Women in Digital Services

Success trends for raising female profiles and accomplishment rates across information technology digital services practices.

Goal: Identify Success Factors

- How can we make current and future endeavors to increase female profiles and accomplishment rates across information technology digital services practices MORE SUCCESSFUL?

- *Hint: We have a few ideas, but we want your input during this session!*

Agenda: Let's collaborate

- Examples of women successes in Digital Services / IT
- Why do we care?
- What is success?
- 3 prong approach to education and exposure of Digital Service
    - School Age
    - Adults Not Currently in Digital Services Fields
    - Women Already in IT field
- Summarize identified **Success Factors**

Panel Introductions

Kathy Knight
Information &
Communication Technologies
Association of Manitoba
(ICTAM)

Martine Delannoy
Chief Foresight Officer at Digipolis
(city of Ghent, Belgium)

Tamara Shoemaker
Director, Univ. of Detroit Mercy's Center
for Cyber Security & Intel Studies; Ops
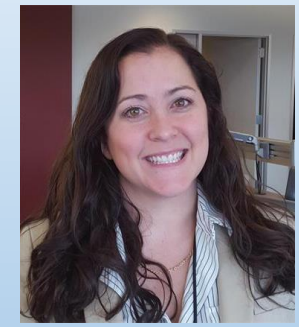Mgr for CISSE; Founder of MI CB Prgm

Marta Arsovska-Tomovska
Former Minister of Information
Society and Administration Of the
Republic of Macedonia

Beth Bell
Vice President and IBM GBS
Canadian Public Sector Lead

Tammy Heller
Vice President, Global Human
Resources Centers of
Expertise, CGI

Lisa Zellers
Director, Emerging
Technologies Practice: Digital
Services Agile Enablement,
CGI Federal

Examples of ♀ success

1940's

Credit: Wikimedia Commons, US Army Photo from the archives of the ARL Technical Library

Betty Jennings and Frances Bilas
2 of 6 women who programmed the ENIAC

1950's

Rear Admiral (Commodore) Grace Hopper
One of the 1st programmers of Harvard Mark I calculator & UNIVAC
Developed the 1st compiler for a computer programming language
Work at CODASYL led to the creation of COBOL

1970's 1980's

Frances Allen
Pioneer in the field of optimizing compilers
Seminal work in parallelization and code optimization
First female recipient of the Turing Award, 2006

From "The Women Who Helped Create Computers and The Modern Internet" Forbes
https://www.forbes.com/pictures/57640c5b4bbe6f038784b647/the-women-who-helped-crea/#52baf81ce3c2

Examples of ♀ success now

- Partner work: Think of an influential women in IT / Digital Services

Laura Weidman Powers
CODE2040 supports young black and Latino engineers working to ensure they are proportionally represented
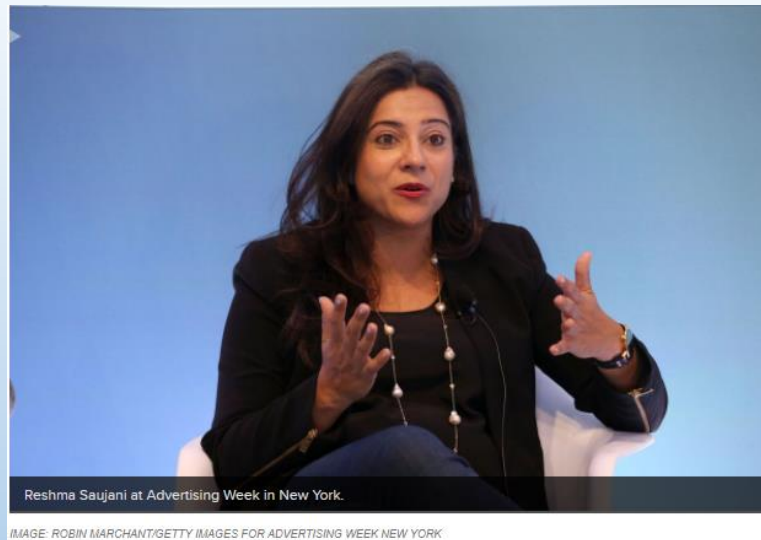

Reshma Saujani
founded Girls Who Code

Tracy Chou
Engineer and alumna of Pinterest and Quora Helped create movement for tech to publish diversity data

From "12 badass women running the tech world" Mashable
http://mashable.com/2017/03/08/women-in-tech-international-womens-day/#SsxQ9_tLo5qH

Is there a problem?

What Happened To Women In Computer Science?

