



Elizabeth Leake | STEM-Trek Executive Director

Advancing Research Computing on Campuses | Best Practices

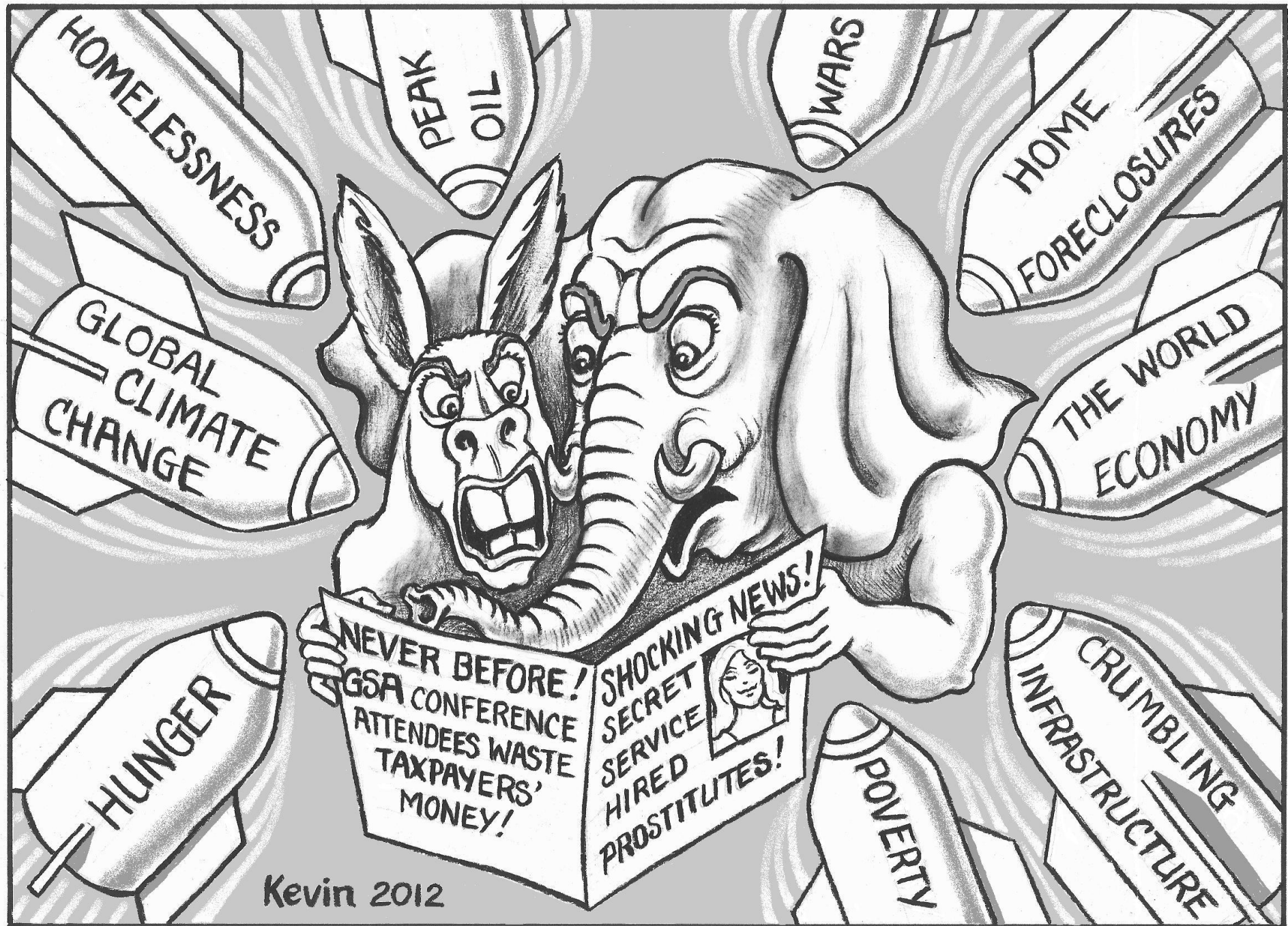
A New Career Path: The Cyberinfrastructure Professional





2010 discussion with TeraGrid Campus Champions about post-9/11 security provisions, and implications for central IT (and travel).





