

Building a Competitive 21st Century Software Workforce

An aerial photograph of a city skyline, likely San Francisco, with a large stadium (SAP Center) in the foreground. The image is overlaid with a dark blue semi-transparent rectangle on the left side, which contains the title text.

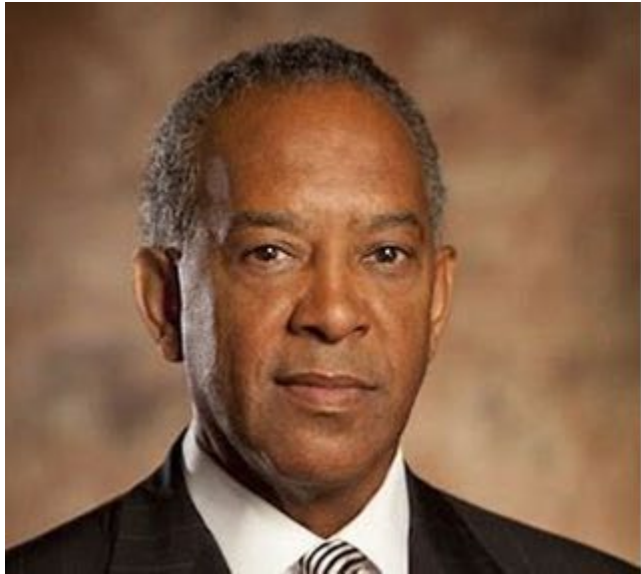
Dr Joe Besselman & Charisse Stokes

Overview

- How did we start?
- How did we start and EVOLVE...
- Economic Impacts: STEM Realities
- Why 27 Percent Matters & Important to DoD/HBCUs
- More Evidence For Change
- Best practices
- Ongoing Challenges
- So now what...

How did we start?

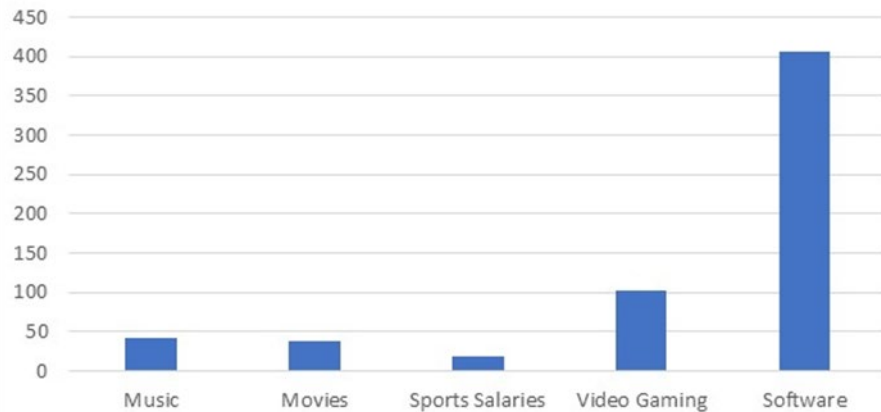
Conspicuous leaders impacting American society with a STEM connection