% Of Women Majors, By Field

■ Medical School   ■ Law School   ■ Physical Sciences   ■ Computer science
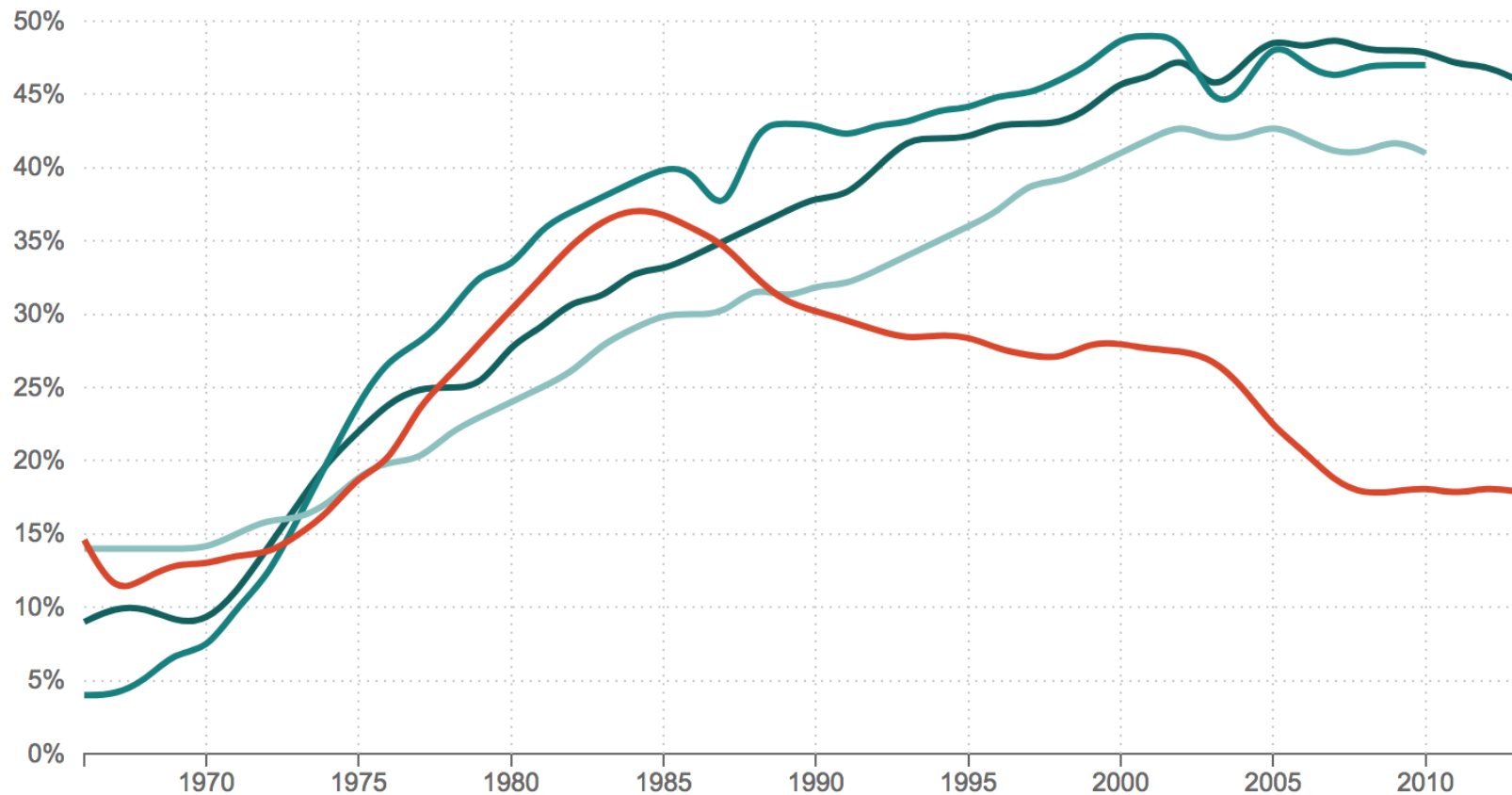
Source: National Science Foundation, American Bar Association, American Association of Medical Colleges
Credit: Quoctrung Bui/NPR

http://n.pr/2vMJWtQ

A Sampling of Theories

- programming was considered "clerical work" - low status, badly paid
http://stanford.io/2unppYg

- discovered to be hard, became a male-stereotype activity like math
http://stanford.io/2unppYg

- perception that tech/engineering is all about machines and cables, men working in basements or conducting trains (male-dominated working environments). Women often don't understand what options are available in tech fields - and that stops them! https://www.forbes.com/sites/markfidelman/2012/06/05/heres-the-real-reason-there-are-not-more-women-in-technology/#561296747b73

- marketing of personal computers to boys in the 80's http://n.pr/2vMJWtQ

- stereotype that women are less competent, evidenced as men move into a field, salaries go up. As women move into a field, salaries go down http://bit.ly/2wrzVza

- pervasive *belief* that innate ability or brilliance is required to succeed http://bit.ly/2wFHzW9

- we're raising girls to be perfect (by avoiding failure and risk) and we're raising boys to be brave http://www.ted.com/talks/reshma_saujani_teach_girls_bravery_not_perfection

