



THE UNIVERSITY OF  
**MAINE**

# *The need for: Assembling PFAS Data for Access and Use*

*Diane Rowland, Dean and Director*

UMaine College of Earth, Life, and Health Sciences  
Maine Agricultural and Forest Experiment Station

## I am not a data scientist.

**“A view of the importance of early data structural design  
from a converted content expert”**

**Clarion call** for the development and building of a national  
PFAS data plan and structure NOW – who, what, where,  
how, ~~when~~

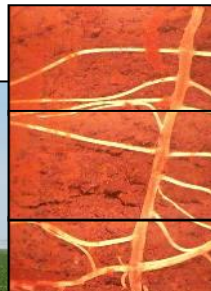
**clarion call** **noun**

: a strong request for something to happen

# Rhizotron and minirhizotron work: can we use architecture to estimate function?

Romain Gloaguen  
David Campbell  
Seth Byrd

*Minirhizotrons*



*Rhizo-boxes*



What do you do with  
17,000+ root images??





# Alina Zare



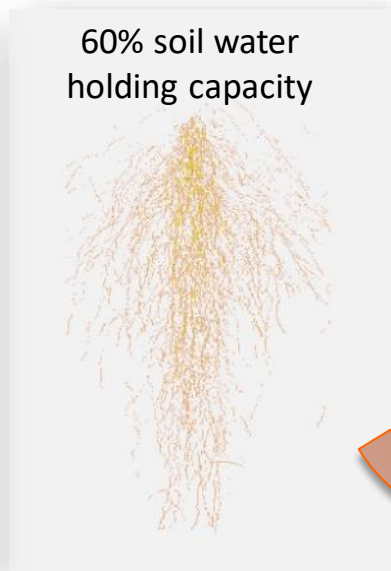
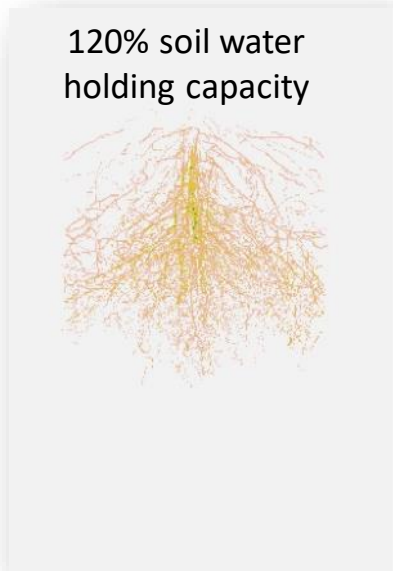
Professor  
Associate Dean for Research & Facilities

**MACHINE LEARNING & SENSING LAB**

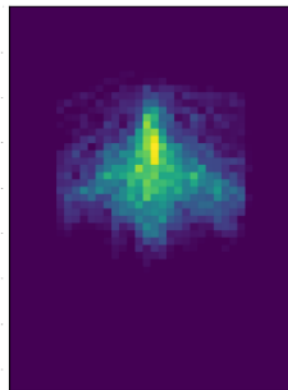
**UF** | IFAS CALS  
UNIVERSITY of FLORIDA  
**UF** | Herbert Wertheim  
College of Engineering  
UNIVERSITY of FLORIDA

# Earth Mover's Distance: using a measure of dissimilarity between two multidimensional distributions for Machine Learning

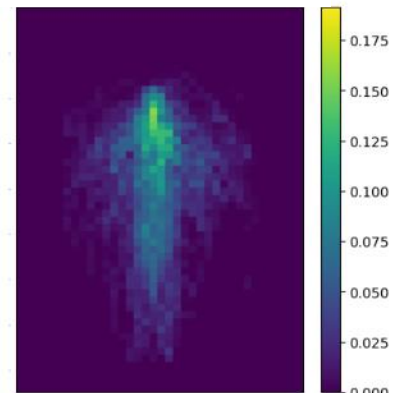
*ANOVA shows no TRL differences*



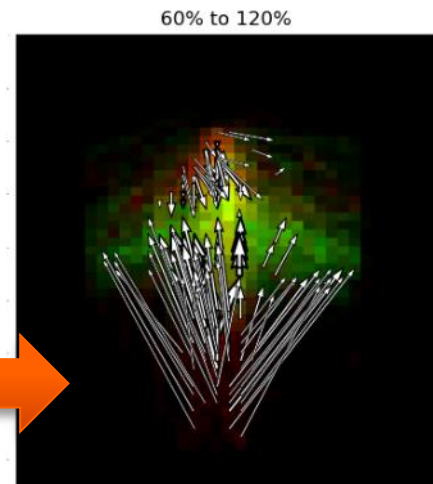
120% soil water holding capacity



60% soil water holding capacity



- Illustrates within the root system architecture where the major differences are



# *Ecosystem Services*

*Benefits that ecosystems provide to humans - allow for sustaining or enhancing the productivity of agriculture and balancing impacts to environment and society*

