Elizabeth Leake | STEM-Trek
HPC Knowledge Meeting 2018
Chasing Unicorns in the Global Gig Economy
STEM-Trek was conceived during a 2010 discussion with TeraGrid Campus Champions about post-9/11 security provisions, and implications for central IT (and travel).
NEVER BEFORE! GSA CONFERENCE ATTENDEES WASTE TAXPAYERS’ MONEY!
SHOCKING NEWS! SECRET SERVICE HIRED PROSTITUTES!

HOMELESSNESS
PEAK OIL
WAR
HOME FORECLOSURES
GLOBAL CLIMATE CHANGE
THE WORLD ECONOMY
HUNGER
POVERTY
CRUMBLING INFRASTRUCTURE

Kevin 2012
Won’t compete for federal funds.

Crowd-source social capital for travel support, mentors and more.

Pay-it-forward element: beneficiaries are encouraged to help others, or to help STEM-Trek in some meaningful way.
Focus groups:

• Early-career, HPC-Curious scholars from underrepresented groups and regions

Beneficiaries are encouraged to pay-it-forward by helping:

• Veterans
• Workers displaced by automation
• Aging workforce
• People with disabilities
FIVE-YEAR RECIPE FOR FAILURE

- Lone champion secures a grant
- Program built around a machine & funding w/five-year shelf life
- Communications, outreach, education and ER neglected
- Thin: single point of failure
  - No vacation or time to train.
  - Too much to do; won’t foster growth.
  - No time for planning or advocacy.
  - Gets burned out.
- Program dies with the machine
  - Local trust & confidence wane.
- Jesse takes a job with a bigger lab where he has back-up, and can have a life again.
Who is STEM-Trek?

FB: 60 % are 18-44 (70 % male)
Millennials; generation Y
English: US, India and UK
BVK Presentation: https://prezi.com/bzkho9dl__d8/millennials-higher-education-complete/
Gen Y 80 million strong (US)

Born between 1980-2000: Largest generation in American history (bigger than boomers by 6+ million)

Fancy living a healthy lifestyle

Crave adventure

Seek peer affirmation

Hooked on social media

Impatient—they want it now

Believe in cause marketing (environment is a priority)

Digital natives (cut their teeth on a joystick)

Job-hopping is normal (3 years expected/91 %)

By 2025 there will be more than 2.8 billion people online, where will you be?

US grads have an average $37,172K+ in student debt

Pathological need to be constantly connected to friends & family

$55k in the UK.
BENEFITS OF THE GIG ECONOMY

Employer:
- Don’t have to pay benefits (saves 40 percent)
- Performance driven
- Less effort recruiting/vetting
  - Saves time but not necessarily good

Employee:
- Work from home
- Can be selective
- Negotiate price

Began after 2008 crash; corporations pressed to improve bottom line, less spent on employees and benefits; more profits for shareholders.

Intuit study shows by **2020, 40 percent** of the workforce will be temporary.
PITFALLS OF THE GIG ECONOMY

- **Employer**
  - High turnover
  - Spend more time training
  - Less institutional knowledge
    - Things fall through the cracks
    - Thin organization/weak internal controls
  - Lack of employee loyalty
  - Less vetting = more risk

- **Employee**
  - Lack social connections
  - More and longer periods of unemployment
  - More discrimination (racial, gender, ability, and age bias)
  - Uncertainty
    - Fewer buying homes
    - Fewer getting married and starting a family
    - Living with parents longer/delays their retirement
    - Don’t feel appreciated/lack of loyalty
Y IS THE ANXIOUS GENERATION

- Humans are social creatures/can’t establish strong relational bonds when you move around a lot
- Loneliness & Depression
- Low self-confidence (difficult to negotiate gig rates effectively)
- Opioid epidemic, most related deaths 23-41
- Increased number of incarcerations highest of any age group 23-41 (criminal)
- Joel Stein (supported by data), calls it the “ME” generation (entitled, lazy, selfish, shallow, narcissistic, fame-obsessed).
- They see themselves in a positive light (tech-savvy, innovative, cool, hip, etc.).
In the past, when someone worked long-term for an organization, they developed a breadth of institutional knowledge; they were the unicorns, or “Wizard of Oz.”

It has become difficult to find temporary or full-time employees with the right skills

- HPC sysadmins
- Data Science
- Science communicators
- Tech outreach

THERE ARE NO UNICORNS…
CASE STUDY: SOUTH AFRICAN HPC ENGINEER

- Unicorn 9-year veteran (once a grad)
- CSIR talent search/recruitment extended twice over a two-month period, but only drew three applications
- No ready-made unicorns applied
STEM-TREK OFFERED TO HELP

- Produced a blog
  - 15,500+ STEM-Trek, re-Tweeted by HPCwire to 11.4k followers
- Marketed to Millennials (subliminal)
- Pull vs. Push
  - HR used traditional watering hole
  - STEM-Trek broadcast to global community of prospects
    - Targeted new communities in Cape Town (industry HPC)
Do you have what it takes to be a CHPC Engineer? If so, apply by March 11!

The South African Center for High Performance Computing (CHPC) is looking for an HPC Engineer with five years of relevant experience, and is a competitive position open to the general public.