03/10/2017

8

"Subtle Gender Bias" Study

"Science faculty's subtle gender biases favor male students", Moss-Racusin *et al*

http://www.pnas.org/content/109/41/16474.full
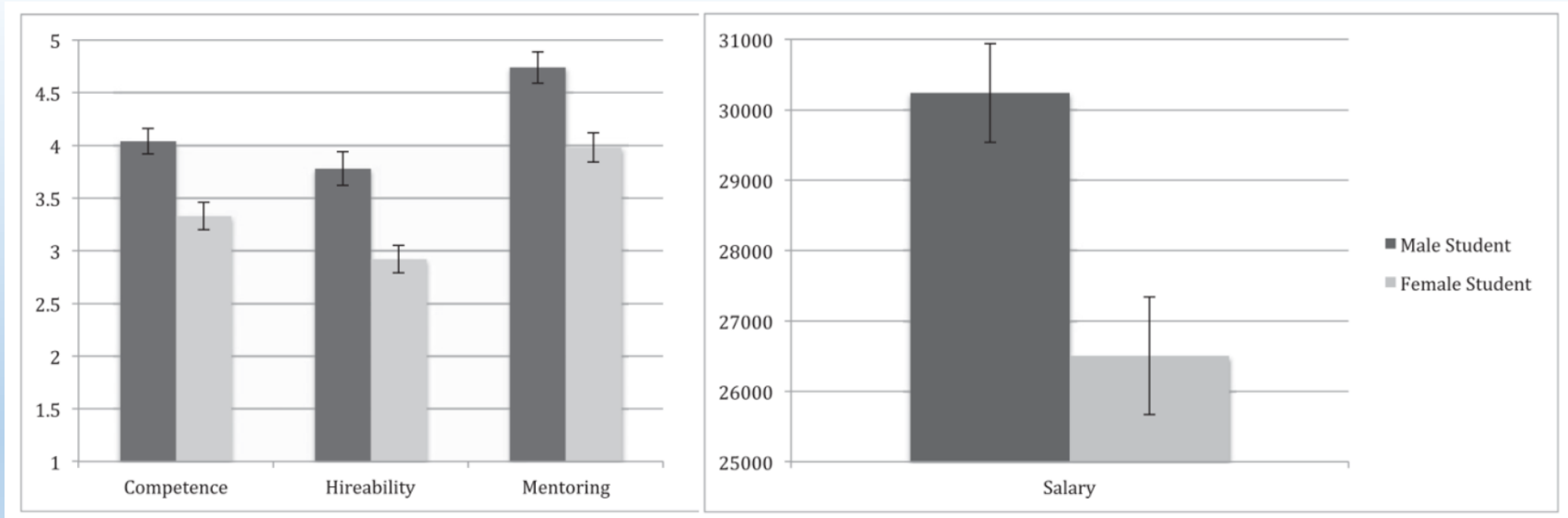
Gender bias in open-source

- For this study, researchers looked at more than 3 million pull requests from approximately 330,000 GitHub users, of whom about 21,000 were women.

- The researchers found that 78.7 percent of women's pull requests were accepted, compared to 74.6 percent for men.

- Programmers who could easily be identified as women based on their names or profile pictures had lower pull request acceptance rates (58 percent) than users who could be identified as men (61 percent). But woman programmers who had gender neutral profiles had higher acceptance rates (70 percent) than any other group, including men with gender neutral profiles (65 percent).
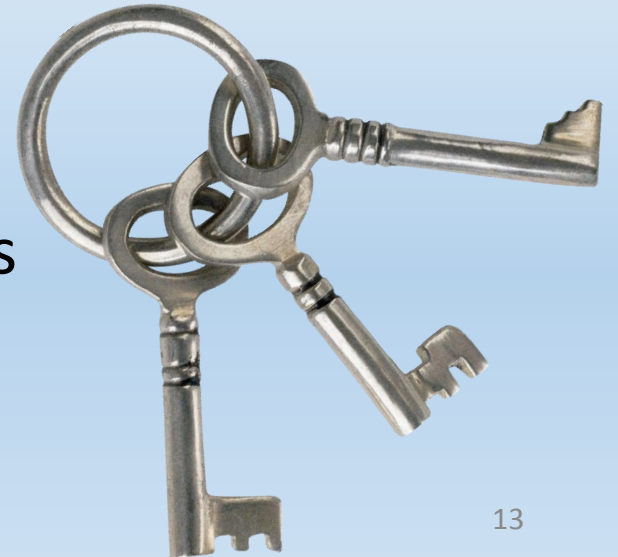
.... Even in 2017

- Google Manifest-bro: James Damore http://bit.ly/2wFChdb

- White House Decision to Stop Equal Pay Rule http://fortune.com/2017/08/30/ivanka-trump-equal-pay/

- In EU, 2.7 million people work in the ICT sector, but only 20% are women. http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A8-2016-0048+0+DOC+XML+V0//EN

- US recognizes a 21% pay gap between genders. https://www.dol.gov/wb/stats/stats_data.htm

- Google - 31% women /25% management https://www.google.com/diversity/

- Microsoft 26.8% (declining ~1% for 3 years) https://blogs.microsoft.com/blog/2016/11/17/global-diversity-inclusion-update-microsoft-deepening-commitment/

