Data Science Initiative

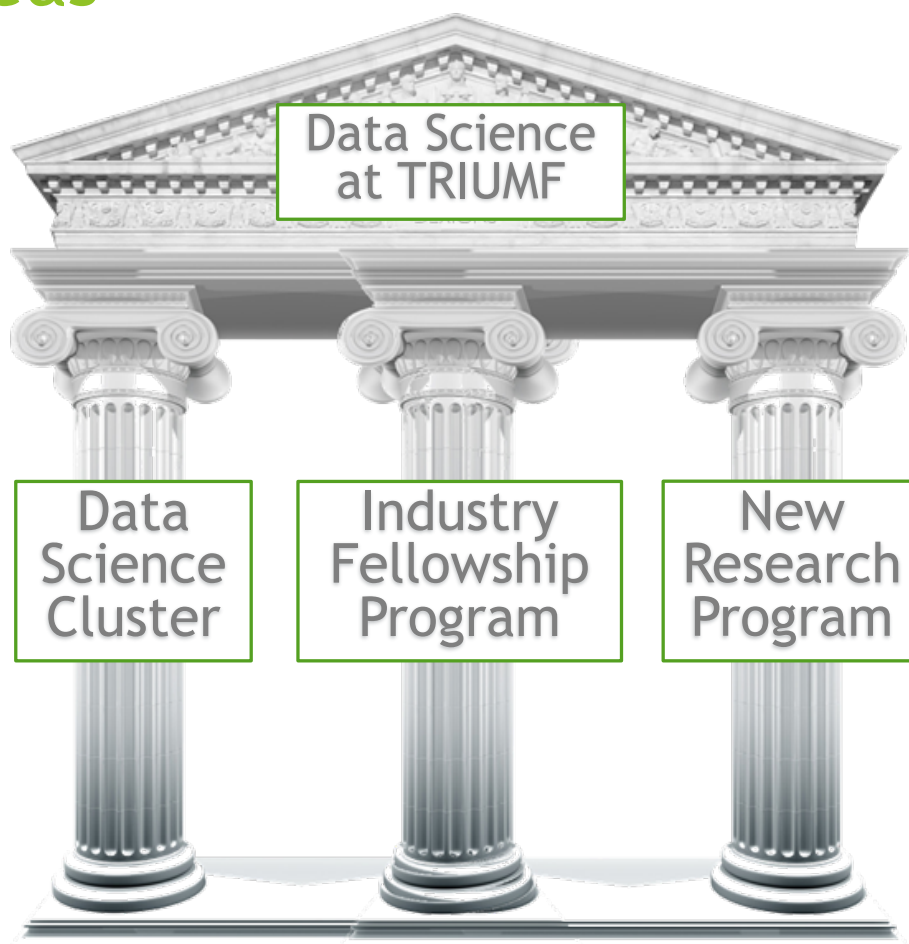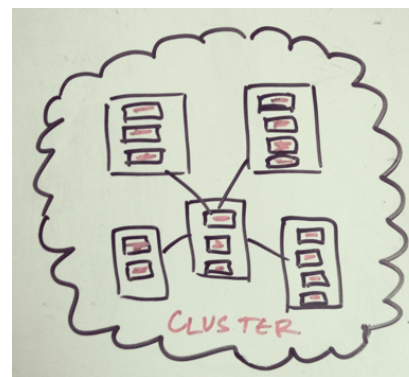## TRIUMF Science Week 2017

Oliver Stelzer-Chilton

Background

- Amount of data produced across the globe has been increasing exponentially

- Big Data is a fast growing industry and research discipline

- Many of our graduates, especially in subatomic physics, are trained to analyze and manage big datasets (building on existing expertise)

- Many are in demand and have found employment in the private sector as data scientists

  - E.g. Facebook, Twitter, Google, EA etc

- At the same time, new developments in data science can benefit our experimental programs to analyze our data more efficiently

- Connection to artificial intelligence is very interesting

- Computing & Software are areas Canada excels in and Vancouver seems suited to become a hub for future growth

Main Areas

Data Science
at TRIUMF

| Data Science Cluster | Industry Fellowship Program | New Research Program |

Data Science Cluster

► Provide a training and discussion development platform for extracting more science from our experiments at the data analysis step

  ► Use of machine learning, multivariate analysis techniques, deep learning and any new developments that arise in the field

  ► Also allows for exchanging techniques between ATLAS, T2K, Belle, Alpha.. etc

► Setup development computing platform, likely hosted at local university and/or use cloud computing facilities

► Hires:

  ► System administrator

  ► Data Scientist that would

    ► support experimental programs

    ► train users and analyzers

    ► Connect to local community (e.g. Organize Data Science Meetups @ TRIUMF)

Industry Fellowship Program

- Tailored similarly to existing program such as "Insight Data" and "The Data Incubator" etc that are successfully operating in major US cities
  - "Seven week postgraduate training fellowship that bridges the gap between academia and a career in data science"
  - Vancouver Data Science Industry might not be large enough yet to attract established programs, but likely just a matter of time
  - TRIUMF Innovations could be partner
- Close connection to industry partners
  - Mentors and potential employers
- Hires/Space:
  - Training program administrators
  - Business and marketing staff
  - Office and meeting room could possibly be arranged by downtown member university campuses

Insight Fellows are Data Scientists at

facebook · Linked in · okcupid · schireson · meetup · Bloomberg · ACTIVISION · jet
VIACOM · DataKind · greenhouse · Square · Capital One · reddit
NBC · STITCH FIX · airbnb · OVER 200 COMPANIES · fitbit · ZocDoc
verizon · VECTRA · twitch · AVANT · oscar · wayfair
Pinterest · JAWBONE · BLACKROCK · Microsoft · TWO SIGMA · MTV
JPMorgan · salesforce · amazon · enigma · SAMBA TV · nielsen · intuit · KHANACADEMY

Research Program

▶ Develop and expand TRIUMFs profile and expertise in data science

▶ Through machine learning connect to artificial intelligence and other related fields

▶ Connect to university partners

  ▶ Local universities have excellent Big Data programs and institutes

  ▶ Establish a new research direction for TRIUMF

▶ Hires:

  ▶ BAE and/or joint TRIUMF-university

▶ Feedback and comments welcome