



# The Massachusetts Open Cloud (MOC)

Workshop

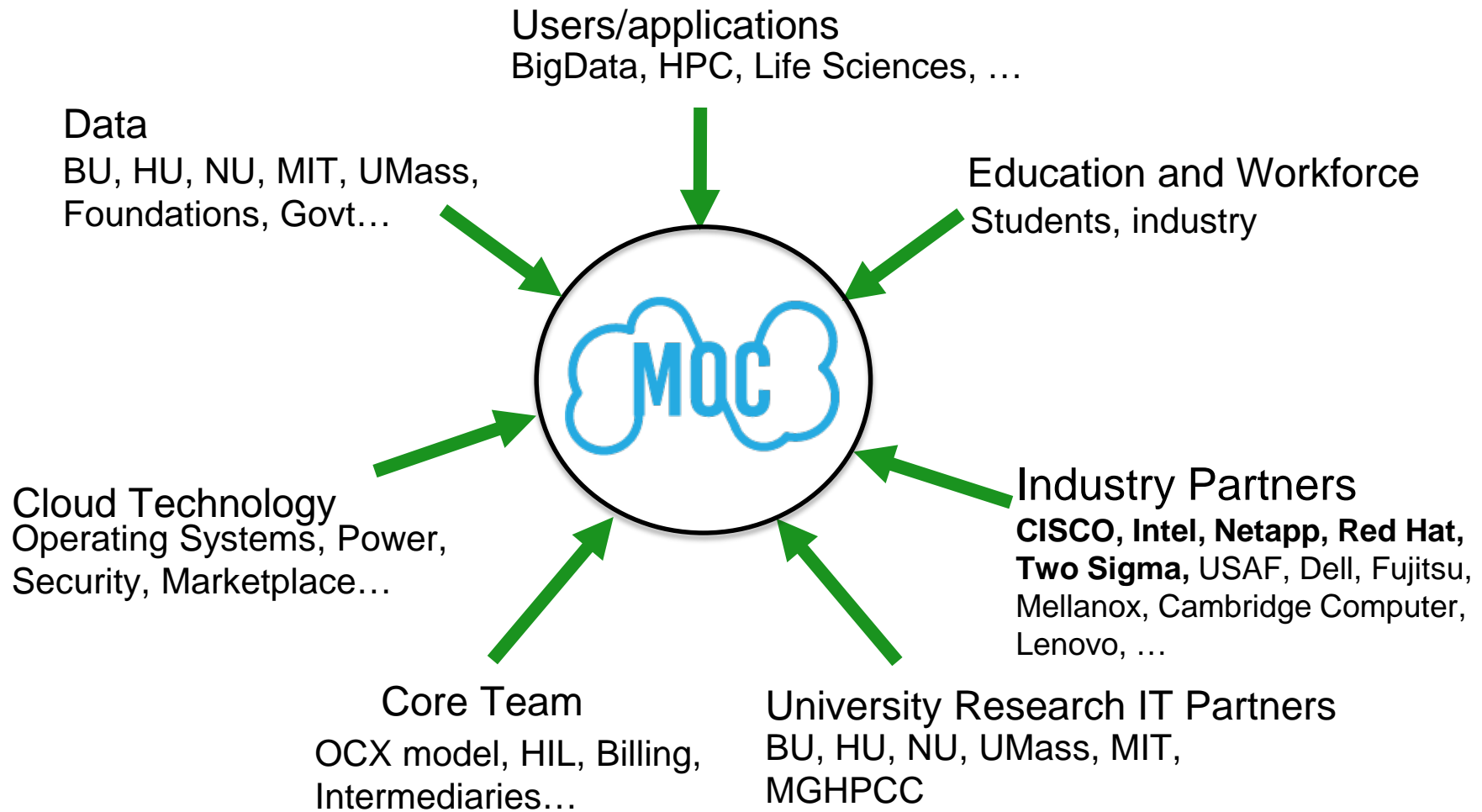
Oct 30, 2018



# Long term project goals

- Create at-scale efficient production cloud
  - *suitable for sharing and analyzing massive data sets and supporting broad set of applications.*
- Create an Open Cloud eXchange (OCX)
  - *enabling level playing field, competition, innovation by broad community, research*
- Create a testbed for researchers, open source developers, startups

# MOC Ecosystem



# Goals of Workshop

- Expose to ecosystem:
  - projects, services, interesting applications
- Enhance connections between different parts of the ecosystem
- Expose challenges and drive new requirements to core/researchers/partners

