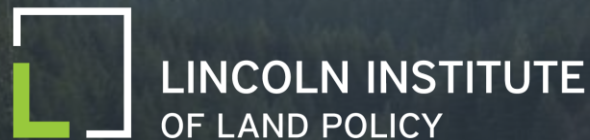# Internet of Water

Better Water Data for Better Water Decisions

Peter Colohan, Director, Internet of Water

Center for Geospatial Solutions, Lincoln Institute of Land Policy

CENTER FOR GEOSPATIAL SOLUTIONS

LINCOLN INSTITUTE OF LAND POLICY

Internet of Water COALITION

Principles and Philosophy

Philanthropic Project

Emerging Federal Initiative

Internet of Water COALITION

Principles

Philanthropic Project
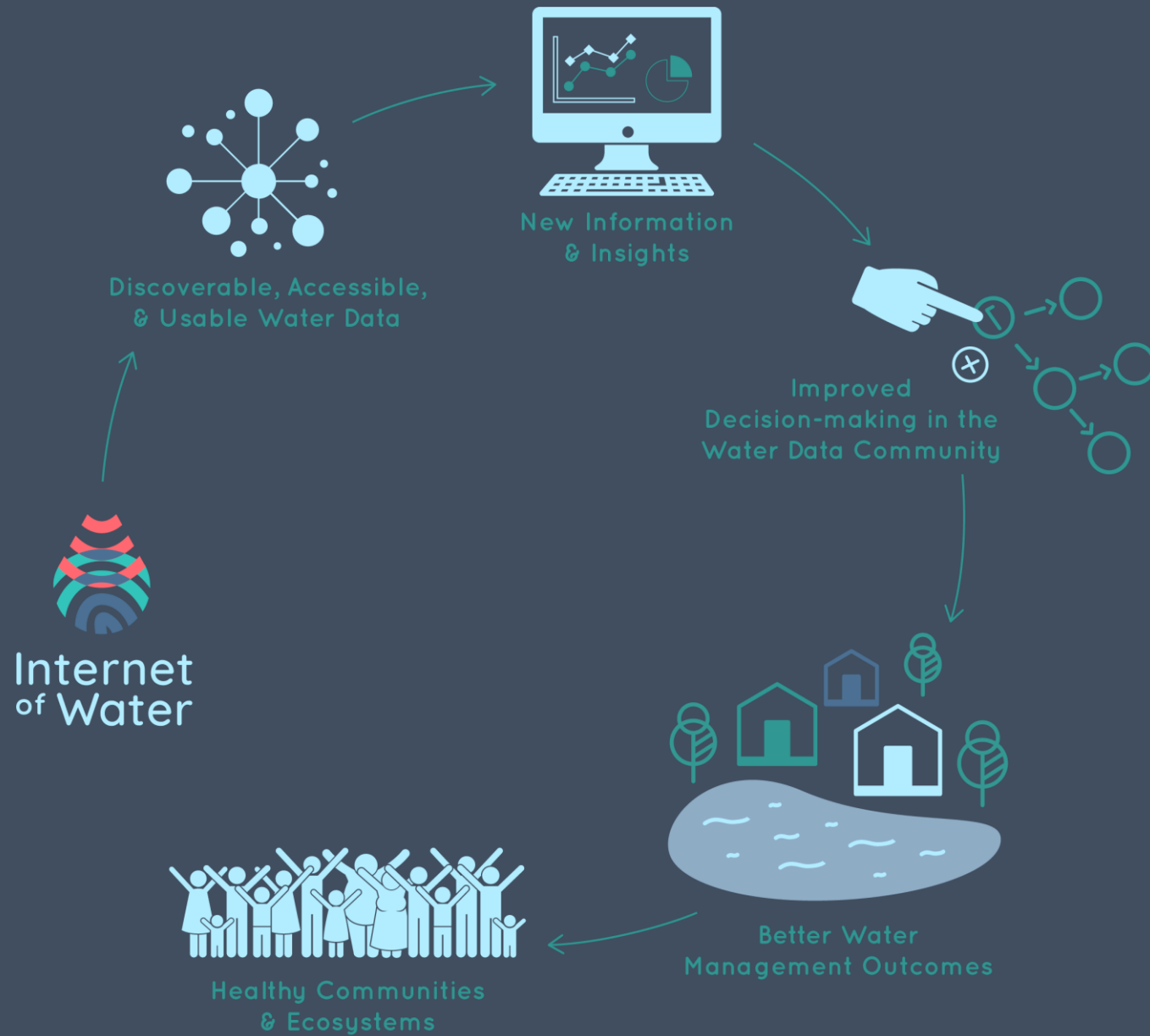
Federal Initiative