Kevin 2012



STEM-TREK/GLOBAL, GRASSROOTS

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
- Veterans
- Workers displaced by automation
- Aging workforce
- People with disabilities

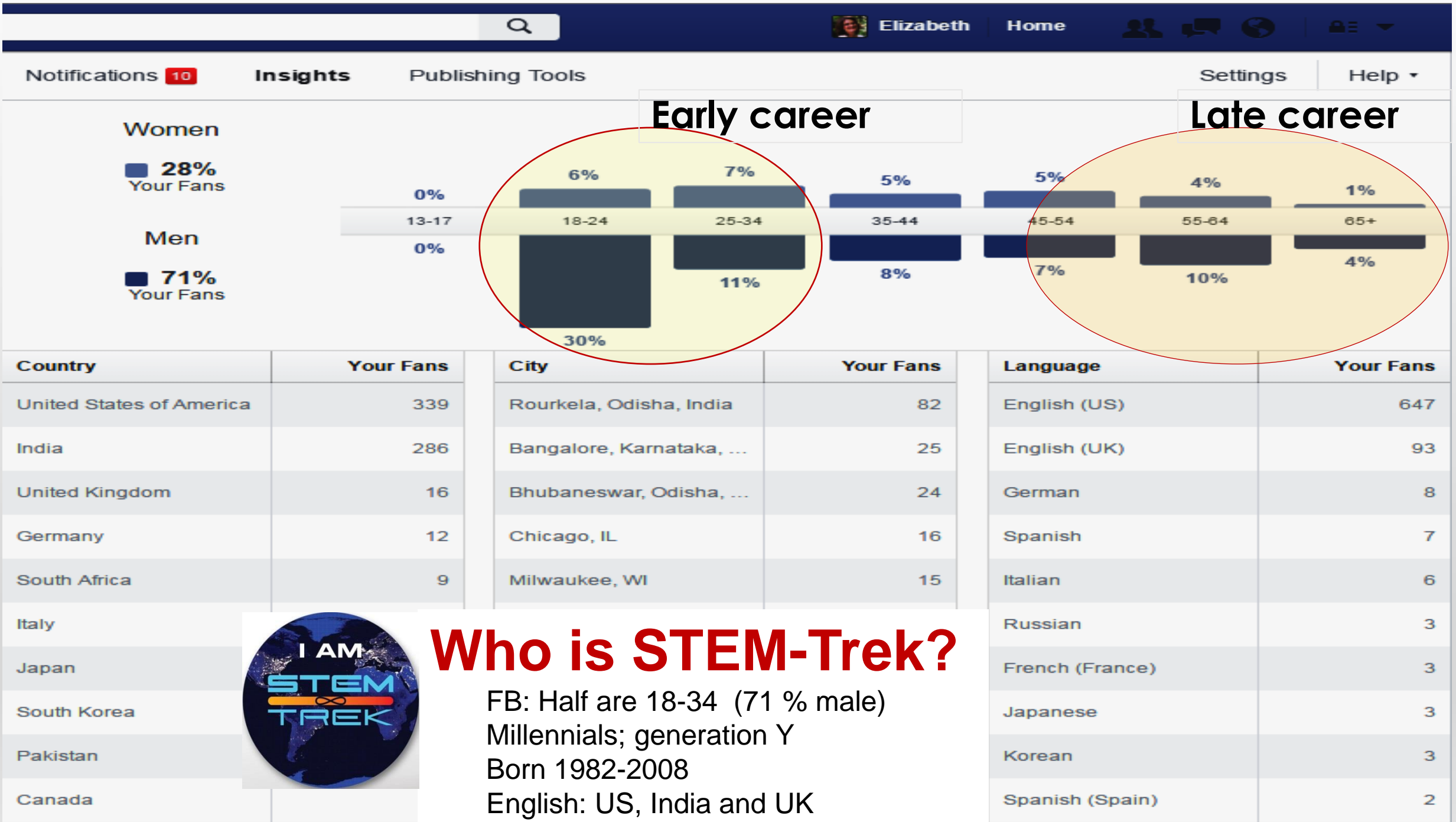


FIVE-YEAR RECIPE FOR FAILURE

- 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.



I AM
STEM
TREK

Who is STEM-Trek?