- Oracle 29% women / 23% mgmt https://www.oracle.com/corporate/citizenship

- SAP 32 % women / 25% mgmt https://www.sap.com/corporate/en/company/diversity.html/workforce/diversity.html
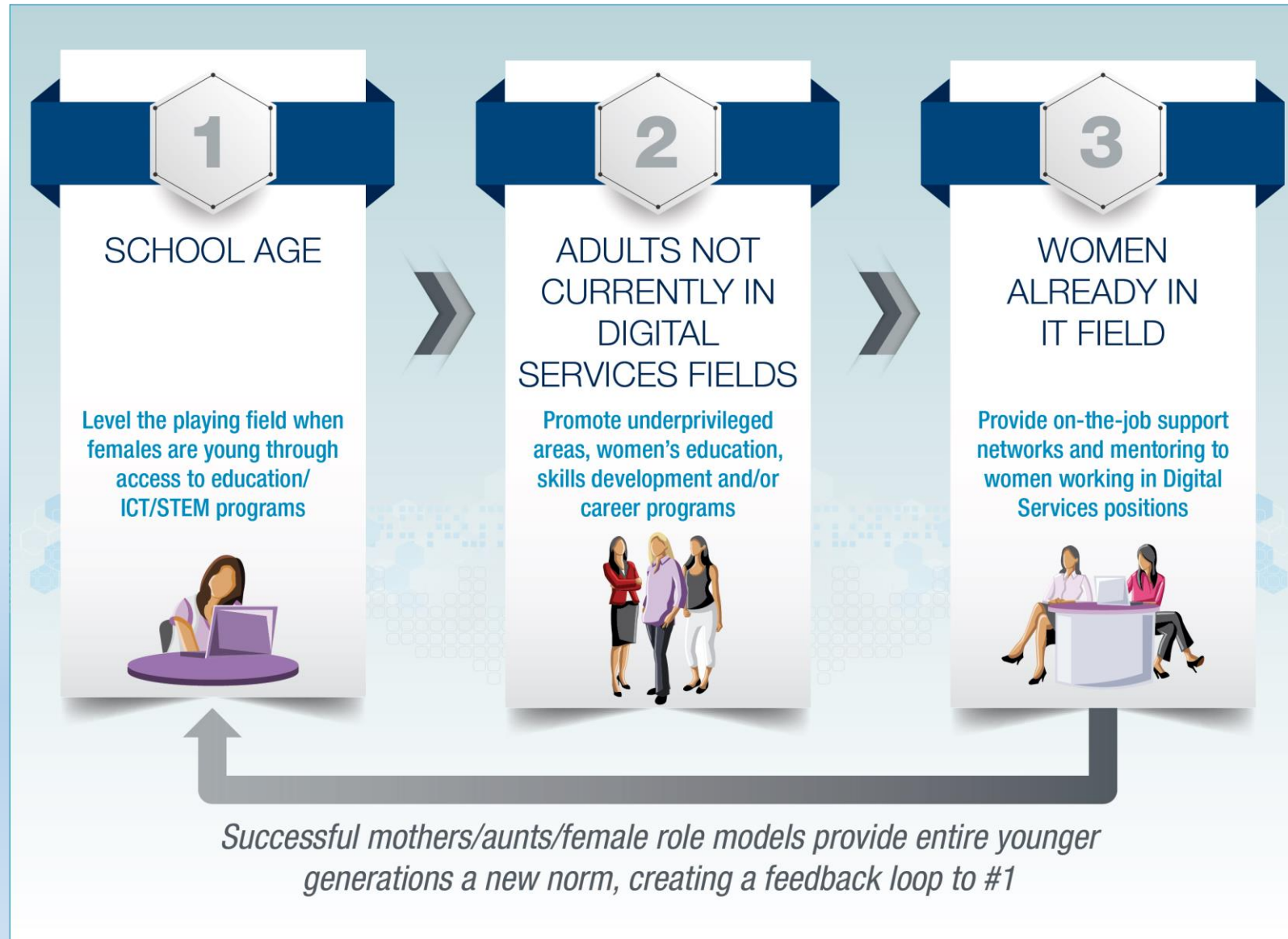
Why do we care?

- **Some of us are women!**

- **Some of us know (have) female children! ...and want them to succeed!**

- Digital Service (IT) jobs are highly paid, provide financial independence and have high impact on society

- We are potentially missing out on >50% of the workforce

- Diverse teams deliver better results and better access to different client groups http://bit.ly/2vLI3g1

- By 2020, Girls Who Code estimates there will be an estimated 1.4 million computing-related jobs in the U.S. alone, and women will likely only fill 3% of those. https://www-03.ibm.com/employment/us/diverse/downloads/empowering_women_in_tech_ibm_case_study.pdf

What is success?

- Seeking and maintaining a balance of women
  - Overall working in IT/Digital services fields
  - At all levels, including leadership and decision-making roles
- Equal pay for equal work
- Not tolerating gender-based discrimination or sexual harassment in the workplace
- Paid maternity and paternity leave
- Benefits such as healthcare and flexible work schedules

3 Prong Approach to Education and Exposure

1 SCHOOL AGE

Level the playing field when females are young through access to education/ICT/STEM programs

2 ADULTS NOT CURRENTLY IN DIGITAL SERVICES FIELDS

Promote underprivileged areas, women's education, skills development and/or career programs

3 WOMEN ALREADY IN IT FIELD

Provide on-the-job support networks and mentoring to women working in Digital Services positions

