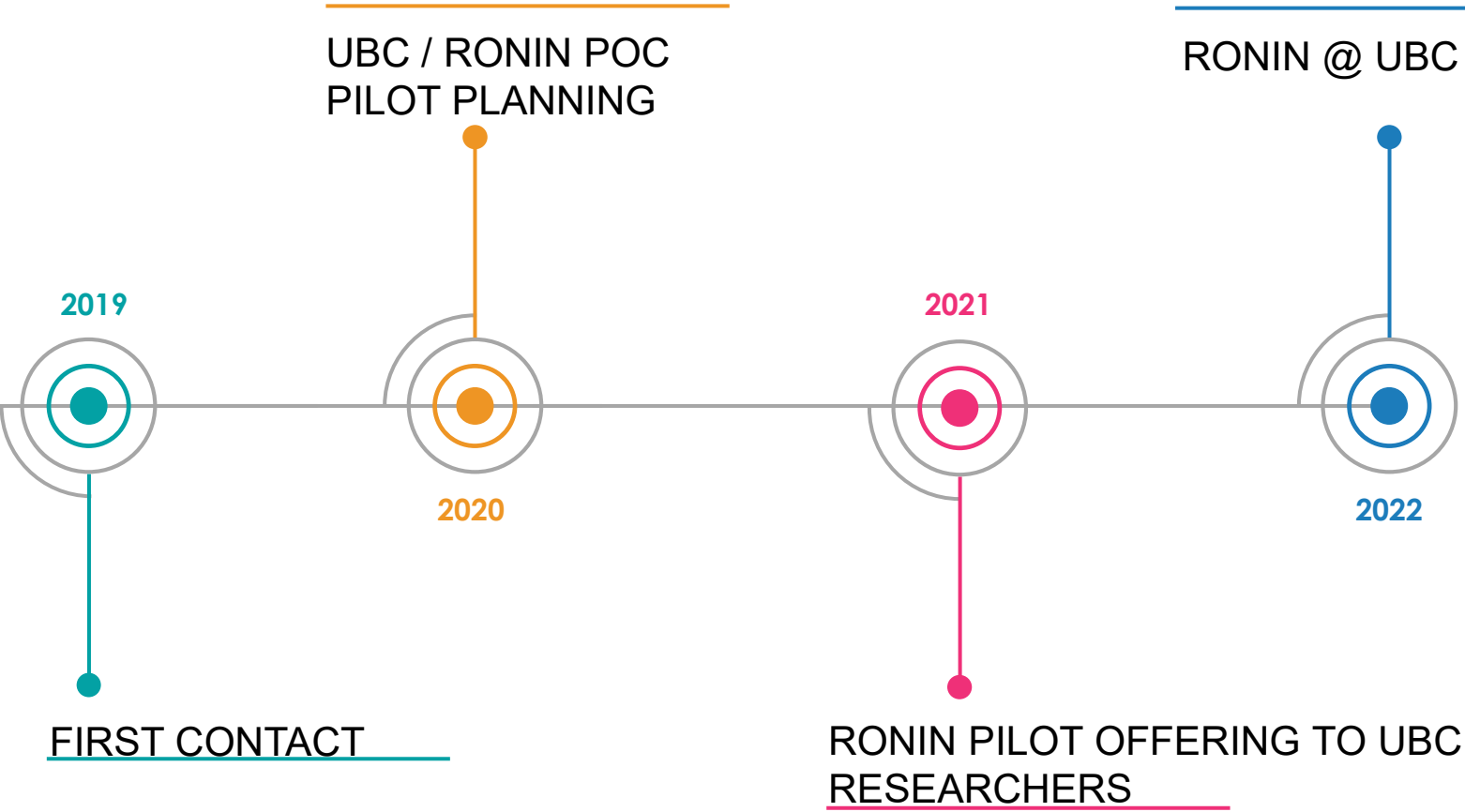
- CPU and GPU compute.
- Block and Object storage.
- Traditional HPC.
- Cost management.



