



# Normalizing inclusion by embracing difference

---

Mary Ann Leung

15-June 2022



Who are we (in this webinar)?



- Poll:

<https://pollev.com/maryannleung407>

Notes:

- Polls are intended for everyone to anonymously interact
- Your data will remain anonymous
- Data from this session will NOT be used in the future
- No scientific conclusions should be drawn from these polls

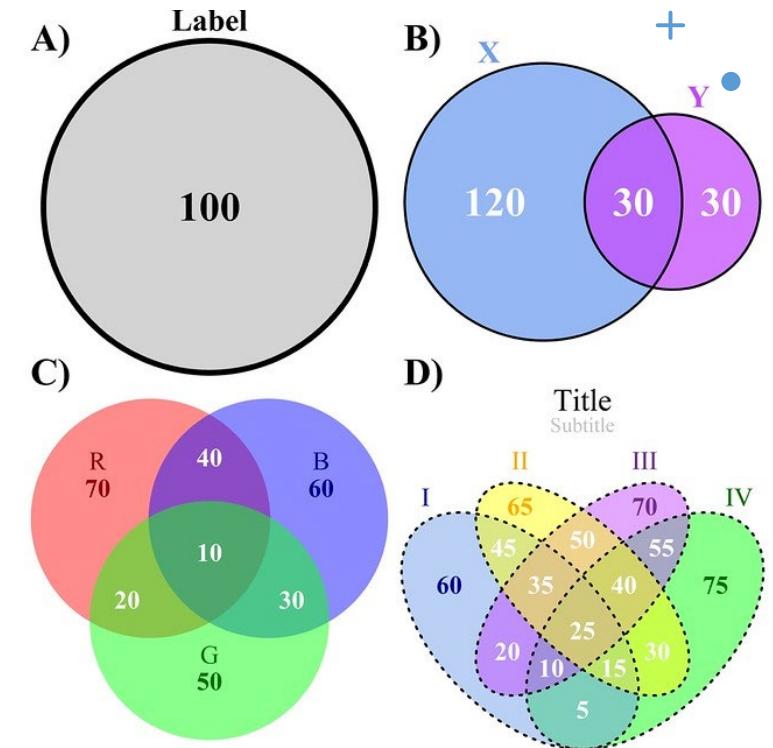
# Agenda

- Diversity, Equity, and Inclusion (DEI)
- Achieving DEI in Teams
- Embracing difference to normalize inclusion
- Partner Activity: Exploring similarity and difference
- Small Group Activity: Applying the concepts
- Closing thoughts & implementation ideas



# Computational Science and Engineering

- Computational Science and Engineering is highly interdisciplinary → technical diversity
- CSEs must be adept at “speaking” multiple languages,
  - Programming languages
  - Domains
- CSEs learn to navigate and exploit technical diversity to innovatively solve problems
- Translate technical diversity adeptness to other forms of diversity?



# Exploring technical diversity

- Poll:

<https://pollev.com/maryannleung407>



# Challenge

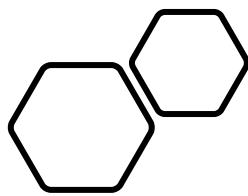
Applying what we know about  
embracing technical diversity to  
other forms of diversity within CSE



# Diversity, equity, and inclusion from Merriam Webster Dictionary

- Diversity:  
the condition of having or being composed of  
differing elements : VARIETY
- Equity:  
justice according to natural law or right  
specifically : freedom from bias or favoritism
- Inclusion:  
the act or practice of including and  
accommodating people who have historically  
been excluded (as because of their race, gender,  
sexuality, or ability)