Successful mothers/aunts/female role models provide entire younger generations a new norm, creating a feedback loop to #1
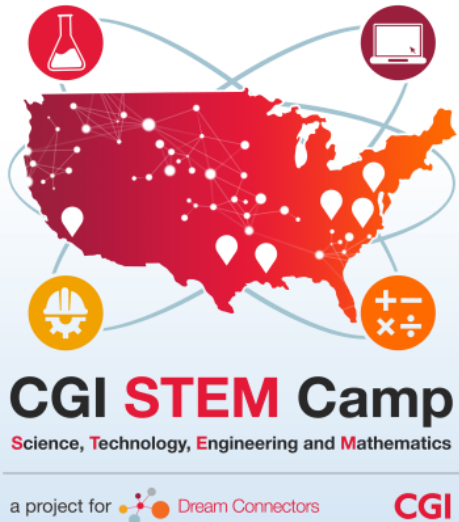
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3 prong approach: #1 School Age

Level the playing field when females are young through access to education/ICT/STEM programs

CGI STEM Programs

CGI STEM Camps in six U.S. cities this year will recruit elementary, middle and high-school students for programs that will introduce basic IT concepts and skills in sessions led by local mentors and CGI professionals. The program, say CGI leaders, addresses a critical industry challenge – a lack of STEM professionals, particularly those from diverse communities, who are needed to help build an IT workforce for the digital age.

Developed in partnership with local organizations, CGI STEM Camps are funded and supported by CGI's **Dream Connectors** global initiative, which engages CGI professionals and resources for programs with community impact around the world. During the day-long camps, students will be introduced to software coding, computer hardware and other important IT skills. In 2017, CGI will hold STEM Camps in Lafayette, La.; Belton, Texas; Durham, N.C.; Los Angeles, Calif.; Lebanon, Va. and Fairfax, Va.

Macedonia Approaches

- ICT is one of the most relevant sectors for job creation (high unemployment rate 22,6%)
- Early STEM education is recognized as a top national priority
- "Working with computers and programming basics" is mandatory subject for K3 graders (8 years old) and above
- Use of educational software and games (DigiMile, ScratchJR, Daisy The Dinosaur, Greenfoot, Alice…) with the aim to understand algorithms, algorithm thinking, logical reasoning, to create and debug simple programs, computer animations etc.
- Other relevant policies (computer per child, Girls in ICT, campaigns…)
- As a result, number of enrolled students at ICT faculties is increasing by 10% yearly since 2011. In 2017, FINKI is a faculty with the biggest number of enrolled students, out of which 33% are female.

CyberPatriot K-12 Program

Children spontaneously seek competition with their peers. These programs seek to inspire students to study Science, Technology, Engineering & Math (STEM)to help to fill the gap in our workforce

- Over 4000 CyberPatriot teams competing in the US last year *(192 all girl teams)*

- 80 in CyberCenturion in UK and 58 CyberTitan in Canada

- Summer camp started in 2014 and over 9000 students have participated

- Over 5400 Grade School kits have been sent out reaching an estimated 54,000 students

All Girl Teams play for FREE! Most STEM education programs draw 12% females, while CP draws 23% female competitors!

Virtual competition, 5 rounds, 3 levels of play, top teams flown to Championship, hands-on, not just for schools-groups as well, Professional mentors for each team, tutorials, practice games, Microsoft OS, Linus OS and Cisco tools as well as "Best Practices". All helping to produce a more diverse pool of people in the career pipeline and aware users. With 42% of the participants minorities because of the CAE program.

Real-life situations take the intimidation out of STEM education and career options!

Since 2010 young women have been playing video/computer games at an equal rate as men. These competitions offer role models, encouraging collaboration and providing opportunities for student-directed project-based learning using critical thinking and other cutting-edge pedagogies to engage girls and improves learning outcomes.

Email Tamara: shoematl@udmercy.edu   Check out the CP Program: http://uscyberpatriot.org/home
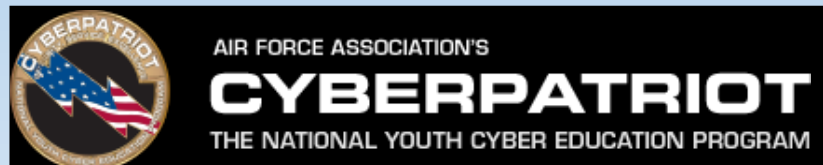
IBM Programs

- **Bridge the Digital Divide:**
  - Since 1999 the IBM Women in Technology Programs targeted at grade 7-9 girls to change perceptions of IT jobs and encourage them to maintain their studies in math and science. These programs take place in the school year and in summer camps. All programs staffed by IBM women volunteers with educational and professional backgrounds in technology.
  - In Canada we also perform IGNITE camps for Aboriginal youth

- **Expand the Pipeline**
  - IBM partners with Girls Who Code which has one focused mission: Close the gender gap in technology. With over 10,000 alumna, the organization recruits girls from sixth to twelfth grade for after school clubs and summer programs to learn coding and become familiar with what opportunities exist for women in technology.

- **Reinvent Education**
  - Launched in 2011 as a public-private collaboration among IBM, the New York City Department of Education, and the City University of New York, P-TECH (Pathways in Technology Early College High School) prepares youth, particularly low-income students of color, many of whom are the first generation in their families to go to college, to move beyond high school, earn a college degree, and enter the workforce with skills that employers value.

From the Group?