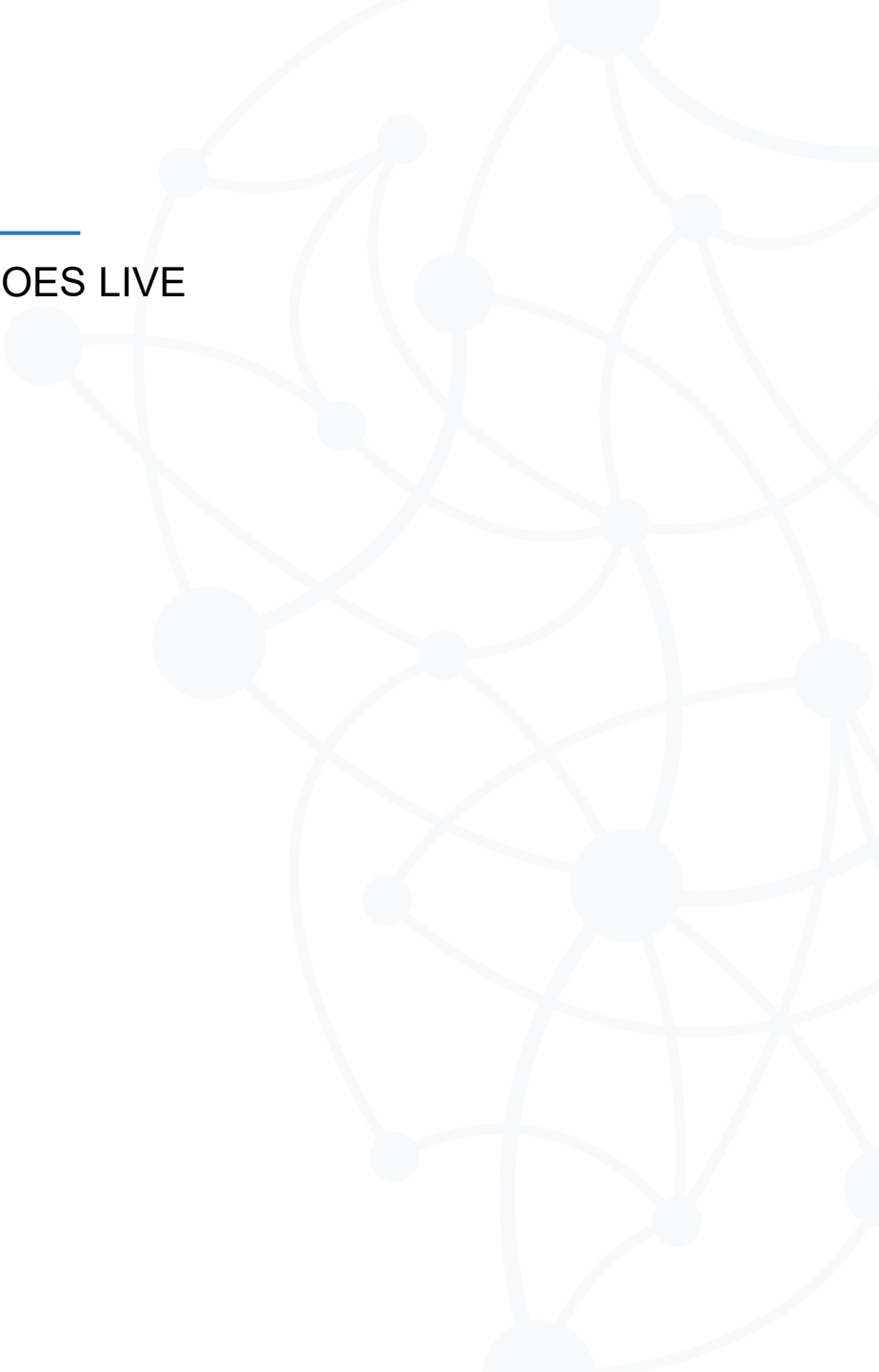
RONIN

- Self-service with guardrails (IAM and SSO, network security).
- Very little technical experience required from researchers to use the web-based UI.
- Orchestration of resources handled automatically with sensible and secure defaults.
- Costs presented up-front.