FB: Half are 18-34 (71 % male)
Millennials; generation Y
Born 1982-2008
English: US, India and UK



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Millennials Higher Education - COMPLETE

No description

by BVK Interactive on 3 February 2016 • 358

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Popular presentations

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Gen Y 80 million strong (US)

Largest generation in American history
(bigger than boomers by 6+ million)

Fancy living a healthy lifestyle

Crave adventure

Seek peer affirmation

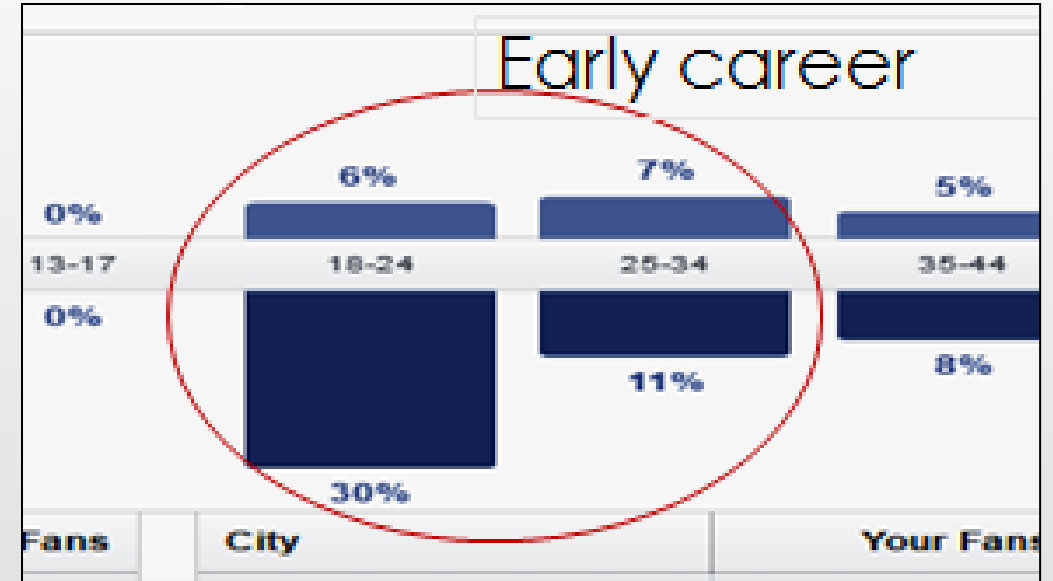
Hooked on social media

Impatient—they want it now

Believe in cause marketing (environment)

Digital natives (cut their teeth on a joystick)

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



Ave. \$ 35K+ student debt.

Formative years aged 7-19 in 9/11, 2001
Columbine 1999

***Pathological need to be constantly connected
to friends & family***


By 2025 three-fourths of the world's workers will be millennials!!!!

LOSS OF KEY SYSADMIN/TRAINER TRADITIONAL RECRUITMENT (CSIR HR TEAM)

- Had been there 9 years (since he was a grad)
- Recruitment extended twice over a two-month period, but only drew three applications
- No unicorns applied


STEM-TREK OFFERED TO HELP

- Produced a blog
 - 8000+ STEM-Trek, re-Tweeted by HPCwire to 11.4k followers
- Marketed to Millennials (subliminal) 
- Pull vs. Push
 - HR watering hole vs.
Broadcast to community of prospects
- Targeted prospects in Cape Town (industry HPC)



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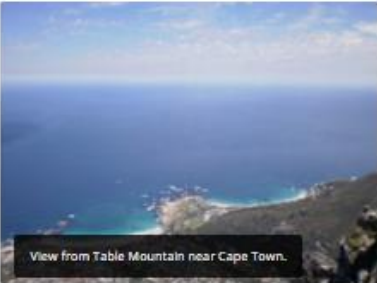
STEM-TREK

- Free or low-cost HPC training
- News & Events
- Preparing for Exascale in South Africa @ the 2015 CHPC National Meeting
- CHPC OPEN SOURCE
- Institute
- Home
- Participate
- Leadership
 - Elizabeth Leake, Founder and President
 - David Stack, Vice President and Adviser
 - Diane Baxter, Education Adviser
- Organization Documents

Do you have what it takes to be a CHPC Engineer? If so, apply by March 11!

On March 3, 2016 | By Stem Trek | With No Comments

The South African Center for High Performance Computing (CHPC) is looking for an HPC Engineer with five years of relevant experience, and a combination of soft and technical skills. The successful candidate will be a front-row participant in the lives of many and a chance to work with an amazing team!



