

The background features a dark blue gradient with a subtle pattern of white dots. Overlaid on this are several circular and semi-circular graphic elements in a lighter blue color. These include concentric circles, dashed lines, and arrows pointing in various directions. A prominent feature is a large circular scale on the left side, with numerical markings from 140 to 260 in increments of 10. The text is centered on the right side of the image.

# DEVELOPING TEAM SCIENCE CAPACITY AT A TECHNOLOGICAL UNIVERSITY

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# PRINCIPLES OF HAUDENOSAUNEE COLLABORATION (LICKER 2019)



Source: [@HaudenosauneeLx](#)

- Respect
- Equity
- Empowerment

# BEST PRACTICES FOR SUCCESSFUL TRANSDISCIPLINARY TEAM SCIENCE (HALVORSEN ET AL. 2019)

- Shared goal
- Assume 200% time of non-TD group
  - Develop shared norms, language
  - State and expect norms of respect
- Choose members carefully:
  - Good social skills
  - TD TS commitment
- Core members TD TS experienced with each other, mentor & train other members
- Multiple leadership levels, subteams
- Work hard, play hard

# MICHIGAN TECHNOLOGICAL UNIVERSITY



# SHARED GOAL: HELP SOLVE ENVIRONMENTAL PROBLEMS



- Social Sciences, Humanities, Forest Resources and Environmental Science, Mechanical Engineering, Civil and Environmental Engineering, Geological Engineering, Economics etc.

# 200% TIME: DEVELOPED FUNDED, SUSTAINABILITY-FOCUSED NSF IGERT PROPOSAL



- Sustainable Futures Institute
- Sustainability certificate
- Interdisciplinary courses, dissertations

# SELECT MEMBERS CAREFULLY



- Successful NSF MUSES, RCN, WSC, IDR proposals
- Selected team members for social and technical skills, ID research commitment

# SENIOR MEMBERS MENTOR AND TRAIN JUNIOR MEMBERS



- Training components built into IAI CRN3, NSF PIRE grants
- Train the trainer approach
- Dissemination to other universities, groups
- Junior members emerge as PIs: NSF WSC, IDR, SEP, RCN, PIRE



# MULTIPLE LEADERSHIP LEVELS, SUBTEAMS



- 130+ members, six countries
- Subteams, country teams
- Leadership flex, new PI/coPIs, lead authors

# WORK HARD, PLAY HARD (IN-PERSON)



## MICHIGAN TECH & TD, TS RESEARCH

- Large, ID group in environmental research
- Early successes laid ground for high success rate
- University-wide hires, admin support
- Plus 20 years: strong TD, TS envt'l capacity

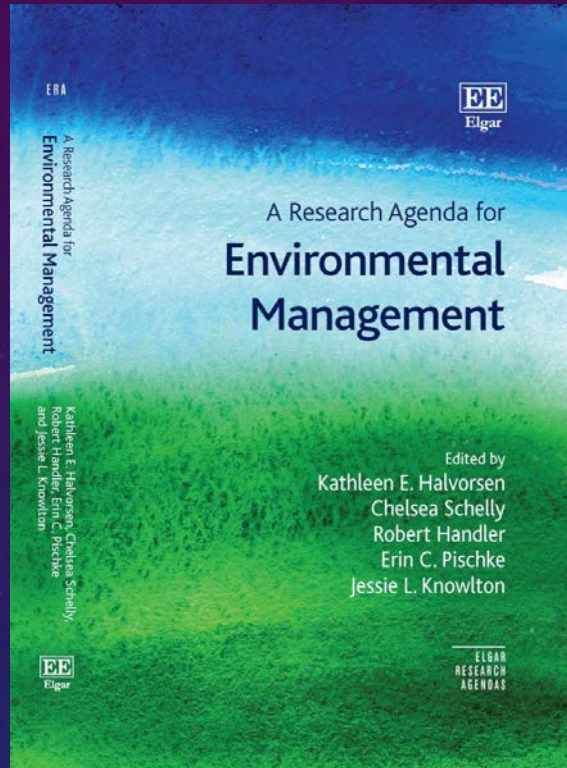
## TECH FORWARD: NEXT 20 YEARS?

- Other areas: health, data science, advanced materials, autonomous systems etc
- Build TD, TS capacity: ability to engender respect, equity, empowerment

# AKNOWLEDGEMENTS

- Research collaborators, admin support
- Funding: Inter-American Institute for Global Change Research CRN3; National Science Foundation IGERT, MUSES, SEP, RCN, PIRE, WSC, INFIEWS, GK12, IDR, NNA programs

# QUESTIONS?



(Halvorsen et al. 2019)