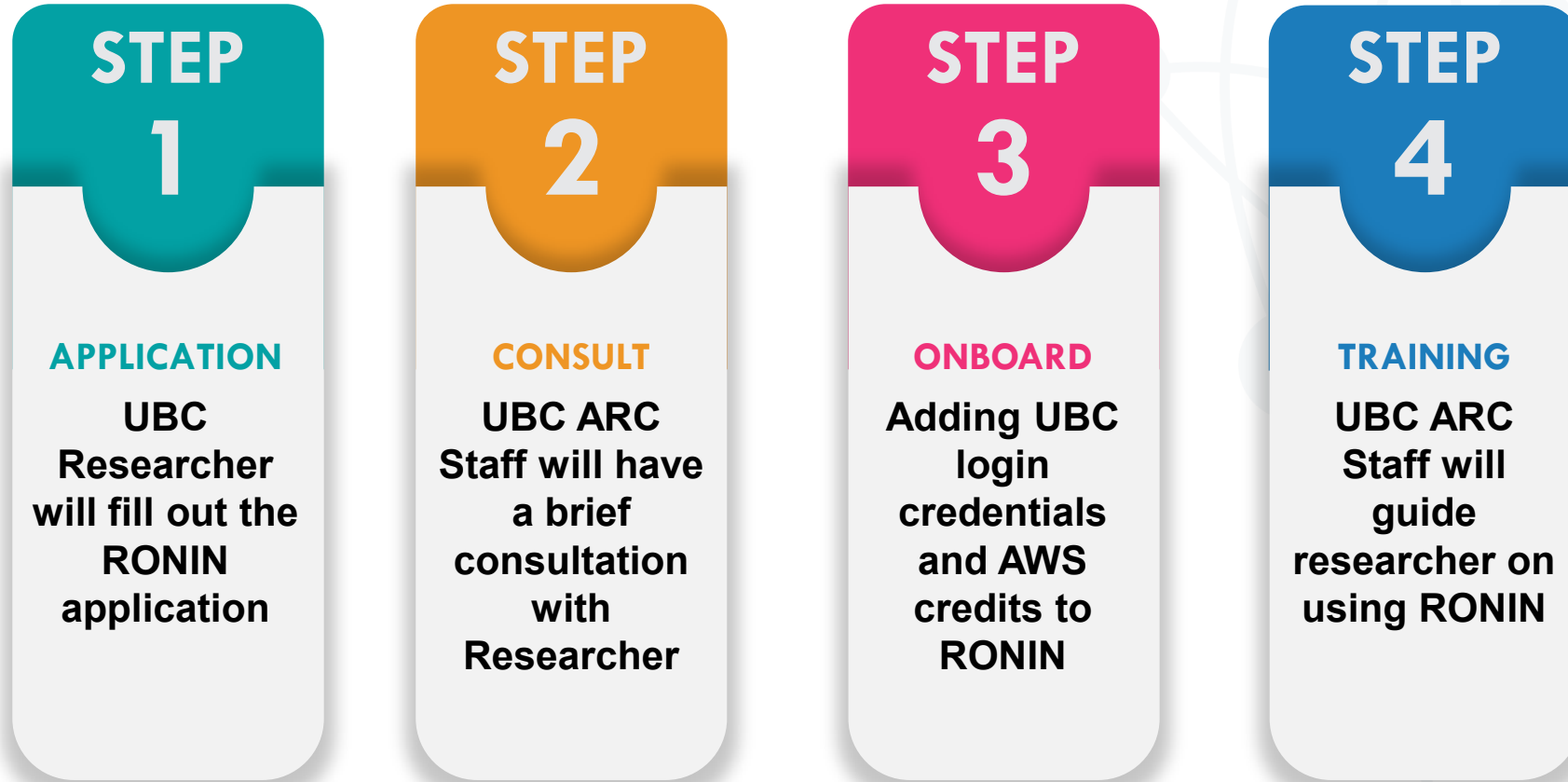
RONIN and UBC



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Onboarding



Onboarding - Requests

STEP 1

APPLICATION

- UBC Researcher gathers information about their project
- RONIN application forms are easily accessible on the ARC web page
- Form submissions create a ticket in our system for our team to review

STEP 2

CONSULT

