34th Annual **INCOSE** international symposium
hybrid event
Dublin, Ireland
July 2 - 6, 2024

Cultural Differences in the Professional Competencies and Their Implications for Systems Engineers

Focus of This Presentation

- The INCOSE Professional Competencies
  - Communications
  - Ethics and Professionalism
  - Technical Leadership
  - Negotiation
  - Team Dynamics
  - Facilitation
  - Emotional Intelligence
  - Coaching and Mentoring
- Why?
  - **Being able to capitalize on systems engineers' strengths while minimizing weaknesses regarding the Professional Competencies is key to project success**
  - Mostly not addressed in the Handbook 4th Edition
  - The Technical Leadership Model elements align with the Professional Competencies

Methodology

- Hypothesis: Hofstede's 1989 idea that cultural differences could explain differences in negotiation styles would apply to other of the Professional Competencies

- Approach
  - Literature review of culturally-related research on the Professional Competencies
  - Preference given to research specific to engineering, STEM, or R&D
  - Multiple sources where possible

Limitations (from Le Baron, 2003)

- The research findings do not apply universally
    - Depends on context
- Most studies are based on Western concepts rather than intercultural perspectives
    - Focus is on Western vs Eastern cultures
    - Limits the ability to generalize to other cultures

Hofstede's Culture Parameters (from Hofstede, Hofstede, & Minkov, 2010)

- Power Distance – acceptance of unequal distribution
- Individualism vs Collectivism – emphasis on individuals or groups
- Uncertainty Avoidance – tolerance (societal) for uncertainty/ambiguity
- Masculinity vs Femininity – assertiveness vs modesty
- Time Orientation – long vs short-term
- Indulgence vs Restraint – hardest one to measure

Communications

- Cultural differences in both verbal and non-verbal communications
- PPU-B (2017) attributes differences in both the content of verbal communication and the balance of non-verbal to verbal to differences between "high context" and "low context" cultures
  - Cultural differences in non-verbal communications, including the use of paralanguage, personal physical space, the meaning of touches, posture, and eye contact
- In a study of intercultural communications in a Chinese subsidiary of a Danish corporation, Jonasson and Lauring (2006) found Western communication to be individually oriented and Chinese group orientation; Chinese relied more on non-verbal than Westerners

Ethics and Professionalism

- Most research deals with ethics policies, not ethical behavior (Scholtens & Dam, 2007)

- Scholtens & Dam found differences between countries regarding ethics systems, bribery and corruption, and human rights

  - Cultures where masculinity and power distance are valued have a negative association

  - Cultures where individualism and uncertainty avoidance are valued have a positive association

  - Transparency International also found these dimensions to be associated with bribe-taking (Sanyal, 2005)

Technical Leadership

- Most research deals with leadership in general, not technical leadership
  - Technical leadership requires creativity and innovation in problem solving, so focused the literature review there

- Results of studies on creative problem solving
  - Grosse and Simpson (2008) found N. American managers were "convergers" focused on decision-making and use of deductive reasoning, while L. American managers were "assimilators" focused on planning and use of decision analysis models
  - Van Duesen, Mueller, Jones, and Friedman (2002) found differences in the method and quality of problem solving in individualistic vs collectivistic cultures
    - Individualistic cultures seem to be moving toward more collective problem solving, perhaps as a result of the quality movement

Negotiation

- Four findings from Hofstede (1989)
    - Cultures with large power distance have more centralized control of negotiations and negotiations are conducted by the top people
    - The need for stable relationships in collectivist cultures leads to negotiations being conducted among people who know one another
    - Negotiators in high uncertainty avoidance cultures prefer highly structured, ritualistic negotiation processes
    - Negotiators from cultures that value masculinity are likely to resolve conflicts by fighting