# Diversity vs. Inclusion

*"Diversity is being invited to the party;  
Inclusion is being asked to dance"*

## ---Verna Myers tells Cleveland Bar





# Achieving DEI within CSE Teams

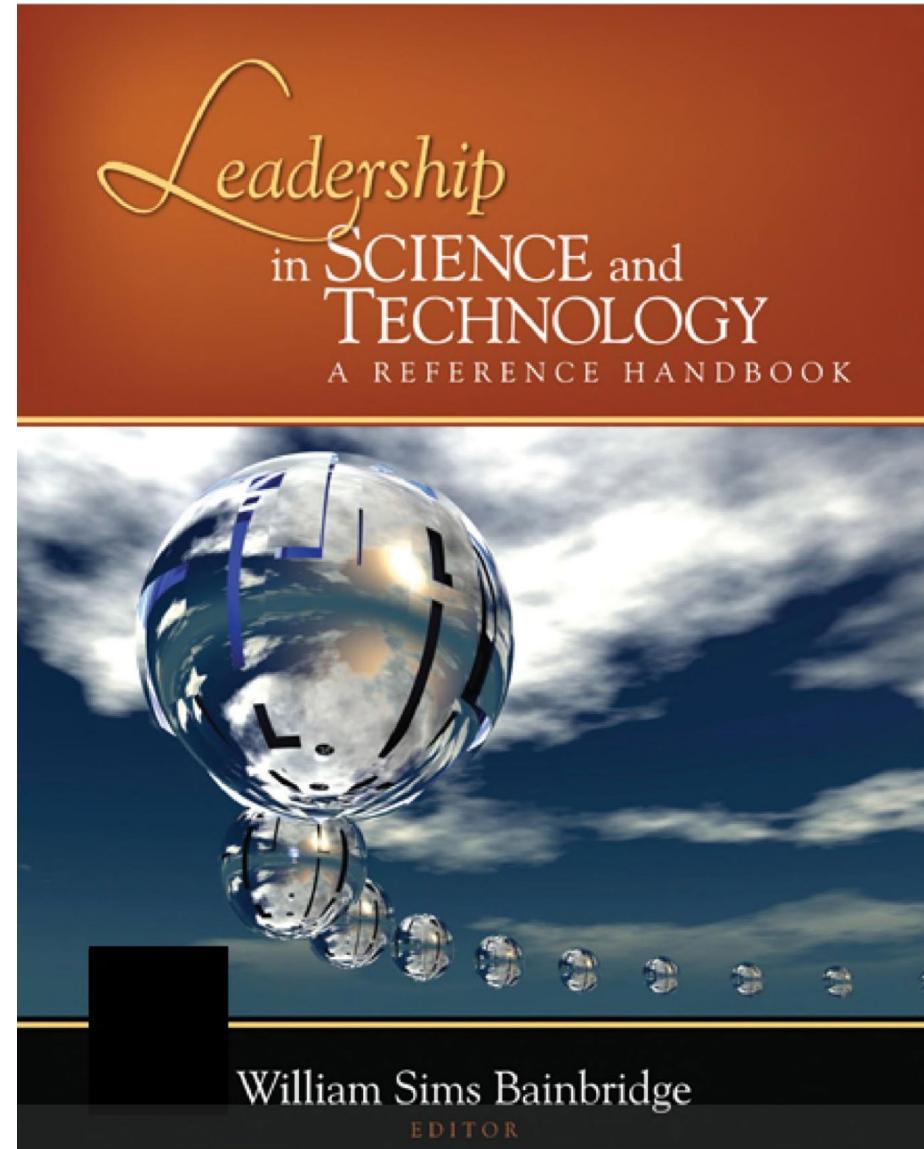
---

What can we do to promote productive and inclusive teamwork?

# Cultivating Teams

*"It is said that the truth shall set us free; yet we need freedom to discover the truth. Thus, leaders in science and technology must accept responsibility for the results of their work and for the means they use to accomplish it. Fundamental to that responsibility is **respect** for facts, for creativity, and for colleagues."*

Bainbridge, W. S. (2012). Leadership in Science and Technology: A Reference Handbook. Thousand Oaks: Sage Publishing.





## Cultivating respect in CSE teams

*“Fundamental to that responsibility is **respect** for facts,  
for creativity, and  
for **colleagues**.”*

# Cultivating respect within CSE DEI context

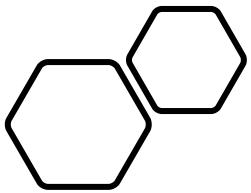
Cultivating respect for colleagues from underrepresented groups, has proven illusive given the common sources of attrition

- Stereotype threat
- Bias & discrimination
- Feelings of isolation
- Lack of role models, confidence, social capital
- Imposter syndrome
- Harassment

you BELONG  
HERE TOO.