- After initial review by ARC we reach out to the researcher for more details
- Schedule a 1-on-1 discussion to determine use cases and planned budget

Onboarding – Getting Started

STEP 3

ONBOARD

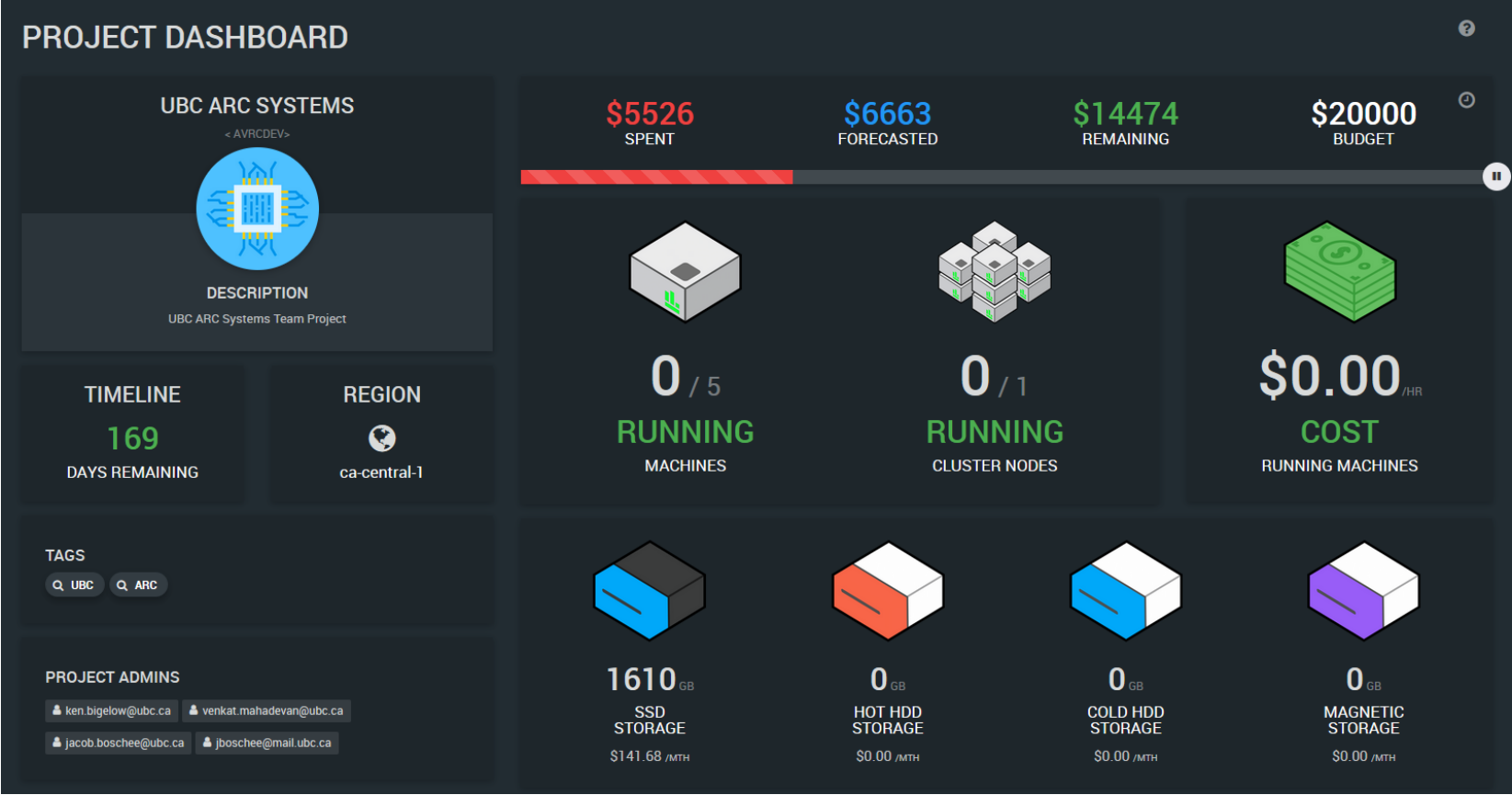
- Researcher provides a list of authorized users to ARC
- Budget is assigned to the created project by ARC to control costs
- User accounts are integrated with campus-wide login for ease of account control