Discoverable, Accessible, & Usable Water Data

New Information & Insights

Improved Decision-making in the Water Data Community

Internet of Water

Better Water Management Outcomes

Healthy Communities & Ecosystems

Internet of Water COALITION

WHY (Principles 1 to 3)

Principles

Philanthropic Project

Federal Initiative

1. EFFICIENCY, SUSTAINABILITY, & RESILIENCE - Water data are essential for efficient, equitable, sustainable, and resilient water planning, management, and stewardship.

2. USEFULNESS - Modern data infrastructure increases the usefulness of water data and enables its broadest possible application.

3. WATER EQUITY - Data equity is necessary for water equity; modern data infrastructure should be implemented and governed so that data are usable by and for overburdened communities.

Internet of Water
COALITION

HOW (Principles 4 to 6)

Principles

Philanthropic Project

Federal Initiative

4. FAIR - All water data produced for the public good should, by default, be findable, accessible, interoperable, and reusable (FAIR) for public use or authorized users.

5. SECURE - Security and privacy risks associated with sharing data can be mitigated using mechanisms for tiered access for authorized users.

6. STANDARDIZED - Commonly accepted data, metadata, and exchange standards should be adopted by water data producers to promote interoperability, efficiency, sharing, equity, and secondary uses of data

Internet of Water
COALITION

WHO (Principles 6 to 9)

Principles

Philanthropic Project

Federal Initiative

7. WHO HAS CONTROL? - Control and responsibility over data are best maintained by data producers.

8. WHO DETERMINES QUALITY AND USE? - Data producers are responsible for sharing data of known quality and documenting essential metadata; data users are responsible for determining whether data are appropriate for specific purposes and uses.

9. WHO HOLDS THE DATA? (EVERYONE) - Federated, distributed systems of interoperable public water data generally provide scalability and flexibility to meet the diverse needs of data producers and users.

Internet of Water COALITION

- Place-based collaborative water data projects

- Common standards, advanced through a nationwide community of practice

- Essential new technologies

Philanthropic Project

Internet of Water
COALITION

From Principles to Prototype: The Internet of Water Start-Up and Coalition

- The IoW project was formed in 2018 at Duke University's Nicholas Institute for Environmental Policy Solutions. After a successful three-year start-up phase the IoW Coalition was formed.

- The IoW Coalition is led by the Center for Geospatial Solutions at the Lincoln Institute of Land Policy in partnership with Duke University, the Western States Water Council, the Water Data Collaborative, and the Consortium of Universities for the Advancement of Hydrologic Sciences, Inc.

Internet
of Water
COALITION

Principles

Philanthropic Project

Federal Initiative

Place-Based Projects

Internet of Water COALITION

Example Start-Up Phase Projects

Principles

Philanthropic Project

Federal Initiative

Freshwater Harmful Algal Blooms Monitoring and Notification System in California
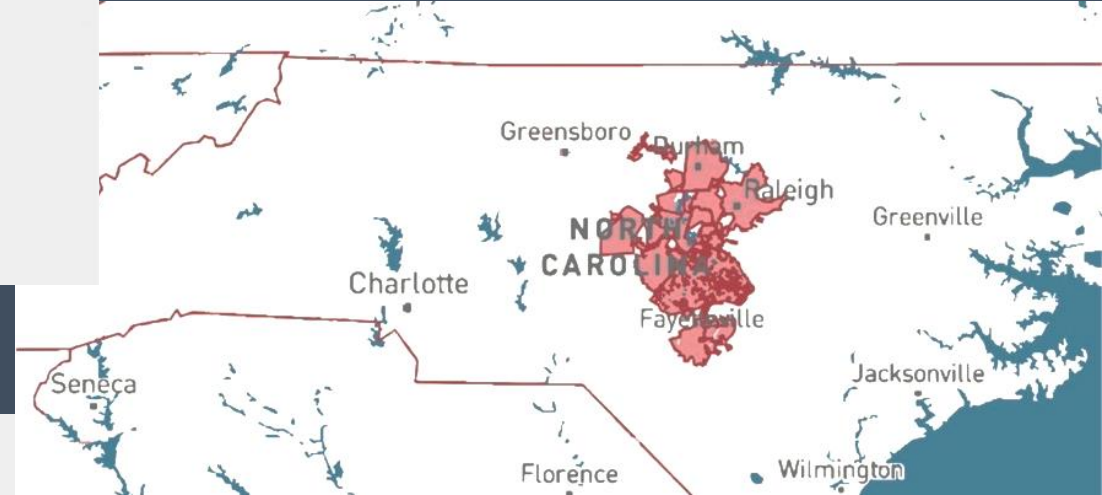
North Carolina Water Supply Dashboard