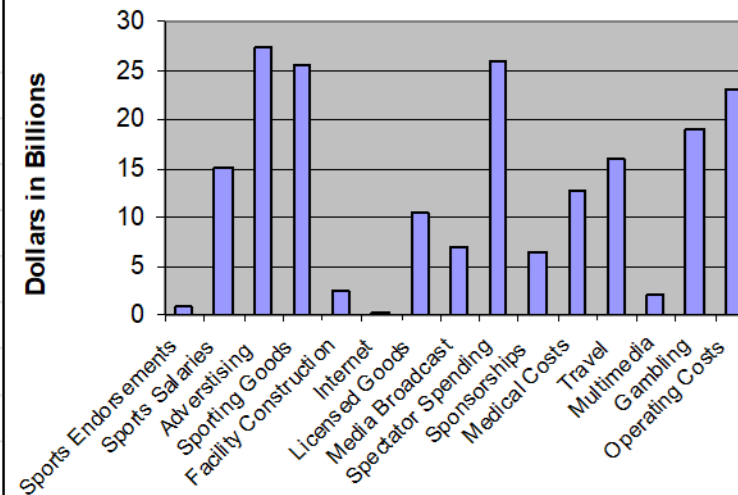
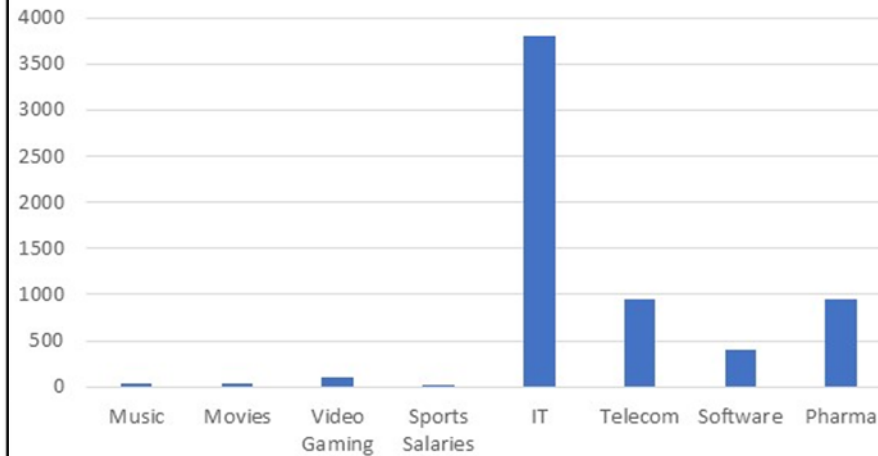
How did we start and EVOLVE

Conspicuous leaders impacting American society with a STEM connection...**Showed them the money 2010-2013**

Dream Sectors Vs Software in Billions \$
WorldWide



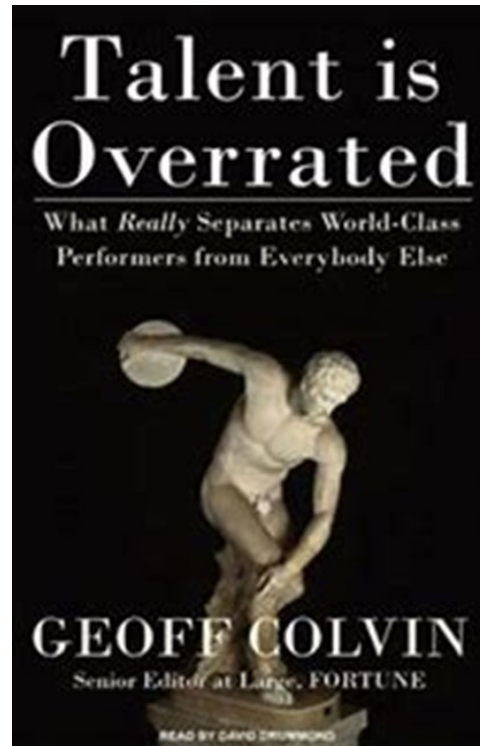
Worldwide Spending in Billions \$



How did we start and EVOLVE

Conspicuous leaders impacting American society with a STEM connection...Showed them the money 2010-2013

"Talent is Overrated"



How did we start and EVOLVE

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“Talent is Overrated”...**Shifted funding to targeted communities to grow Robotics curriculums—got CRITICISM**



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Shifted yet again towards a stickier message

- **DoD and Country’s dire need for Engineering and IT/Software Specialists**
- **Minorities and Women UNDERREPRESENTATION in these disciplines**
- **Economic importance to Minority communities and security of Women**
- **Economic importance to the remainder of the respective communities – “...all boats are lifted”**

2019 STEM Realities

- Engineering: Women are 13-24%, with approximately 5000 Black graduates out of 127,000 total graduates in 2019
- Computer Science and IT: About 89,000 grads per year and 26% of them are Women and Black only 9%
- Health related professions: 251,400 grads: Men 15%: Black: 29,000
- Biological Sciences: 121,200 degrees: Men 36%: Black: 10,000
- Hispanic population is really surging as a STEM participant when comparing today to 10-15 years ago

What if we could get Minority Graduates to 27% and Women to 55%?