- Examples of similar programs

- What else could make programs more successful?

- What can you do tomorrow, next week, next year?

Potential Success Factors

- 2 sides to "Gamification"
  - Learning to code through games has had success "The nice thing about computer games is that they can invoke emotion in a more natural way that makes learning more interesting," comments Clark Aldrich, creator of numerous educational simulations and author of Unschooling Rules. http://www.scholastic.com/browse/article.jsp?id=3755577
  - Some think "gaming" is less interesting to girls, so should we consider offering education activities that they could find interesting?

- Career choices away from IT often happen in high school- be sure programs engage at HS

- Focus on design careers as well as coding

- Engage parents and teachers - they "do" influence career choices.
  - 74% of teens that considered engineering did so only after being explained the economic benefits and impact they can have on the world - https://www.forbes.com/sites/markfidelman/2012/06/05/heres-the-real-reason-there-are-not-more-women-in-technology/#1c0c0f347b73

- Raise girls to be brave, strong, have grit and are fueled by failure!
  - Disney, I'll Take Your Princess and Raise You an Engineer
    http://blog.goldieblox.com/2017/08/debbie-on-princesses-and-engineer/

- Create young role models, like Lune van Ewijk: first-ever European Digital Girl of the Year™ Award recipient as part of the "Opening up Education" program http://ec.europa.eu/avservices/photo/photoByReportage.cfm?ref=024001
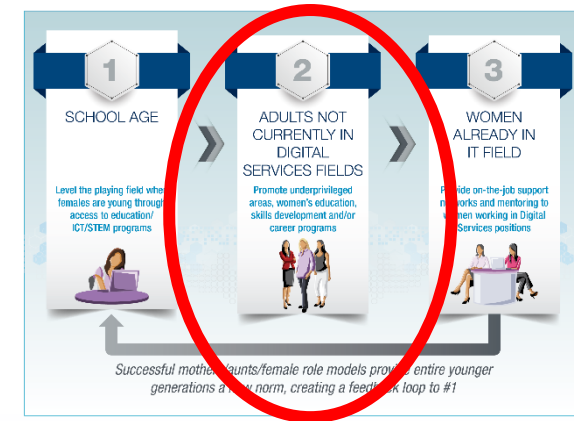
3 prong approach: #2 Adults Not Currently in Digital Services Fields

ICTAM

- Information and Communication Technologies Association of Manitoba (ICTAM)

- Where are the women in Canada's ICT industry?

- Currently, only 27.1% of the ICT workforce is represented by women, in Manitoba that number drops dramatically to 11.1%

- It's about culture, not gender

http://ictam.ca/

CGI supports The Women's Center

- CGI regularly supports non-profit The Women's Center:
  - *Providing **mental health counseling**, support and **education** to people of all ages, to **build resiliency**, navigate life's challenges and opportunities, find healing and **wellness**, and develop new skills and goals for life.*
- Events to educate adults not currently in digital services fields:
  - Annual Leadership Conference
  - Interview Skills, Networking Skills, Resume Development Courses
  - Federal Job Application Support
  - Re-Entering the Workforce Support

  - www.thewomenscenter.org

IBM Focus on Bringing Women Back to IT

Welcome back.
Return to the workforce the right way.

- Tech Re-Entry, the Society of Women Engineers, and iRelaunch – the return-to-work experts – have partnered to make rejoining the tech industry easier for skilled employees who have been out of the workforce.

- ReBoot Accelerator for Women is an 8-week program designed to give women the skills, connections, and confidence to re-enter the workforce.

From the Group?

- Examples of similar programs
- What else could make programs more successful?
- What can you do tomorrow, next week, next year?

Potential Success Factors

- Engage companies and non-profit organization dedicated to closing the gender gap in technology
  - Ex: Girls Who Code, Disney's #DreamBigPrincess campaign, UN Girls in ICT
- College recruitment programs targeting women
  - A HBR study found "Five years after a company implements a college recruitment program targeting female employees, the share of …. women in its management rises by about 10% on average." *Spotlight on Building a Diverse Organization: Why Diversity Programs Fail And what works better, by Dobbin and Kalev, Harvard Business Review, 2016*

3 prong approach: #3 Women Already in IT field

Is the future female?
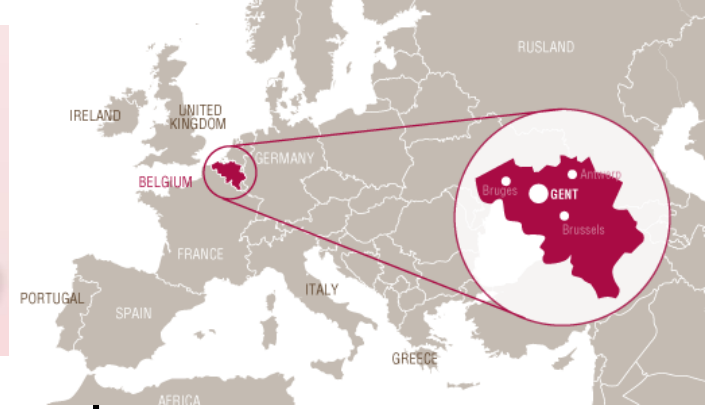
- European legislative context since 1973: Equality of genders
- Government plays a role and tries to lead by example (at political level and within governmental level)
- Due to financial issues it remains difficult to find and keep qualified ICT experts: Creatively working on many drivers
- Stem education a.o. is in place, as well as (media, role models, equal chance, equal treatment…)
- But still stereotypes persist in the expectations and the associations of ICT
- How can we move forward? A few ideas…