6/15/2022



## The good news

- We CAN change things
  - As individuals
  - As leaders
  - As systems

(policies, practices, etc.)

## The bad news

- Change is hard



People are very open-minded about new things,  
as long as they are exactly like the old ones.

*Charles F. Kettering*

Source: <http://people-equation.com/no-leadership-title-you-can-still-influence-change>



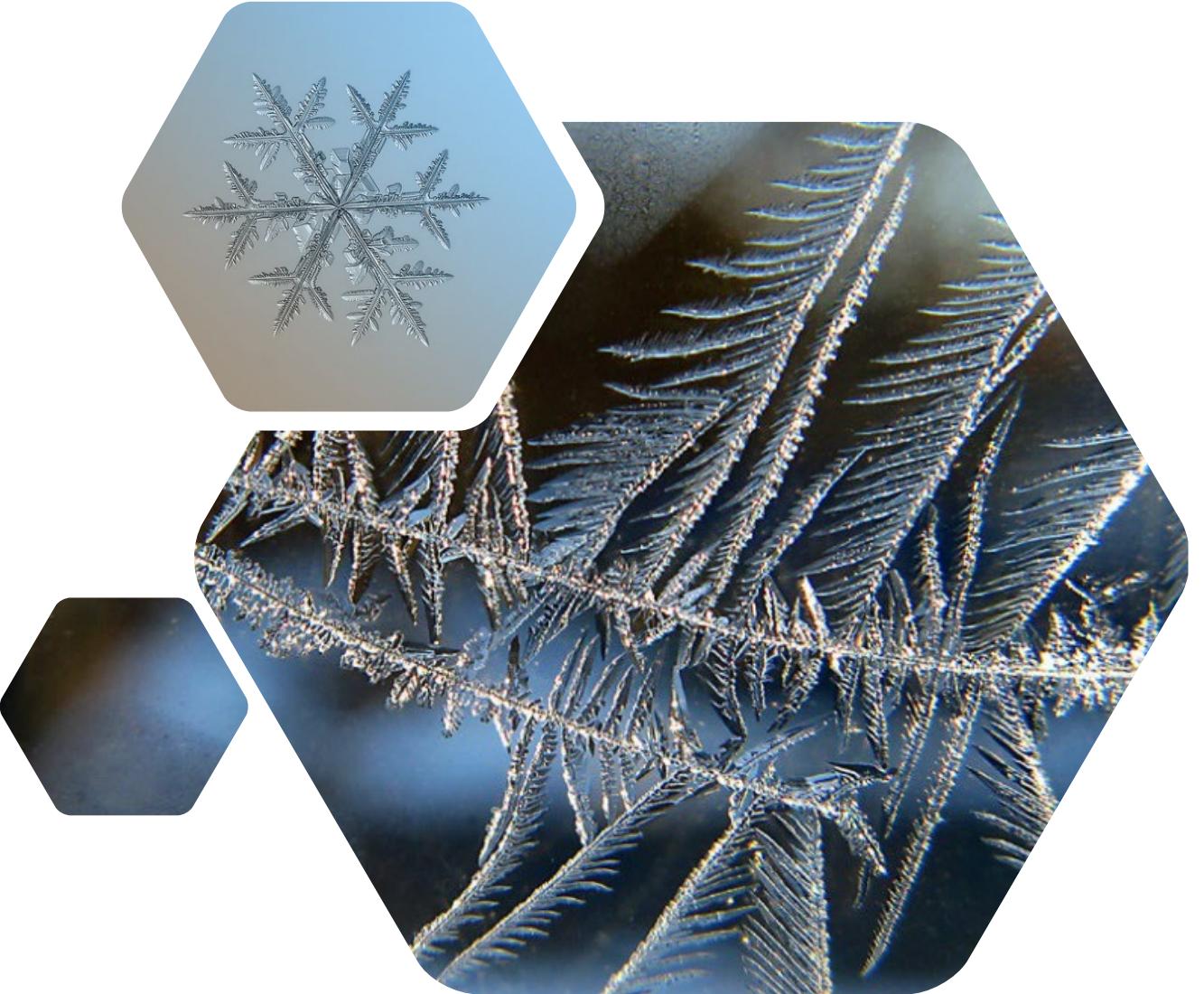
# Concept/Analogy

Teamwork in CSE by  
*“Coordinated Self Assembly”*



6/15/2022