(Very Similar to NY Times Study of Haiti)

Why the 27 Percent Matters

- Graduate Year Minority Impact: \$3.1B (adjusted salary by discipline)
- Graduate Year Impact on Women: \$15B
- However, these choices cause lifetime impacts—these decisions by our young people will likely affect them for 50 working years
- Annual Lifetime Minority Impact With No Salary Adjustment: \$120-150B
- Annual Lifetime Impact to Women With No Salary Adjustment: \$400-600B²¹

**DoD Should Target Growing 25-100K More STEM Graduates Per Year
(It is only a “paltry” \$2-8B)**

Why Important to DoD and HBCUs

In this software century, our Country, your DoD needs MORE;

- Engineers
- Computer Software/IT Experts
- Software economists
- Modeling/Simulating
- Penetration Testers
- Creators of Automation (Testing, RPA, Composite Capabilities)
- Appliers of AI and Machine Learning
- Real Time Adapters
- Software Architects
- Scanning Technologists

More Evidence For Change

- PEO BES operates across three geographic locations with more than 2000 military, civilians and contractors (Montgomery, AL; Dayton, OH; and San Antonio, TX)
- More than 130 programs or more than 400 applications
- Approximately 37% of the workforce is Minority
- One of five Portfolio leads as well as Directors of Engineering, Contracting, and Small Business Contracting are Minority
- Minority-owned Contractors approximately 23% out of \$1.16B total contracts
- Software Releases:
2019: 334; 2021: 17,500; 2022: on a trajectory for 14,000
- PEO has incentives to engender more Minority contracting; targeted HBCU rising Junior or Senior hiring: RPA program targeting 6 per year by location with initial effort at 2 by location (already hired programmers from Tuskegee and Alabama State University)

Best Practices

Montgomery AFCEA Chapter, TechMGM and the Lab on Dexter

- Local AFCEA Chapter has donated over \$1M to local public school district for STEM efforts
- Targeted scholarships to educators seeking graduate degrees in STEM areas in minority areas
- Majority of high school internship awarded are minorities
- Partners with local organizations to expose minority students to emerging technology
- Hosts 600 high school students during AFITC, sponsors hackathon event
- Participates in National Computer Science Education Week to encourage Comp Sc
- Collaborates with industry led organizations and local universities to provide certifications
- Facilitates The Alabama Collective to elevate minority tech talent and entrepreneurs
- Integral part of building a regional ecosystem to raise awareness and provide opportunities

Ongoing Challenges

- Tremendous losses of income and economic security to Women and Minority Communities—exploring duplication of the Haiti study with the New York Times
- Country needs Engineers / IT/Software technologists
- Historical White Male faculties with “weed out” culture – CS50 at Harvard has shattered that model
- Need money and study of;
 - Transitions of Women from Jr High to High School and High School to College
 - Loss of Minority males happening in Elementary Schools
 - How can we bring Minority males in contact with law enforcement back into the workforce

So now what...

- Attacking ALL facets of the Accession Chain:
 - Education (teachers and students)
 - Interns
 - Hiring
 - Promotions
 - Companies
- Ensuring leaders are SEEN
- Its not just about Minority ownership—where are the Women and Minorities?
- TARGETED Hiring – and in some cases dragging people into the workplace

So what now...

Come and check us out at DAFITC/HBCU Classic Weekend

- August 29^h – September 1st, Montgomery, AL
- 4000+ attendees
- 100+ seminar sessions, 10+ keynotes
- innovateAFITC Hackathon Cyber Challenge
- Women's Leadership Luncheon
- HBCU ROTC Mentoring Session
- HBCU NPHC Mixer
- Blacks in Tech & Innovation Roundtable
- HBCU Alumni & Friends Golf Tourney
- HBCU Classic Weekend; Labor Day and Red Tails Classic