IBM Programs

"Past is prologue. And it is a fact that women have helped drive every era of technology we have known to date."
—Ginni Rometty, Chairman and President, at the Grace Hopper Conference

Principles: *Identify Talent Early, Mentor Rising Talent, Empower Self-Promotion, Reach Deeper into the Pipeline, Focus on Technical Women, Lift up Women Around the World*

- IBM Diversity Business Resource Groups within IBM for women plus other diversity groups.

- Top down focus on ensuring women are represented at all levels of IBM.

- Focused education targeted at women to encourage them to give them skills and encouragement to advance EG:
  - **Building Relationships and Influence (BRI)** is an award-winning, highly experiential, global leadership program for women with executive potential. The three day, face-to-face session helps increase the number of women in executive roles and the retention rates of high potential women.

- Focused female leadership development events

- Unit level women's events like: speed mentoring, networking groups and executive interviews and female mentors

- IBM Corporate and Executive Service Corps

- Partner, Partner, Partner

Women in Technology
IBM Systems

Launched on
International
Women's Day
8th of March 2015

CGI Women's Forums

- Many Business Units include women's support groups, including
  - In our India BU, multiple diversity and support programs (Woman & I and Women.Who.Win (W3), etc.) are aimed at creating a single community of CGI women in India through the sharing of ideas and knowledge. Since 2012, support programs range from local and personal, to professional and global.
  - In our US Federal BU, it started as a grass-roots movement committed to organic growth through educational opportunities, networking and mentorship for women across the company. A 3 event pilot in 2016 has morphed into a community that now boasts an email distribution of 350 members and 5 events annually, spanning from general communication education, to building a career at CGI, to Speed Networking activities.
  - Our youngest group is in our USEM BU, but has already launched a series of mentorship programs and offline Women Empowerment videos that cater to their women members.

Anti-Examples

- **Deloitte drops workplace diversity**

    - "After 24 years, WIN, the women's initiative at Deloitte, will end. Over the next 18 months the company will also phase out Globe, which supports gay employees, and groups focused solely on veterans or minority employees. In their place will be so-called inclusion councils that bring together a variety of viewpoints to work on diversity issues."

    - https://www.bizjournals.com/losangeles/news/2017/07/27/deloitte-drops-workplace-diversity-groups-for.html https://www.bloomberg.com/news/articles/2017-07-19/deloitte-thinks-diversity-groups-are-pass

- **Stressing the Advantages of Female Leadership Can Place Women at a Disadvantage** Joris Lammers and Anne Gast (Social Cognition Center Cologne, University of Cologne, Germany)

    - "Women are still underrepresented in management and men hold the majority of higher positions. Nonetheless, one often-heard claim in popular media is that female people-centered leadership skills (empathy, communication, etc.) are a better match for the business world – especially in the future... Four studies show that such claims paradoxically maintain gender inequality, by undermining support for affirmative action to reduce female underrepresentation in leadership. Where earlier research shows that positive stereotypes can hurt women by suggesting that they are unqualified for leadership, the current findings show that even positive stereotypes that claim that women are particularly well qualified for leadership can hurt women in their chances for gaining leadership positions. Although it is good to highlight the advantages of female leadership, exaggerated and sensationalist claims contribute to a perpetuation of gender inequality."

    - http://econtent.hogrefe.com/doi/full/10.1027/1864-9335/a000292

From the Group?

- Examples of similar programs
- What else could make programs more successful?
- What can you do tomorrow, next week, next year?

Potential Success Factors

- The Cyber Patriot Program (K-12) brings in "real life" examples of successful women in IT to set the "new norm" in their activities

- Promote female role models and engage them as mentors (It's much easier for girls to imagine a career in STEM subjects if they see successful examples)

Regroup: Success Factors

- How can we make current and future endeavours to increase female profiles and accomplishment rates across information technology digital services practices MORE SUCCESSFUL?

Thank you

Links to Addt'l Relevant Articles

- **#BeBoldForChange: Women in tech explain what International Women's Day means to them**
  - http://www.cbronline.com/news/verticals/the-boardroom/beboldforchange-women-tech-explain-international-womens-day-means/

- **How Gender Stereotypes are Still Affecting Women in Tech**
  - https://www.witi.com/articles/1017/How-Gender-Stereotypes-are-Still-Affecting-Women-in-Tech/

- **How Can Women Break the Stereotyping in Tech?**
  - https://www.witi.com/articles/1022/How-Can-Women-Break-the-Stereotyping-in-Tech/?/

- **Bloomberg Studio 1.0 - Sheryl Sandberg: exclusive interview on company culture, leadership, diversity, and the social network's global impact at its headquarters in Menlo Park, California.**
  - https://www.bloomberg.com/news/audio/2017-08-15/bloomberg-studio-1-0-sheryl-sandberg