If you have the skills and are interested in working with cutting-edge technology, this is your opportunity to join a team of experts and make a difference in the field of high-performance computing.

Yes! Women should apply, too.

Appeals to the competitive

Geek’s need to know what they’re in for.

I would apply if I could—you should, if you are qualified.

If you don’t love training, don’t apply.

Position Details:

The South African Council for Scientific and Industrial Research (CSIR) has a vacancy for a High Performance Workstation Engineer. The successful candidate will be expected to fulfill a significant role in the rollout of state-of-the-art HPC technologies, both hardware and software, and to assess its performance and suitability for use in production HPC environments. In addition, the candidate will be expected to ensure that the equipment is maintained to the highest standards.

CHPC’s New System Features:

- Dell PowerEdge C6220 servers:
  - Standard compute nodes: 1.78 GHz/node
  - 2x Intel Xeon E5-2609 v3 (Haswell) processors
  - 32 cores each: 24 cores/node
- Dell PowerEdge R930 servers:
  - Large memory compute nodes: 1024 GB/node (8 GB nodes)
  - 4x Intel Xeon E7 4850 v3 processors
  - 14 cores each: 64 cores/node
  - Infibuntod D2R1.2 2GB Liberty
  - Parallel storage (2xibre) PR

Total number of nodes (including compute, LINpack, and storage nodes):
- 6 in Phase 1 and 19 in Phase 2
- 9 in Phase 1 and 10 in Phase 2 (April 2016)

The 2015 Student Cluster Challenge winners will travel to Germany to compete in the International Supercomputing Conference this summer.
22 QUALIFIED APPLICATIONS RECEIVED IN 8 DAYS!
Recruit and Retain Millennial Unicorns

Remember, they can often earn twice as much elsewhere

Offer a sense of security, avoid soft money if you can

Expedite the HR process. Avoid bottlenecks!

Ample vacation time, and back-up so they can take it

Childcare and generous maternity leave

Flexible work options (home)

Peer recognition: Employee of the month

Free gym membership (family) and time to exercise

Support professional development, travel & conferencing

Encourage and reward civic involvement (cause marketing)

Facilitate the pursuit of and/or completion of advanced degree
DO YOU REALLY NEED A UNICORN?

• If you have strong back-end tech talent, think about augmenting the front-end with soft skills, and cross-train

✔ Cheaper
✔ Diverse
✔ Abundant
WHERE TO FIND PROSPECTS

• Grow your own
  • Student cluster competitions

• Look under the “Long Tail”

• HPC communicators can be from underrepresented disciplines more diverse / stellar soft skills.
  • Arts & Humanities
  • Social Science (XSEDE Jetstream)
  • Economics

• Cherry-pick from another silo (LinkedIn)
  • Journalism and Communications Academic Depts.
  • Public Affairs/University Relations
  • Displaced journalists can be retrained
50 percent of prospects
50 percent of your potential
Make the workplace more comfortable for women

NOT COOL OR FUNNY

Tech companies in China are hiring "programming cheerleaders". Girls that cheer up the programmers as they work.
TechTopia

Well-wired living, laboratory, education, training, and recreational community that offers technical & psycho-social support for rural, home-based, high-tech workers.

Recreational, fitness and cultural options improve the quality of life for residents and their families, while creating a weekend destination for people from nearby cities (vs. the other way around).
FRAUD BOOK

- White-Collar Crime, Organizational Misconduct and Fraud Examination:
  An Accounting, Behavioral and Criminological Approach

By Frank S. Perri, JD, CFE, CPA

- Edited by Elizabeth Leake

- Available in 2019 via Amazon!
ONE PERCENT = PSYCHOPATHS

- Not all are criminals, but many criminals are
- **Red flags** to watch for when hiring or promoting
  - Charming (skilled at impression management/inconsistent with subordinates).
  - Lack empathy (ruthless high-achievers)
  - Rationalize misconduct (blame others; failure is never their fault)
  - Street-level and white-collar wired the same; seek opportunities to exploit

- 25 percent incarcerated in federal corrections facilities are psychopaths
- Orgs with weak internal controls likely to have more than one percent
  - Those with traits gravitate to and are promoted within
  - They hire others who can be manipulated and/or also possess the traits
  - They will seek to normalize fraud in order to establish a culture of misconduct
White-collar crime is “socially-acceptable” and rarely punished
  - When discovered, employee is pressured to quit so there is no mitigation; no record.

Lack of loyalty in gig economy (prevailing attitude that others deserve to be mistreated)

Tight budgets thin staff = Weak internal controls
  - Hire/fire to satisfy selfish needs (intimidated by would-be whistle-blowers, or that would outshine them)

Fraud could be intentional or via negligence

Stakes are higher than ever (costly in terms of penalties and might take years to discover)
  - Nefarious use or sale of computational power (intentional or neglect)
  - Intellectual property sold and/or orchestrated data breach
  - They might buy hardware or software for illegal purposes, or personal use
  - Misuse decommissioned hardware
  - Set up a Bitcoin mining operation in the closet (excessive power bills/institution’s liability)
  - Serve-up copyright protected media; university subject to liability
By Thomas Sterling, Matthew Anderson and Maciej Brodowicz

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QUESTIONS?

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