- *Food production*
- *Water filtration*
- *Carbon sequestration*
- *Recreation!*

*Step 1: Measure Ecosystem Services*



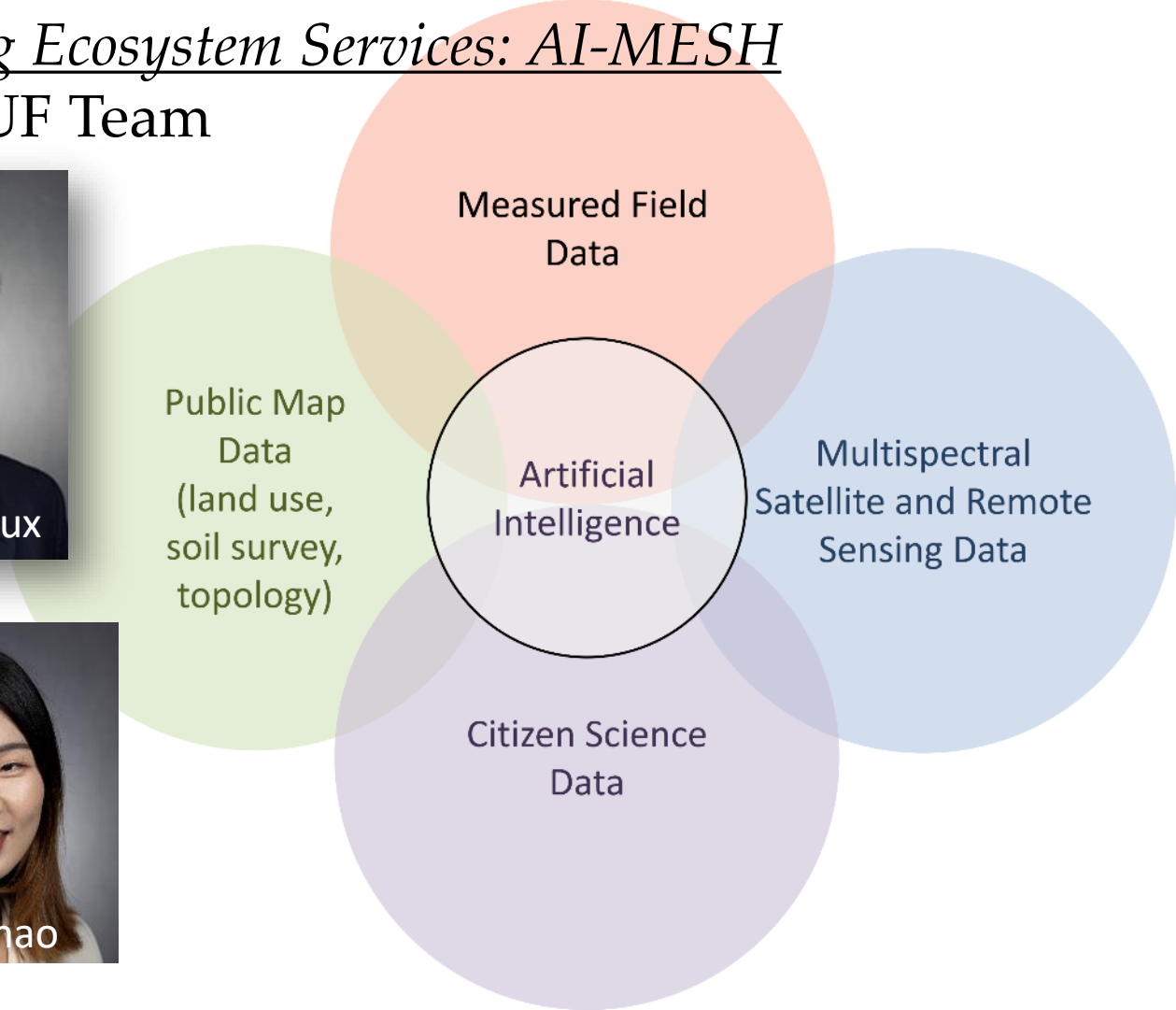
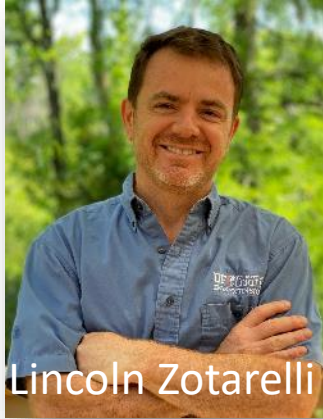
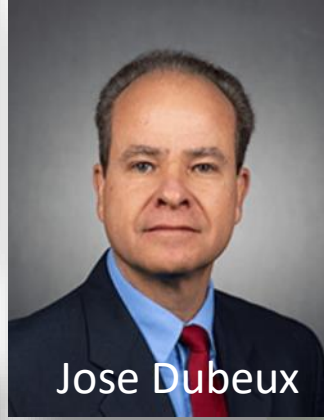
*Provisioning  
Regulating  
Cultural  
Supporting*