# Overview of Day

Time	Session
8:00 – 8:50	<b>Overview</b> <b>Keynote: Scaling Challenges at Two Sigma</b>
8:50 – 12:05	<b>Micro-talks: What's Coming on the MOC</b> <b>Micro-talks: Research in an Open Cloud</b>
12:05 – 13:20	<b>Lunch &amp; Posters</b> <b>Viewing of ChRIS Project Videos</b>
13:20 – 15:40	<b>Micro-talks: Elastic Hardware and Security</b> <b>Micro-Talks: Research on an Open Cloud</b>
16:10 - 17:30	<b>Roundtables &amp; Roundtable Report Outs</b>
17:30 – 18:45	<b>Closing Remarks</b> <b>Reception &amp; Posters</b>



# Keynote

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# Five Hours of Micro-talks

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# What's Coming on the MOC

- **MGHPCC: A Platform for Collaboration** - Jim Culbert, MGHPCC
- **The Next Iteration of the MOC** - Lars Kellogg-Stedman, Red Hat
- **Intel's Data Management Platform @MOC** - Dave Cohen, Intel
- **IBM's Deep Learning Investment in the MOC** - Lori Bucciarelli, IBM
- **Cisco: Multi-cloud services for the MOC and its users** - Michael Shepherd, Cisco
- **Harvard Dataverse and the MOC** - Mercè Crosas, Harvard University
- **Using the Mass Open Cloud to perform Data Science Experiments** - Sherard Griffin, Red Hat
- **Looking towards the computing horizon: A Northeast Cyberinfrastructure Lab** - Wayne Gilmore, Boston University & Scott Yokel, Harvard University





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# Research in an Open Cloud

- **Working on an Open Cloud: Red Hat Collaboratory Projects on the Mass Open Cloud** - Hugh Brock, Red Hat
- **Logging What Matters: Presenting Pythia and Just-in-Time Instrumentation** - Emre Ates, BU & Lily Sturmman, BU/Red Hat
- **The workflow motif: A powerful abstraction for debugging distributed applications** - Mania Abdi, NEU/MOC & Golsana Ghaemi, BU/MOC
- **D3N: A multi-layer cache for improving big-data applications' performance in data centers with imbalanced networks** - Matt Benjamin, Red Hat; Emine Ugur Kaynar, BU/MOC & Ali Marieda, Red Hat
- **Bump-in-the-Wire FPGAs and HPC in the Cloud** - Ahmed Sanaullah, BU

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# Elastic Hardware and Security

- **Creating Isolation in the Cloud** - Nabil Schear, MIT Lincoln Laboratory
- **Malleable Metal: Integrating San-booting with Foreman** - Naved Ansari, BU/MOC & Ian Ballou, BU/MOC
- **Agentless Bare-Metal Introspection** - Apoorve Mohan, NEU/MOC
- **The Security in Elastic Secure Infrastructure**- Amin Mosayyebzadeh, BU/MOC
- **Strong Isolation, Verification, and Control in Future Public Clouds** - Rushi Patel, BU
- **FLOCX: Enabling marketplace at the bottom of the cloud** - Sahil Tikale, BU/MOC



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- **Secure Multi-Party Computing in the Cloud** - Ben Getchell, BU
- **FaaS: Think Outside the Container** - Tommy Unger, BU
- **A demonstration of adapting HW to SW needs for network workloads** - Han Dong, BU
- **A Unikernal based on Linux** - Ali Raza, BU & Parul Sohal, BU



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# Four Hours for Discussion

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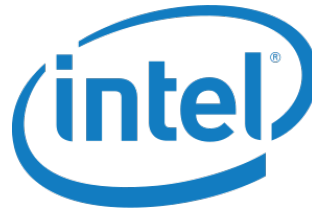
# Roundtable Session – pick one

- **Future Research Opportunities in the MOC**
  - Facilitated by Ayse Coskun, BU; Raja Sambasivan, BU & Mayank Varia, BU
- **Data Science and the MOC**
  - Facilitated by Merce Crosas, Harvard University & Sherard Griffin, Red Hat
- **Looking towards the computing horizon: A Northeast Cyberinfrastructure Lab**
  - Facilitated by John Goodhue, MGHPCC & Scott Yokel, Harvard University



# Thank You

The MOC Workshop is made possible by the generosity of our Core Partners



## Special Thank You to:

Two Sigma for Sponsoring the 2018 MOC Workshop Lunch

Red Hat for Sponsoring the 2018 MOC Workshop Reception

