



CERF2021

26TH BIENNIAL CONFERENCE



TEAM KNOWLEDGE INTEGRATION

WEBINAR

2-17-2021

CERF 2021 DESIGN COMPETITION
COASTAL VIRGINIA



www.vaseagrant.org

What is Sea Grant?

- **Federal-state partnerships**

- Research
- Education
- Extension/outreach
- Communication

- **Virginia Sea Grant**

- Research Fellowships
- Professional Development – Communication, Team Science, Policy
- Extension – Resilience, Seafood, Literacy, Law & Policy



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Why a resilience design competition?

- **Solve Problems...**
- **Innovation**
 - Integrate knowledge across perspectives
- **Integration**
 - Design, coastal sciences, engineering, policy...



Degrees of Integration – Teams

Uni-disciplinary	Multi-disciplinary	Inter-disciplinary	Trans-disciplinary
	Cross-disciplinary: Degrees of integration 		
Single discipline, method, concept Critical basic science, or on common problems	Each discipline makes independent but additive contribution	Integrates methods and perspectives from 2 or more disciplines Synergies beyond additive	Integrates and transcends boundaries Fundamentally novel frameworks, theories, models

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Integrating Knowledge – not new.....

- **Systems thinking – emphasizing the inter-connections rather than independence**
 - Sustainability Science
 - Socio-Ecological Systems
 - Coupled Human-Natural Systems
 - Design Thinking
 - Network Analysis
 - Integrated Studies
- **But....illusive**

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Integrating Knowledge – Wicked Hahrd



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Integrating Knowledge – Wicked Hahrd

- **Study of six NSF-funded Interdisciplinary Centers**
 - Produced few new interdisciplinary outcomes
 - Mostly, same disciplinary results patched together in a multidisciplinary way
- **National Socio-Environmental Synthesis Center – Teams**
 - Limitations in professional and leadership skills – members uncertain over goals and roles
 - Lack of understanding or respect for different disciplines
 - Power dynamics and other destructive relations
 - Professional language differences
 - Team lacked cohesion. There may be cliques.

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2015 NAS *Enhancing Effectiveness of Team Science*

- High diversity – language, culture, norms
- Deep knowledge integration – time and effort
- Large size – compounding the challenge
- Goal misalignment – among members and sub-groups
- Changing membership – impacts group dynamics
- Geographic dispersion – without face-to-face
- Task interdependence – unaware of interdependence

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Achieving deep knowledge integration

- **Cognitive discomfort, struggle**
 - Uncertain, confused, ambiguous, time consuming



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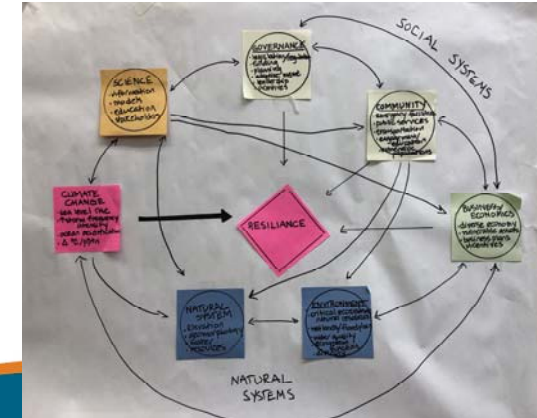
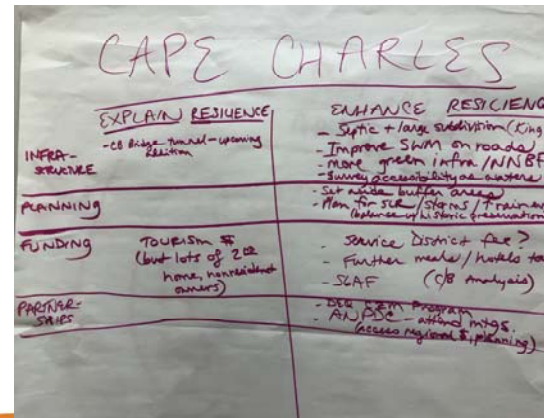
Achieving deep knowledge integration - tactics

- **Visualization, external representations**
 - Great advantage of design.
- **Iterative, adaptive deliberations**
- **Scenarios, simulations, what-if thought experiments**
- **Active listening, tolerance for vagueness and ambiguity**
- **Attitude – curiosity, patience, collaborative orientation**

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- Visualization, external representations

- [illegible]



VIMS | WILLIAM & MARY
VIRGINIA INSTITUTE OF MARINE SCIENCE

Achieving deep knowledge integration - tactics

- **Self-reflection – adaptive, reflective practitioner**

- **Taskwork** – leadership, knowledge management, project management, performance monitoring...
- **Teamwork** – interpersonal competencies: team dynamics, communication, conflict management, trust and psychological safe space, feedback, sharing success, harnessing diverse perspectives...

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Achieving deep knowledge integration

- In this together ... peer mentors, coaches, JEDIs....
 - Share stories

Me before therapy:



Me using my coping skills after
processing with my therapist:



Before I introduce our Jedi Panel, I want to pause and see if there are any questions.

Achieving deep knowledge integration

- In this together ... peer mentors, coaches, JEDIs....
 - Share stories: disciplinary collaboration, lessons learned, skills & competencies



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