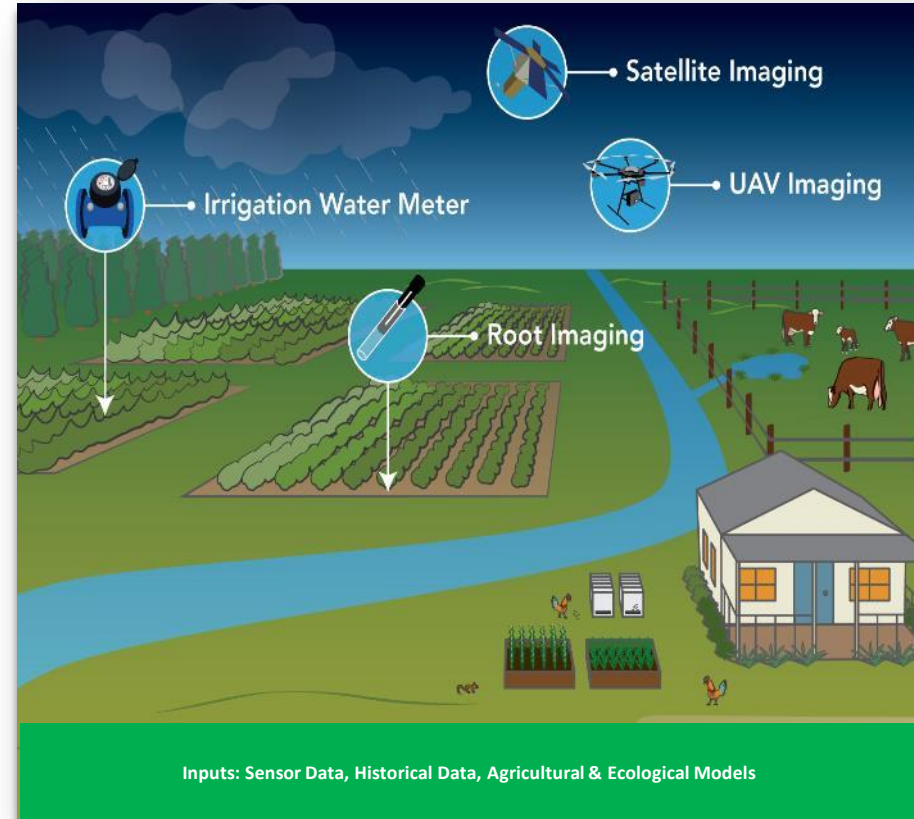
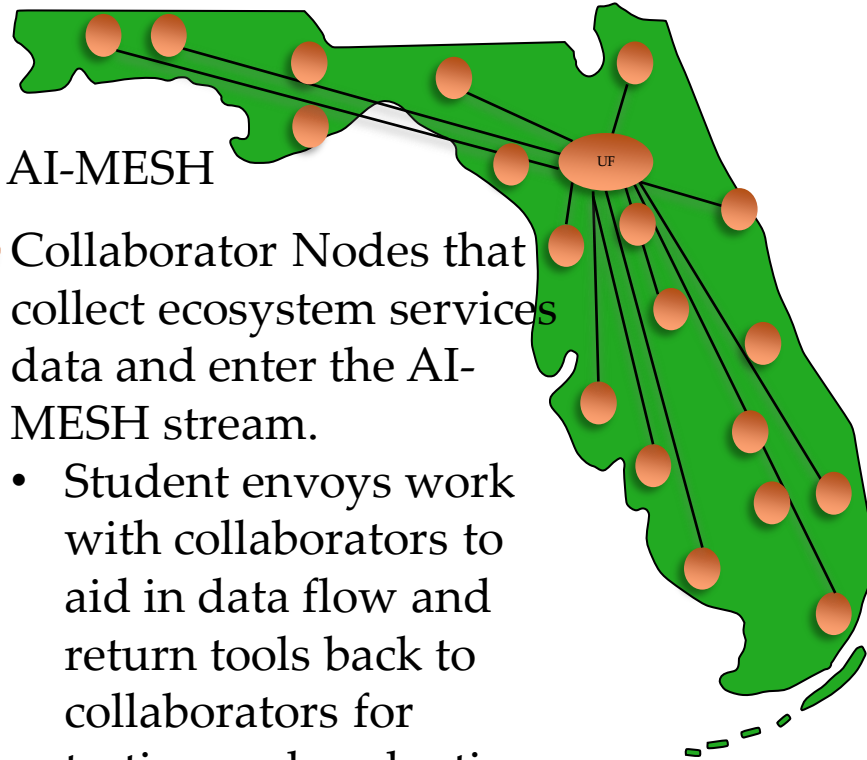