Negotiation

- LeBaron (2003) also had multiple findings
  - Negotiating styles are affected by time orientation (monochromatic vs polychromatic)
  - Cultural differences in space orientation must be accounted for when arranging face-to-face negotiations
  - Cultures where masculinity and high power distance are valued have assertive, task-oriented negotiators and hierarchically-based negotiations
  - Cultural differences in negotiators' persuasive styles and comfort with emotionality are associated with femininity
  - In high uncertainty avoidance cultures, negotiators find it difficult to establish trust unless dealing with family or close friends

Fazliani and Charoengam (2015) found long-term orientation and monochromatic time orientation to be associated with persistence and pragmatism in negotiation

Team Dynamics

- Important to understand cultural differences in team dynamics due to the global nature of distributed teams (Neeley, 2015)
  - Cultural differences contribute to high social distance among team members
  - Power imbalances also affect team dynamics
- Solomon (2018) found cultural differences in team dynamics are due to differences in individual vs group orientation

Facilitation

- There are cultural differences in facilitators' style and participants' behavior (Jelavic & Salter, 2014)

  - Feminine cultures are more comfortable with participation in group interactions; masculine cultures prefer individual decisions

  - High power distance cultures see empowering individuals in a group as normal; low power distance cultures see it as unacceptable

  - High power distance cultures adopt a hierarchy in managing the facilitation, while low power distance cultures want an even distribution of managerial authority

Emotional Intelligence

- The way emotions are experienced and expressed is influenced by culture (Bagheri, Kosnin, & Besharat, 2013)
  - Asian cultures tend to express emotions using tone of voice; Western cultures through facial expressions
  - Western cultures tend to encourage emotional expression; Asian cultures "down-regulate" positive emotions

Coaching and Mentoring

- Noer (2007) found that high power distance cultures are associated with unwillingness to challenge and confront counterproductive coaching behaviors

- Research dealing with cultural differences in mentoring is lacking (Kent, Kochan, & Green, 2013)
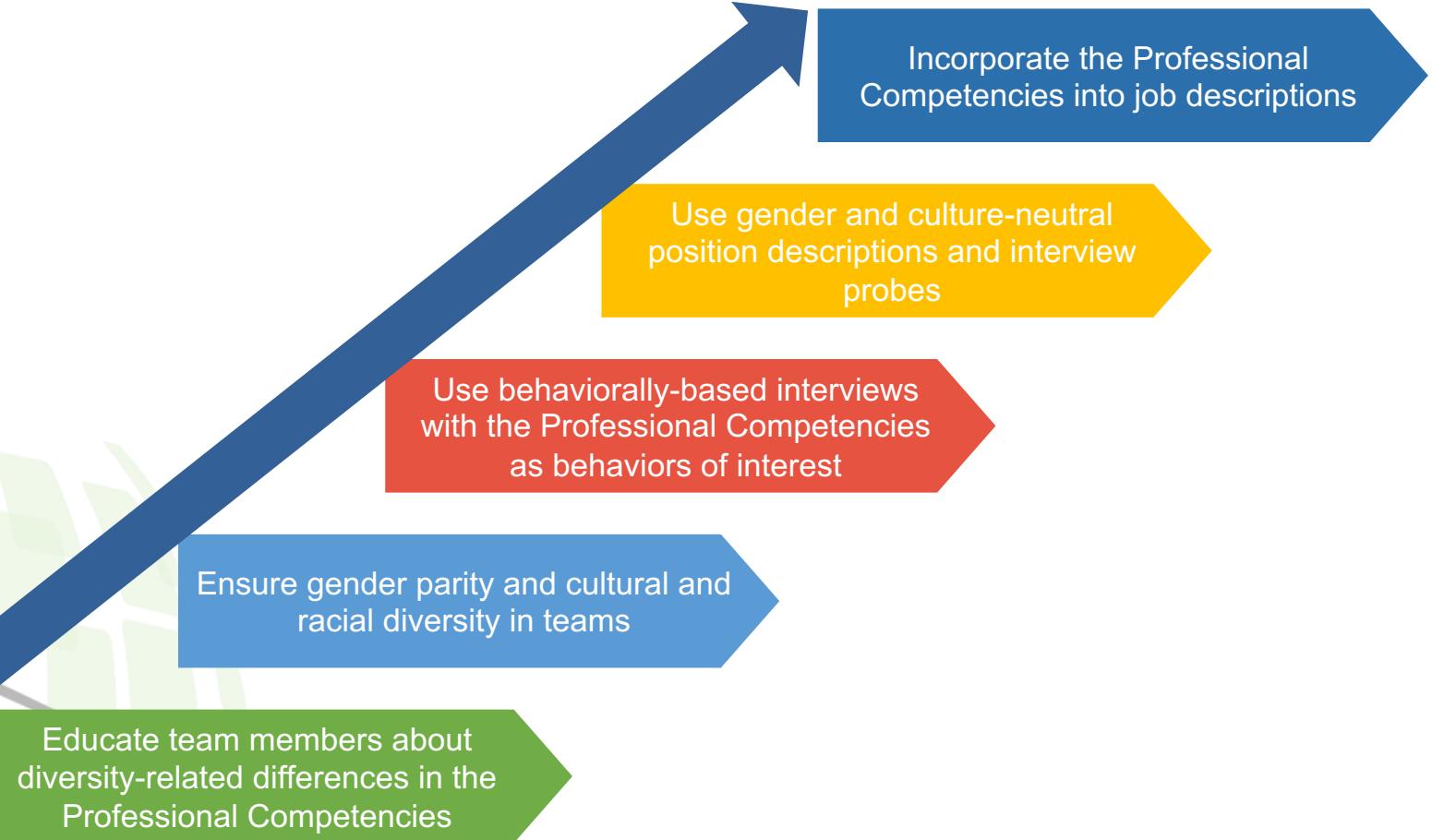
Discussion