Improved Data Management and Decision Support in the Lower Pecos Valley

Internet of Water COALITION

Principles

Philanthropic
Project

Federal
Initiative

Common Standards &
Peer 2 Peer Network

Internet
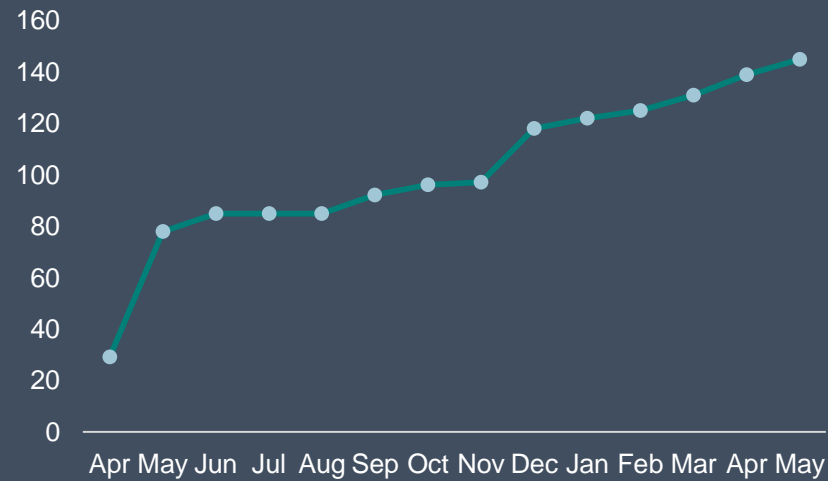of Water
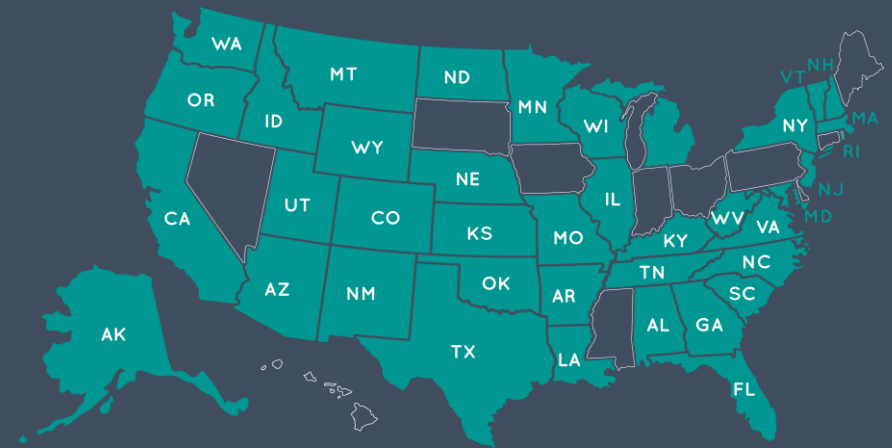COALITION