STEP 4

TRAINING

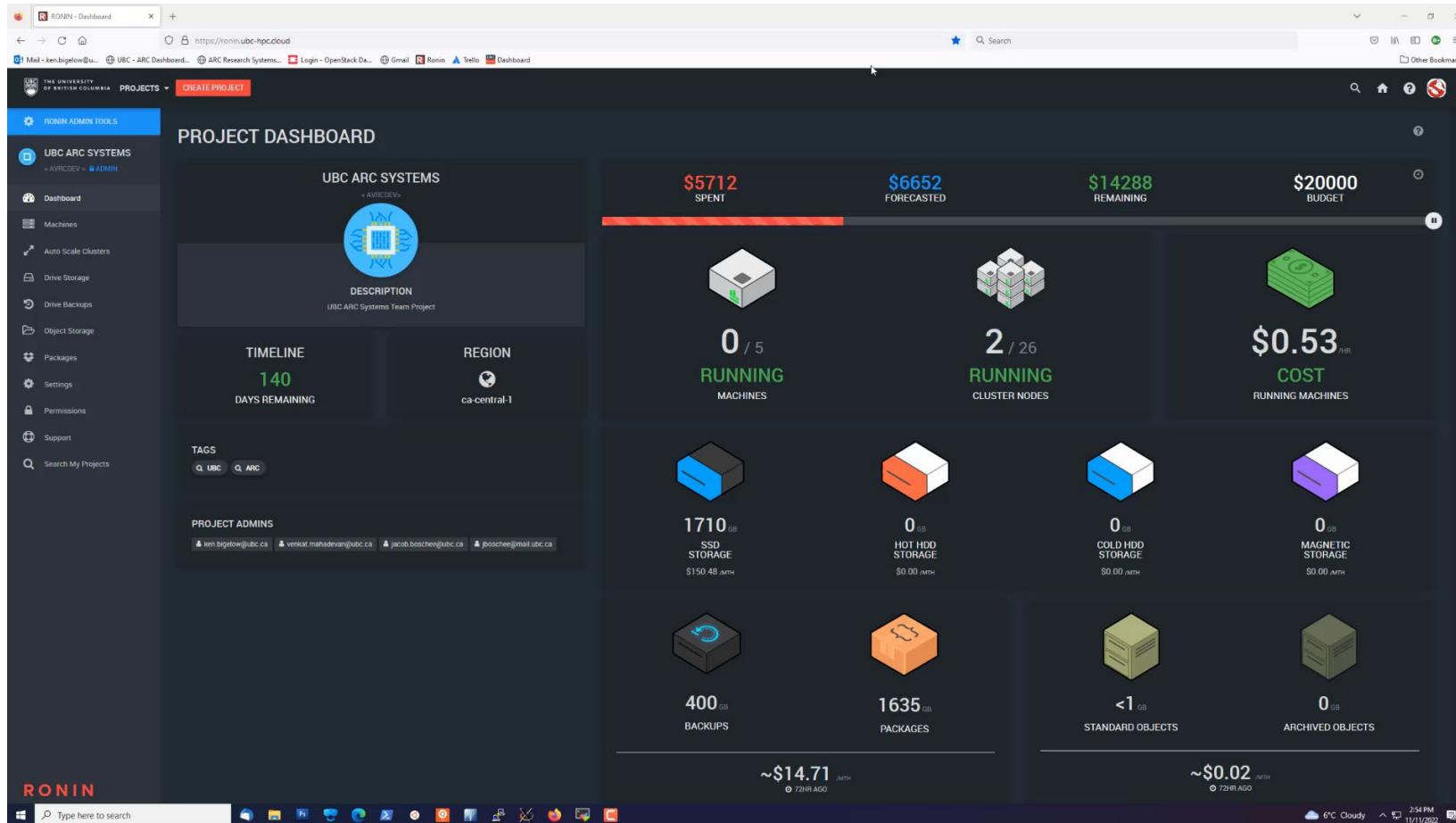
- UBC ARC Staff will guide researcher on using RONIN
- Walk through standing up VMs and auto-scale clusters
- Further questions and assistance is provided through service tickets