View from Table Mountain near Cape Town.

As you may have heard, HPC industry eyes are on South Africa as exascale's likely birthplace. With the Square Kilometer Array (SKA) being built in the great Karoo region, implications for SA and the HPC industry have captured the attention of


With only a few years left to prepare for SKA, CHPC is expanding their portfolio with the addition of a new petascale system.

The HPC Engineer would be a key team member in the planning of their annual national meeting, a significant challenge. You will be part of a student team working on the 2015 International Supercomputing Conference in 2013 & 2014.

Their annual national meetings feature in-depth data science and network infrastructure content, in addition to the traditional HPC tutorials, workshops, plenaries, and student programs. Plus, they're held in phenomenal venues. The 2016 conference will be in beautiful East London, and in 2014 it was at Kruger National Park, a game reserve the size of New Jersey where people are in cages and animals run free.

If the successful candidate doesn't already live in Cape Town, CSIR will support relocation expenses (even if they don't live on the continent). Plus, the job offers 25 paid vacation days each year.

If I were qualified, I wouldn't be posting this—I would be applying before the March 11 deadline!



Elizabeth Leake, Founder and President

CHPC's New System Features:

Dell® PowerEdge™ C6320 servers:

- Standard compute nodes 128 GB/node
- 2x Intel® Xeon™ e5-2690 v3 (Haswell®) processors
- 23 cores each; 24 cores/node

Dell PowerEdge™ R930 servers:

- Large memory compute nodes; 1024 GB /node (fat nodes)
- 4x Intel Xeon E7 4850 v3 processors
- 14 cores each; 56 cores/node
- InfiniBand™ FDR 2:1 blocking 56 GBPS
- Parallel storage (usable) PB

Total number of racks (including compute NLogin® management and storage nodes):


- 6 in Phase 1 and 19 in Phase 2
- Centos 7.1 with Bright® cluster management

Total expected LINPACK compute (TFLOPS):

- 774.5 in Phase 1, and 1000 Phase 2 (April, 2016)

Position Details:

The South African Council for Scientific and Industrial Research (CSIR) has a vacancy for a High Performance Computing (HPC) Engineer. The successful candidate will be responsible for the design, development, and deployment of HPC technologies, both hardware and software, and to assess its performance and suitability for use in production HPC environments. In addition, the candidate



The 2015 Student Cluster Challenge Winners will travel to Germany to compete in the International SCC 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)

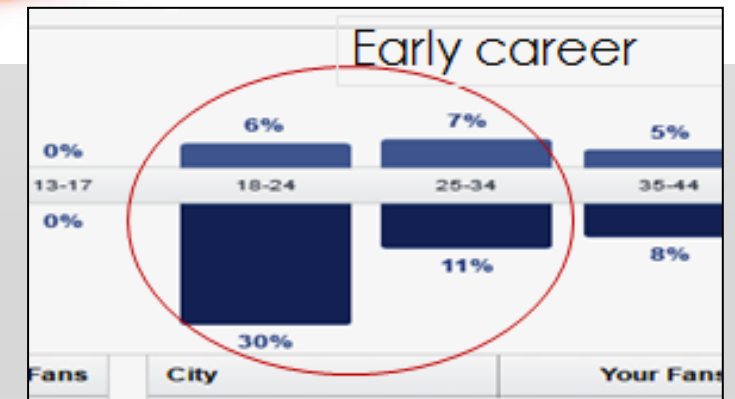
Peer recognition: Employee of the month

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



Institutionalize perks; In 9 years $\frac{3}{4}$ of all workers will be millennials!!!!

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

- 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

Rural-TechTopia, anyone?



By Elizabeth Leake, STEM-Trek

When I founded STEM-Trek, I began to investigate why economies everywhere had begun to unravel. I became even more convinced that we need a stronger support system for our focus groups, including STEM (science, technology, engineering, and mathematics) scholars, veterans and the aging workforce. While volunteer work through STEM-Trek has taken me to sub-Saharan Africa where communities have always struggled, it has been especially difficult to watch conditions deteriorate in what was once my idyllic home town, Lincoln, Illinois-U.S. You might say it's the heart of the heartland.

Subtle changes to a town are more obvious to people who move away, and return for holidays. For me, trips home have been infrequent since my parents passed away, but I'm returning in a

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).



QUESTIONS?

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