- **Cyber Patriot Impact Report**
  - http://uscyberpatriot.org/Documents/Fact%20Sheets/Impact%20Report_2017.pdf

- **Women Matter, McKinsey & Company**
  - http://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Organization/Our%20Insights/Women%20matter/Women_matter_oct2007_english.ashx

Links to Addt'l Relevant Articles 2

- **P-TECH 9-14 schools are public schools that offer students a new approach to learning…**
  - http://www.ptech.org/ - https://www.ibm.com/thought-leadership/ptech/index.html - http://www.businessinsider.com/inside-ptech-ibm-high-school-2017-5

- **Empowering Women's Success in technology: IBM's Commitment to Inclusion**
  - https://www-03.ibm.com/employment/us/diverse/downloads/empowering_women_in_tech_ibm_case_study.pdf

- **Why Recruiting more women into tech makes good financial sense**
  - http://www.womeninstem.co.uk/women-in-tech/why-recruiting-more-women-into-tech-makes-good-financial-sense

- **Women in Cybersecurity**
  - https://www.acgusa.org/wp-content/uploads/2017/08/McCloyFellowhip_Report-Zahout.pdf

Additional References / Case Studies

Innate Talent Misconception

- Published in Science in 2016, Sarah-Jane Leslie et al. examined four hypotheses to explain differences in gender ratio in various disciplines at PhD level. Of these four, only the last one is correlated in a statistically significant way.

> 1) gender differences in willingness or ability to work long hours;
>
> 2) gender differences in the high end of the aptitude distribution (in other words, ability);
>
> 3) the extent to which a particular discipline requires systemizing (the need to understand abstract principles and rules) over empathizing (the need to understand human thoughts and feelings); and
>
> 4) the extent to which practitioners believe that raw, innate talent is the main requirement for success.

- "We hypothesize that, across the academic spectrum, women are underrepresented in fields whose practitioners believe that raw, innate talent is the main requirement for success, because women are stereotyped as not possessing such talent."

  - http://internal.psychology.illinois.edu/~acimpian/reprints/LeslieCimpianMeyerFreeland_2015_GenderGaps.pdf

CATA Alliance Example

- Canadian Advanced Technology Alliance (CATA*Alliance*) announces: U.S. based, Springboard Enterprises and CanWIT(Women in Tech) are teaming up to invite candidate nominations for the Tech Innovation Hub, a diverse network of experts that helps women-led tech, digital health, device, caregiving, and health technology companies accelerate through an inflection point of growth.

- According to Springboard Enterprises CEO, **Amy Millman** and CanWIT (Women in Tech) National Spokesperson, **Cindy Gordon**, " Our shared goal is to mentor and, coach, showcase and support women-led growth companies seeking investment of financial and human capital for product development and expansion. We've assembled an all-star team of industry experts, influential business leaders, investors, and a peer network of entrepreneurs that we leverage to support each new class."

http://cata.ca/Media_and_Events/Press_Releases/cata_pr06271601.html

eHealth Example

- [Ambra Health](#), makers of the leading cloud-based, medical image management suite, today announced it will launch RAD Women (#RADxx), an initiative focused on fostering networking and mentorship opportunities for women in digital health and informatics, at the upcoming Radiology Society of North America (RSNA) annual conference.

- Technology industry veteran Mini Peiris will draw on her experience launching and running successful mentor programs at previous organizations for the development of the RADxx Initiative. She was a founding member of [WIN (Women in NetSuite)](#) during her tenure at NetSuite Inc., the tech industry's leading provider of cloud ERP software suites. The charter of WIN was to inspire and grow women leaders and Ms. Peiris served as the Chair for its mentor program. "Ambra Health sits at the intersection of technology and radiology innovation, and is proud to support RADxx in bringing new and more diverse leaders into the informatics profession," said Ms. Peiris, now CMO at Ambra Health.

https://ambrahealth.com/press-release/ambra-health-launch-radxx-initiative-women-leaders-digital-health-informatics-rsna/

Cornell Women in Leadership Certificate

Do we need a certificate?

- This five-course certificate program examines the issues facing women in leadership positions and offers strategies for handling them. Professor Streeter discusses how women can best negotiate in the workplace, ways to effectively provide both positive and negative feedback and how they can strengthen their emotional intelligence to stand out as a leader among both men and women.

- This certificate positions women who are in leadership positions to recognize when there is a gender dimension at work and how they can outstrategize gender bias and their own habits to achieve better results.

- Example Course: Navigating the Double Bind: Most women in leadership roles face a very common dilemma: If they're strong, assertive leaders, they're viewed as domineering and abrasive, encountering resistance as a result; if they aren't assertive enough, they're viewed as weak and a pushover, making it hard to get support within the organization.

https://www.ecornell.com/certificates/leadership-and-strategic-management/women-in-leadership/

Clever Facebook Marketing by BeCode.org

- Our mission : Enabling tomorrow's digital talent to blossom. We believe that education makes everything possible. Since 2017, BeCode has been offering free training courses for jobseekers to become web developers in partnership with Simplon.

http://www.becode.org/partners/index.html

https://www.facebook.com/pg/becode.org/photos/?tab=album&album_id=521871871494683