# Measuring Ecosystem Services: AI-MESH

## Current UF Team



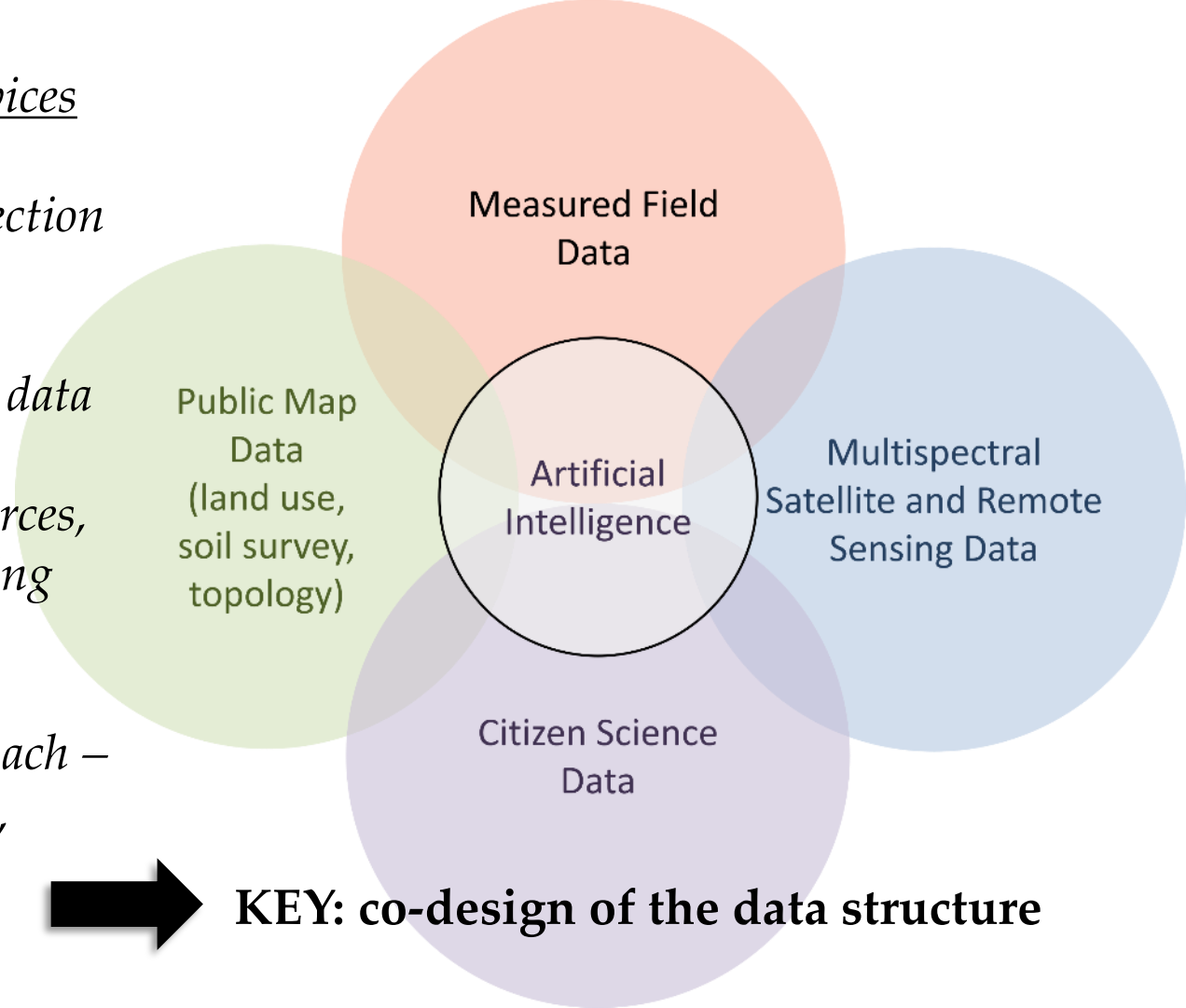
# Data network for ecosystem services across FL