# Natural self assembly



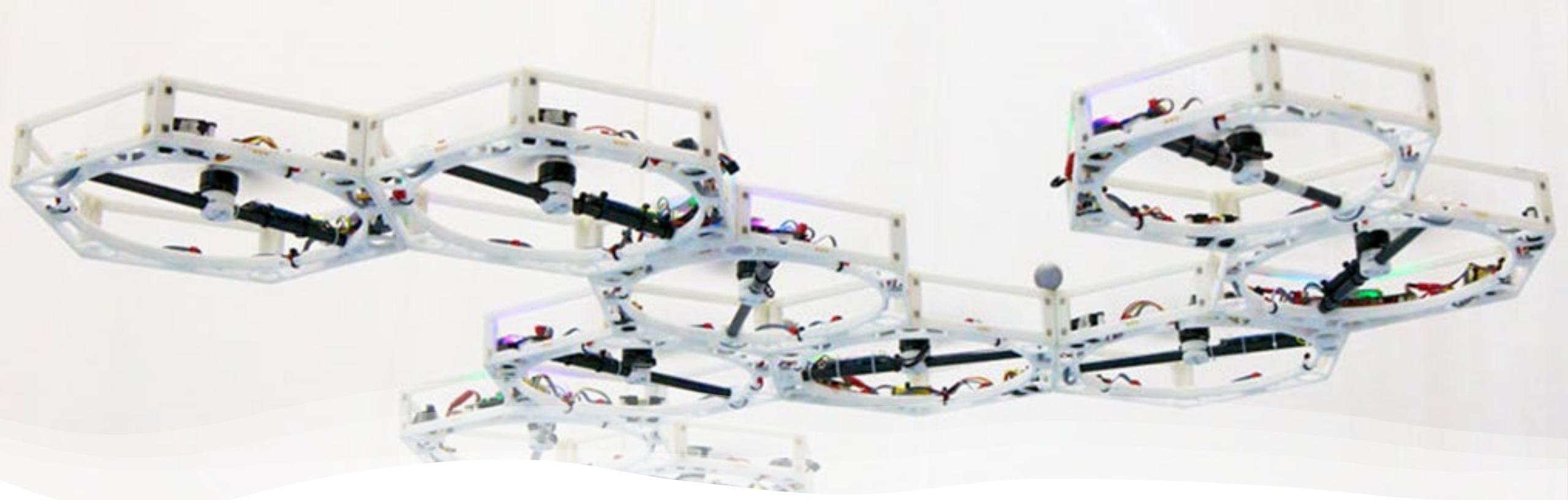


# Self assembly with a nudge: Carbon nanotubes

***“Coordinated Self-Assembly”***

---

<http://www.youtube.com/watch?v=1kWApU3o6ko>



## Coordinated Self Assembly in Robotics

<http://robohub.org/the-distributed-flight-array-modular-robots-that-self-assemble-coordinate-and-take-flight/>



1  
8

# Inhomogeneous Robots

---



# Coordinated Self Assembly for Teams?



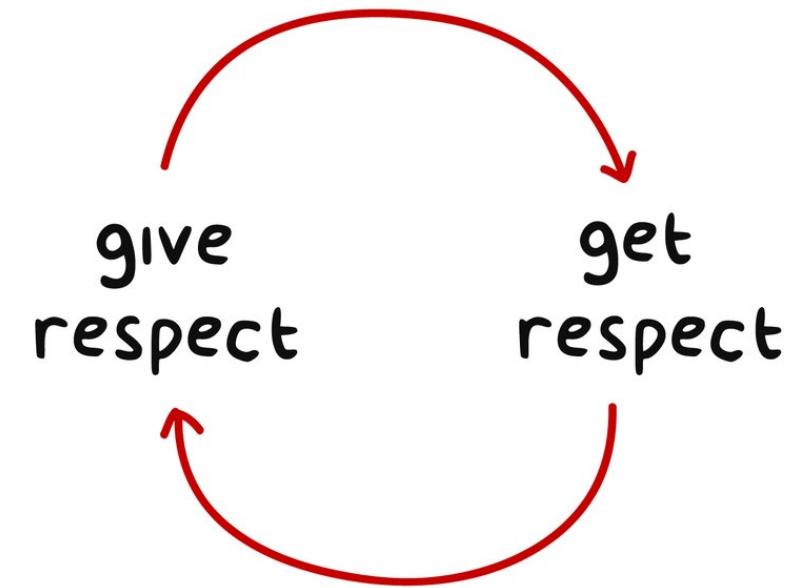
## Coordinated self-assembly to achieve DEI in CSE