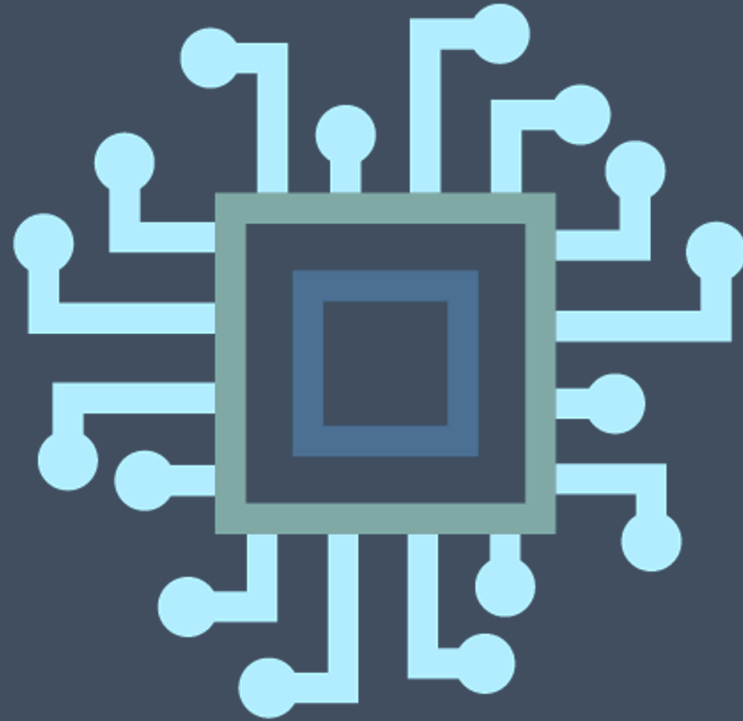Principles

Philanthropic
Project

Federal
Initiative

New Technology

Internet
of Water
COALITION

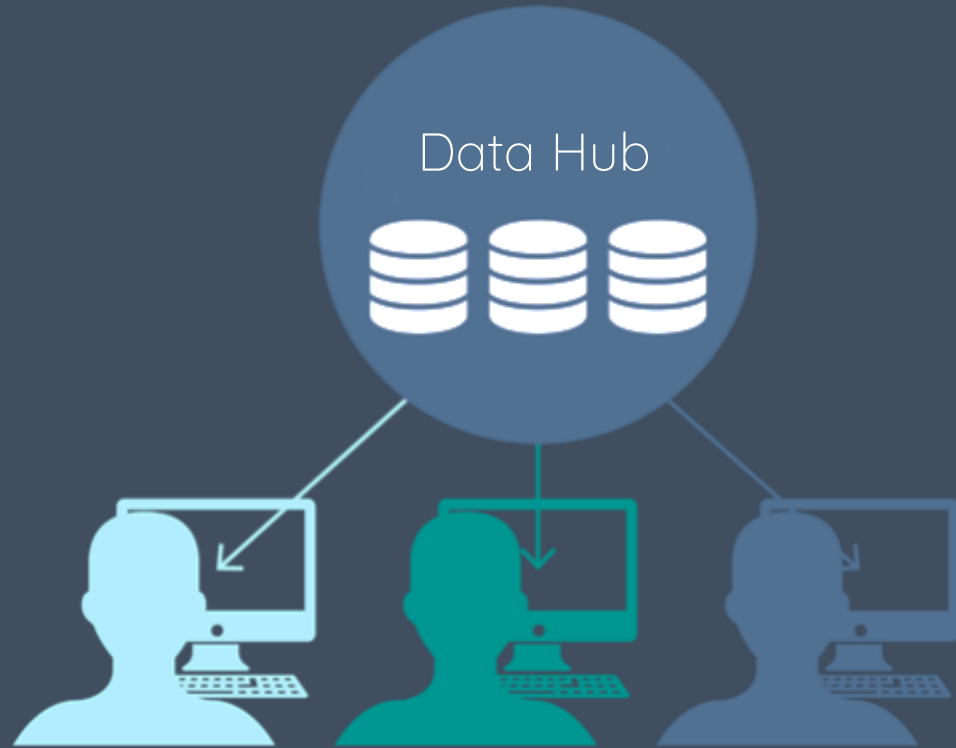Principles

Philanthropic Project

Federal Initiative

Geoconnex

A search index for water data from all organizations

Internet of Water COALITION

Principles

Philanthropic Project

Federal Initiative

Before Geoconnex

After Geoconnex

Few relevant data sources

All relevant data sources

Org A   Org B   Org C
Org D   Org E   Org F

Internet of Water
COALITION

Emerging Federal Initiative

Principles

Philanthropic Project

Federal Initiative

Total Length: 2337 km

Steamboat Springs, Colorado
1. East Branch South Fork Mad Creek (11 km)
2. South Fork Mad Creek (6 km)
3. Mad Creek (1 km)
4. Elk River (17 km)
5. Yampa River (314 km)
6. Green River (561 km)
7. Colorado River (1427 km)
Mexico

More Detail   Faster

USGS Monitoring Locations
Water Quality Portal sites
Points of Diversion

River Runner Linked

Internet of Water
COALITION

Internet of Water
COALITION

internetofwater.org

https://internetofwater.org/peer-to-peer-network/

Peter Colohan

pcolohan@lincolninst.edu