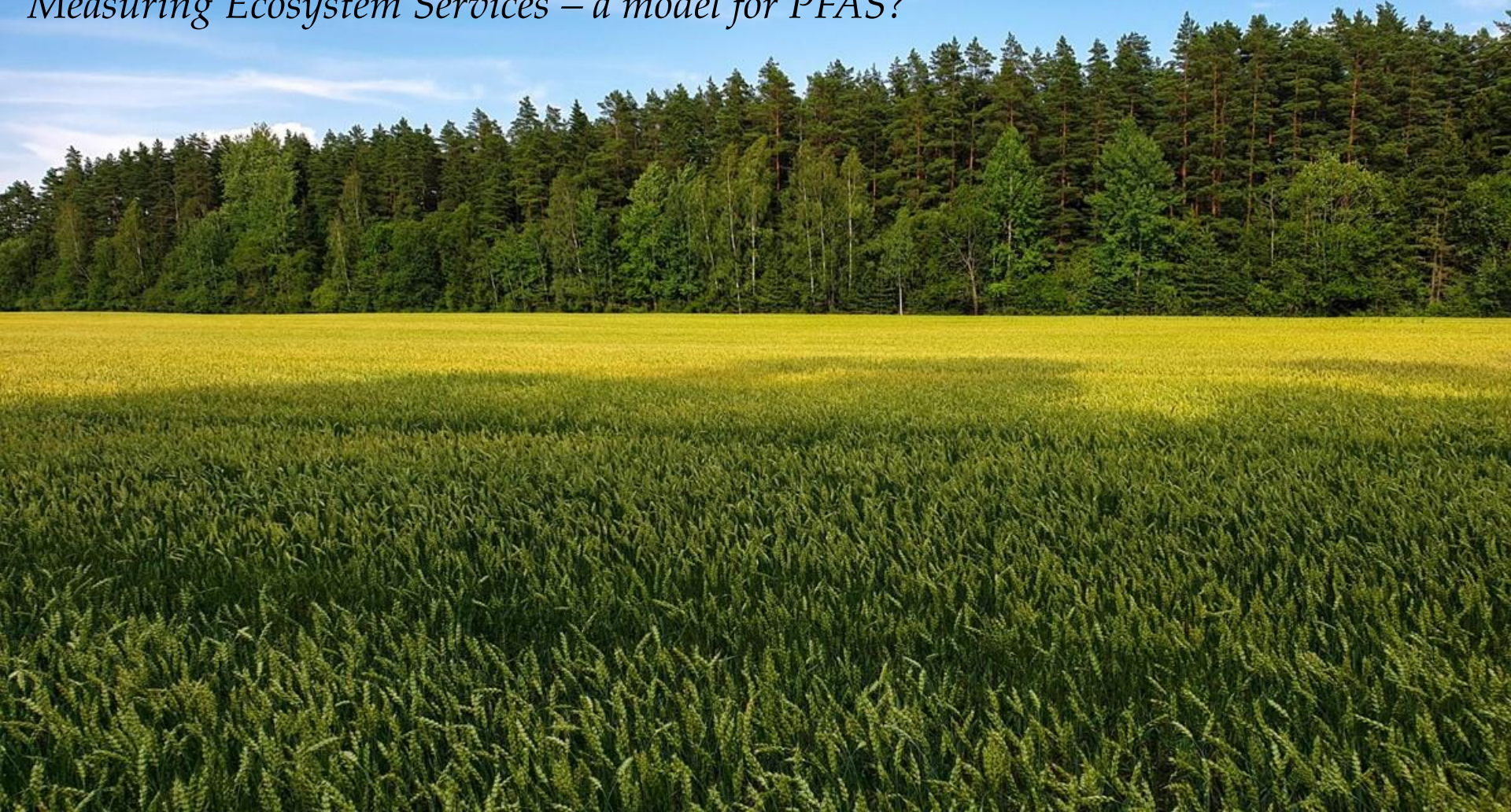
## Measuring Ecosystem Services

### **PROS**

- *Co-creation of data collection and structure with stakeholders*
- *Compilation of existing data from diverse sources*
- *De-identifying data sources, incentivizing data sharing*
- *Understandable, trustworthy AI*
- *Transdisciplinary approach – content experts, ML/AI, computer architecture, human interface*