- Teams of people from diverse backgrounds → **Diversity**
  - All team members are fully functional and free of bias and favoritism → **Equity**
  - Take advantage of similarity and difference → **Inclusion**
  - Teams assemble naturally and all “parts” fit together
  - The sum of the parts makes a greater whole
- 
- A photograph showing a group of diverse individuals holding hands in a circle, symbolizing unity and diversity. The hands are of various skin tones and ages, representing a diverse community.
- A red bracket on the right side of the slide groups the last two bullet points together, pointing to the word "Coordinated Self-assembly" in red text.

## What might it take?

---

- Starting state
  - Numbers are low
  - “Canary in the coal mine” syndrome?
- Need for
  - Freedom
  - Respect
  - Belonging – “safe” environment
  - Bringing one’s whole self to “the job”



Creativity, Freedom,  
Respect within  
EDI/DEI

- Creativity requires freedom and respect
  - Freedom from bias, isolation, low self-efficacy
  - Respect for each person's background, **differences**, needs

# So, what's holding us back?

- Long standing systems, practices in place
- Affinity for “likeness”
- Fear of something new...different

## But, imagine the rewards

- Diversity → innovation
- Workforce demands for talent, technical skill
- Changing workforce demographics
- Increase competition for talent

People are very open-minded about new things,

as long as they are exactly like the old ones.

*Charles F. Kettering*

Source: <http://people-equation.com/no-leadership-title-you-can-still-influence-change>



## Summary: Celebrating difference in CSE

- Already know how to embrace technical diversity
- Adapt to new dimensions of diversity
- Rethink how we assemble and manage teams

# Celebrating/embracing difference

Partner Activity: Exploring similarity and difference





## Small group activity: Lost on a deserted island

- Imagine that you have been stranded on a desert island following a shipwreck
- Each person is allowed to bring ONE item
  - Pick an item that represents something you enjoy
  - Item does not have to be realistic, but should reflect something about you
  - For example, if you love music, you might bring a guitar
  - Pick what object you want to bring and make note of it



# Small group activity: Lost on a deserted island

- Join a breakout room
  - preferably with some people you don't already know
  - ideally load balance so ~same number of people in each room
- In your breakout room
  - Each person shares what they bring and why
  - Devise a way to combine your items to help the group better survive
  - Try to apply some of the concepts presented in today's webinar
  - We will regroup to discuss what you came up with

# Breakout room discussion



What items does your group have?



How did you combine them to increase chance of survival?



What did you learn from the activity?

## Some closing thoughts

- What does it mean to embrace or celebrate difference?
  - Recognize dimensions of difference
  - How easy is it to find similarity?
  - How easy is it to talk about difference?
  - Truly understand the impacts of difference
  - What are the barriers to change?
  - What can be gained by difference?
  - How can we use known techniques to facilitate (technical) difference to embrace other kinds of diversity?



# Some implementation ideas

- Next time you are forming a team:
  - Make it a priority to bring in more diversity
  - It's natural to call on someone you already know, but intentionally branch out
  - Expand your network, even just one node away by
    - Reach out to colleagues to identify others
    - Engage in activities where you can meet new people
    - Branch out and take some risks
- As you onboard and work with your team:
  - Take actions to INCLUDE everyone
  - Ensure everyone is heard, even quiet shy types
  - Learn of everyone's unique attributes and explore how to utilize them
  - Cultivate respect and embrace/exploit difference





## SUSTAINABLE HORIZONS INSTITUTE

Mary Ann Leung [mleung@shinstitute.org](mailto:mleung@shinstitute.org)

A more diverse and inclusive future is on the horizon