- Nothing in the literature to suggest that people from one culture are better at the Professional Competencies than another

- People from any culture can succeed if they leverage their positives and minimize their negatives when applying the Professional Comptencies

Competency`	Research Study	Hofstede, Hofstede, & Minkov's (2010) Dimensions
Communications	PPU-B (2017)	Individualism vs collectivism Uncertainty avoidance Indulgence vs restraint Monochromic vs polychromic time orientation
	Jonasson & Lauring (2006)	Individualism vs collectivism
Ethics and Professionalism	Scholtens & Dam (2007)	Individualism vs collectivism Masculinity vs femininity Power distance Uncertainty avoidance
	Sanyal (2005)	Masculinity vs femininity Power distance
Technical Leadership	Van Duesen, Mueller, Jones, & Friedman (2002)	Individualism vs collectivism
Negotiation	LeBaron (2003)	Power distance Uncertainty avoidance Masculinity vs femininity
	Fazliani & Charoengam (2015)	Short- vs long-term orientation Monochromic vs polychromic orientation
Team Dynamics	Solomon (2018)	Individualism vs collectivism
	Neeley (2015)	Power distance
Facilitation	Jelavic & Salter (2014)	Masculinity vs femininity Power distance
Emotional Intelligence	Bagheri, Kosnin, & Besharat (2013)	Indulgence vs restraint
Coaching and Mentoring	Noer (2007)	Power distance

Implications for Systems Teams

When Selecting Systems Engineers or Forming/Developing Systems Teams

Educate team members about diversity-related differences in the Professional Competencies

Ensure gender parity and cultural and racial diversity in teams

Use behaviorally-based interviews with the Professional Competencies as behaviors of interest

Use gender and culture-neutral position descriptions and interview probes

Incorporate the Professional Competencies into job descriptions

Design Implications

- Important that individuals not be stereotyped but *population stereotypes* are useful in design
  - China example
- Design for 5th through 95th percentile of certain physical characteristics may also be influenced by cultural stereotypes
  - Mongolians tend to have a stocky body type

Final Words

- People from any culture can succeed with the Professional Competencies
- Guidelines for selection, formation, and development of systems teams should improve team effectiveness
  - Because the research on cultural differences is not specific to systems engineering, implementation of the guidelines needs to be monitored
- Awareness of population stereotypes and use of them in design should result in products that are more responsive to the target audience

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