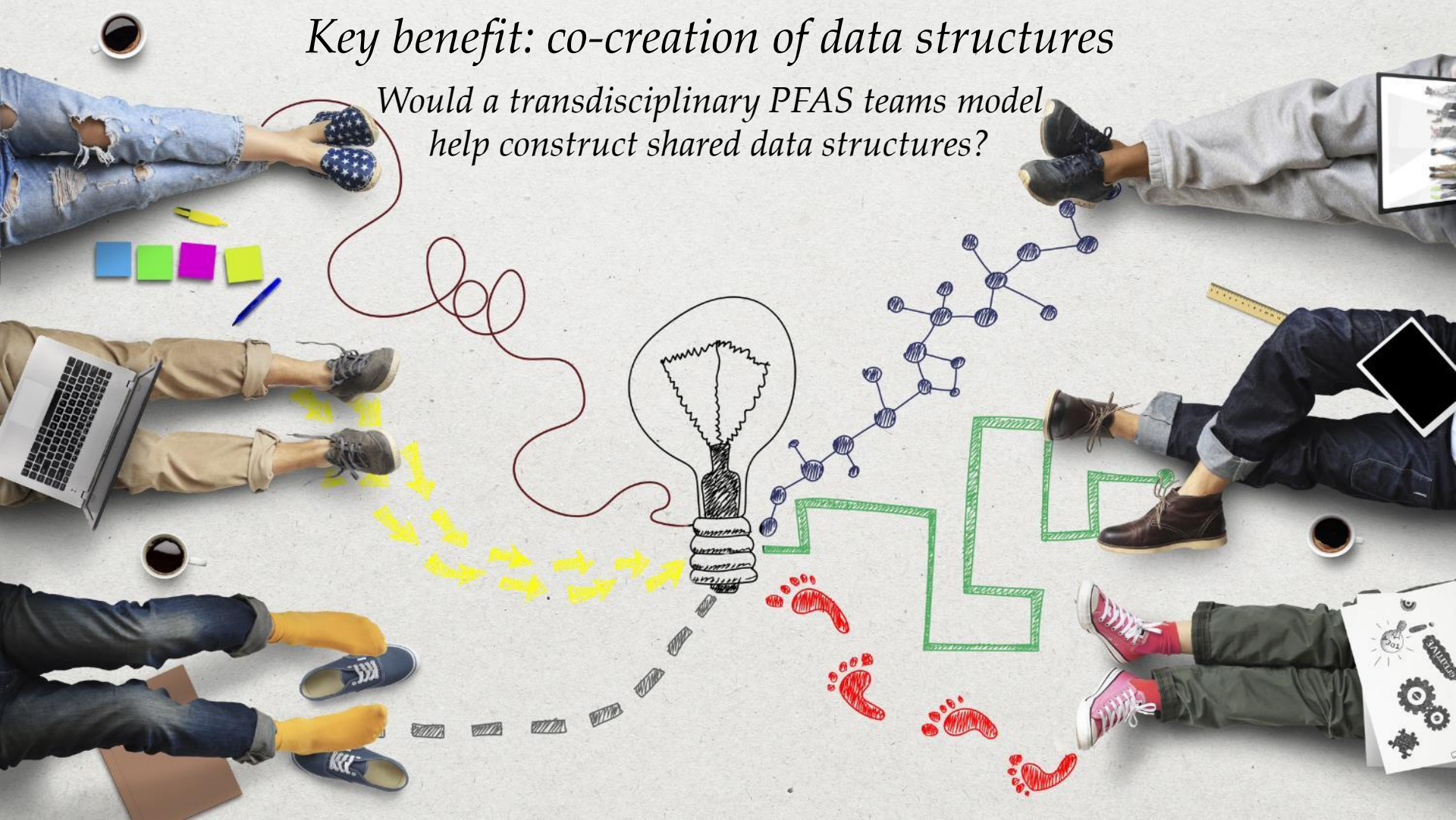


*Measuring Ecosystem Services – a model for PFAS?*



# *Key benefit: co-creation of data structures*

*Would a transdisciplinary PFAS teams model help construct shared data structures?*



Teams to support database and computing architecture development that allow for the collection and application of PFAS data for monitoring, decision support, and prediction.