Researchers POV



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Researchers POV – Create Auto Scale Cluster



Testimonials

Kevin Leyton-Brown

“We used RONIN to conduct a large simulation study of the Federal Communication Commission's 2016-17 Incentive Auction, a novel and complex auction whose aim was to repurpose radio spectrum from broadcast television to wireless internet.”

“We found RONIN particularly helpful for its ability to support bursty workloads. For most of the project we wanted a small number of machines for preliminary testing, but occasionally wanted many machines to test an idea out at scale. RONIN's autoscaling SLURM clusters made this workflow extremely easy to use and very cost effective. We also benefited from the flexibility of being able to easily switch the underlying machine architecture (type of GPU, amount of RAM) to suit the needs of each experiment, since requirements were often hard to estimate in advance.”

“Overall, we're enthusiastic RONIN users, and hope to be able to do much of our research computing on the cluster in the future.”

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Testimonials

Sherif Osman, Ahmad Rahmzadeh and Shahria Alam

“The novelty of this work is the formulation of performance-based design guidelines applicable to hybrid reinforced concrete bridge piers (HRCBPs), which would enable practicing engineers to adopt such a safe and durable alternative.

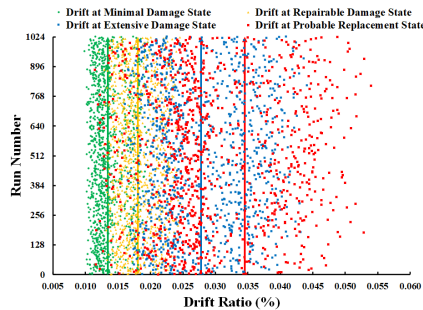
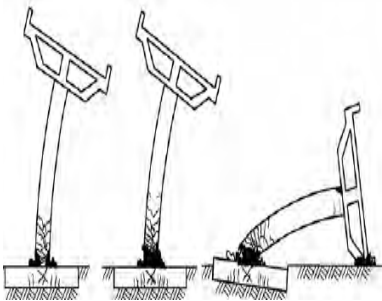
In order to develop such comprehensive guideline, we have already used RONIN to run more than 3072 different cases.”

“RONIN played a very critical role in our research in structural engineering at UBCO.

Many of our students run extensive numerical simulations that require high computational power. To purchase those machines with high configurations seem to be very expensive.

During COVID time, it was also very challenging to access labs. We were solely depending on numerical works. Besides, many students could not graduate and we had to pay them for additional years of funding which triggered funding constraints. So, RONIN did help us survive during those financial hurdles.”

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Thank you !
Questions?



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