**clarion call** noun

: a strong request for something to happen

## **Stakeholders**

Plant and soil scientists

Engineers

Hydrologists

Economists

Social Scientists

Remote sensing experts

AI/ML

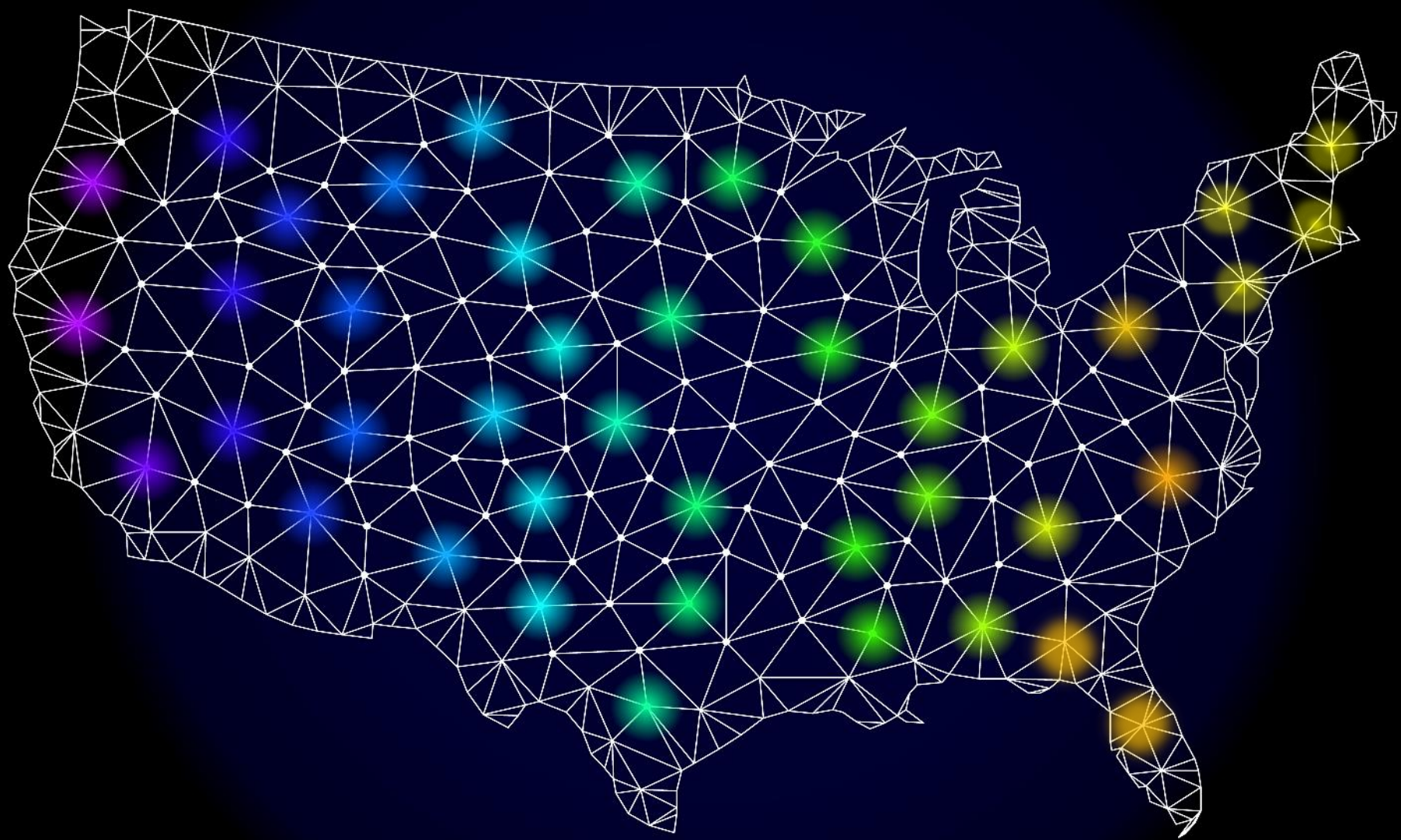
Computer architecture

Database structures

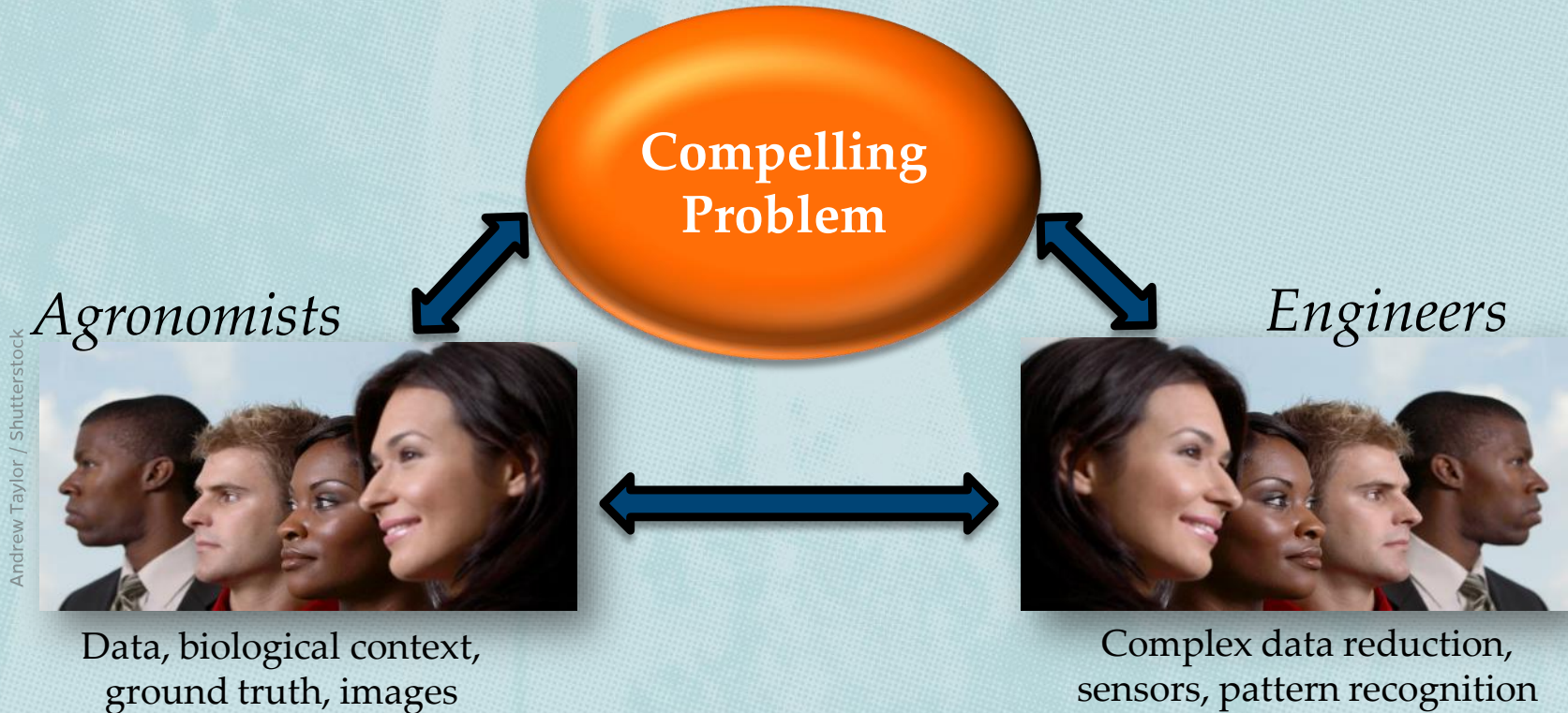
Modelers

Computational biologists

Etc.....



# Interdisciplinary Paradigm: An Example





# Transdisciplinary Paradigm



*Agronomists*

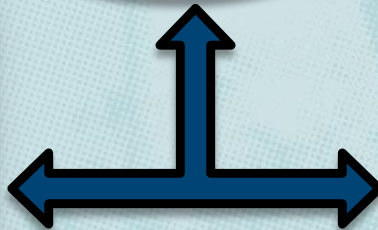


Data, biological context,  
ground truth, images

*Engineers*



Complex data reduction,  
sensors, pattern recognition



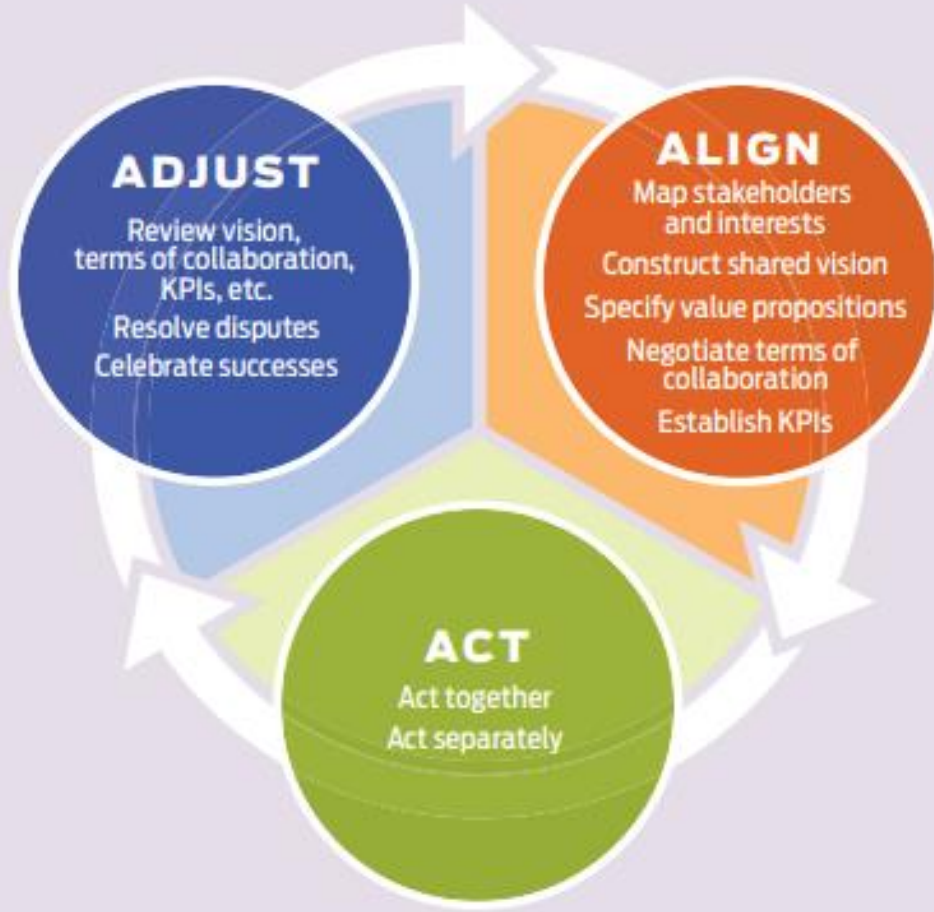
# When Launching a Collaboration, Keep It Agile

By the Stakeholder Alignment Collaborative



Pips Veazey

Director of the Portland Gateway  
[alice.veazey@maine.edu](mailto:alice.veazey@maine.edu)



*Ensuring teams are successful:*

*Stakeholder connected*

*Transdisciplinary make-up*

*Agile*

*New members come up to speed quickly*

*Re-tooling to respond to breakthroughs*

*Resource supported*

*Connected*

A sunset sky with many birds flying and tall grass in the foreground. The sky is filled with soft, orange and pink clouds, and numerous birds are seen in flight, scattered across the upper half of the frame. In the foreground, tall, green and yellow grasses are visible, swaying slightly. The overall mood is peaceful and natural.

*Thank you!*

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