

# PLANETARY SPATIAL DATA INFRASTRUCTURE (PSDI)

---

WHY WE NEED IT

JUSTIN HAGERTY AND JAY LAURA

USGS ASTROGEOLOGY SCIENCE CENTER

# OUTLINE

- ▶ Key terms
- ▶ Common Issues for the Planetary Scientist
- ▶ What is Planetary Spatial Data Infrastructure (PSDI)?
- ▶ Examples of Success
- ▶ Goals and Benefits of a PSDI
- ▶ Next Steps Toward Implementation of a PSDI

# KEY TERMS

- ▶ **Spatial Data** – Data with a locational/spatial component related to a common spatial reference (e.g., a coordinate system)
  - ▶ Digital terrain/elevation models
  - ▶ Map projected image mosaics
  - ▶ Geologic maps
- ▶ **Science-Ready Spatial Data Products**
  - ▶ Accurate, co-registered, interoperable, known error, reproducible

- ▶ **Foundational Data Products**
  - ▶ Orthoimages/controlled mosaics
- ▶ **Framework Data Products**
  - ▶ Mineralogy / element maps

Duplication of effort or too much effort

I want to get everything in one place

No enforcement of standards or policies

I'm not an expert in data processing

Too hard to find what I'm looking for

Too many formats

Uncommunicated expectations (roles & responsibilities)

Software is too complex or too expensive

Too many tools to choose from

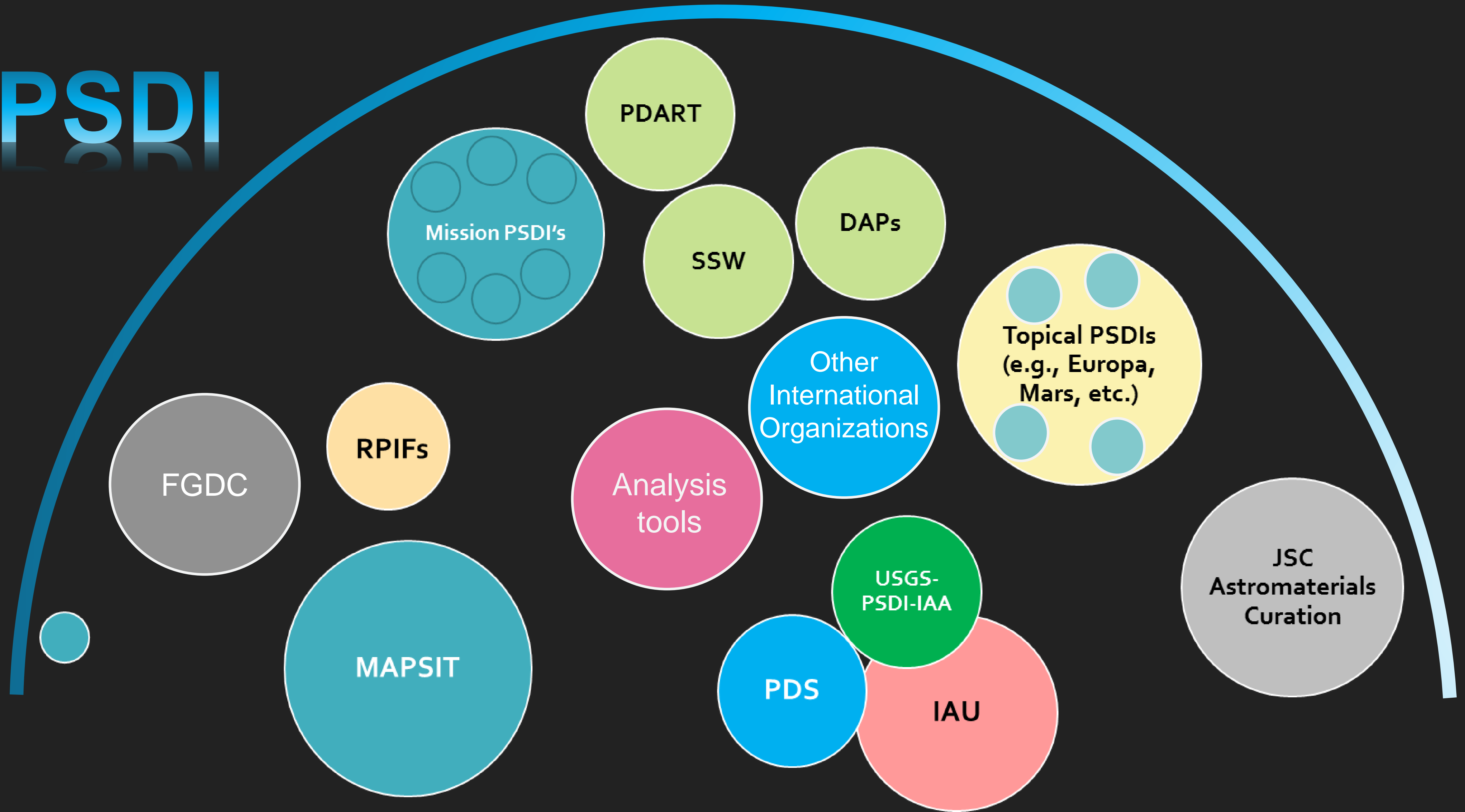




Spatial data should just work



# PSDI



# WHAT IS PSDI?

- ▶ Planetary Spatial Data Infrastructure (data, access, policy, standards, users)
  - ▶ Places bounds on the scope of the spatial data ecosystem (constrain the issue)
  - ▶ Identifies the key thematic components and relationships
  - ▶ Formalizes previous ad hoc approaches via standards and communication
  - ▶ Community-scale discussions →

PSDI ≠ PDS

Lisa Gaddis Presentation!



# WHY WE NEED PSDI

## EXISTING SDIs

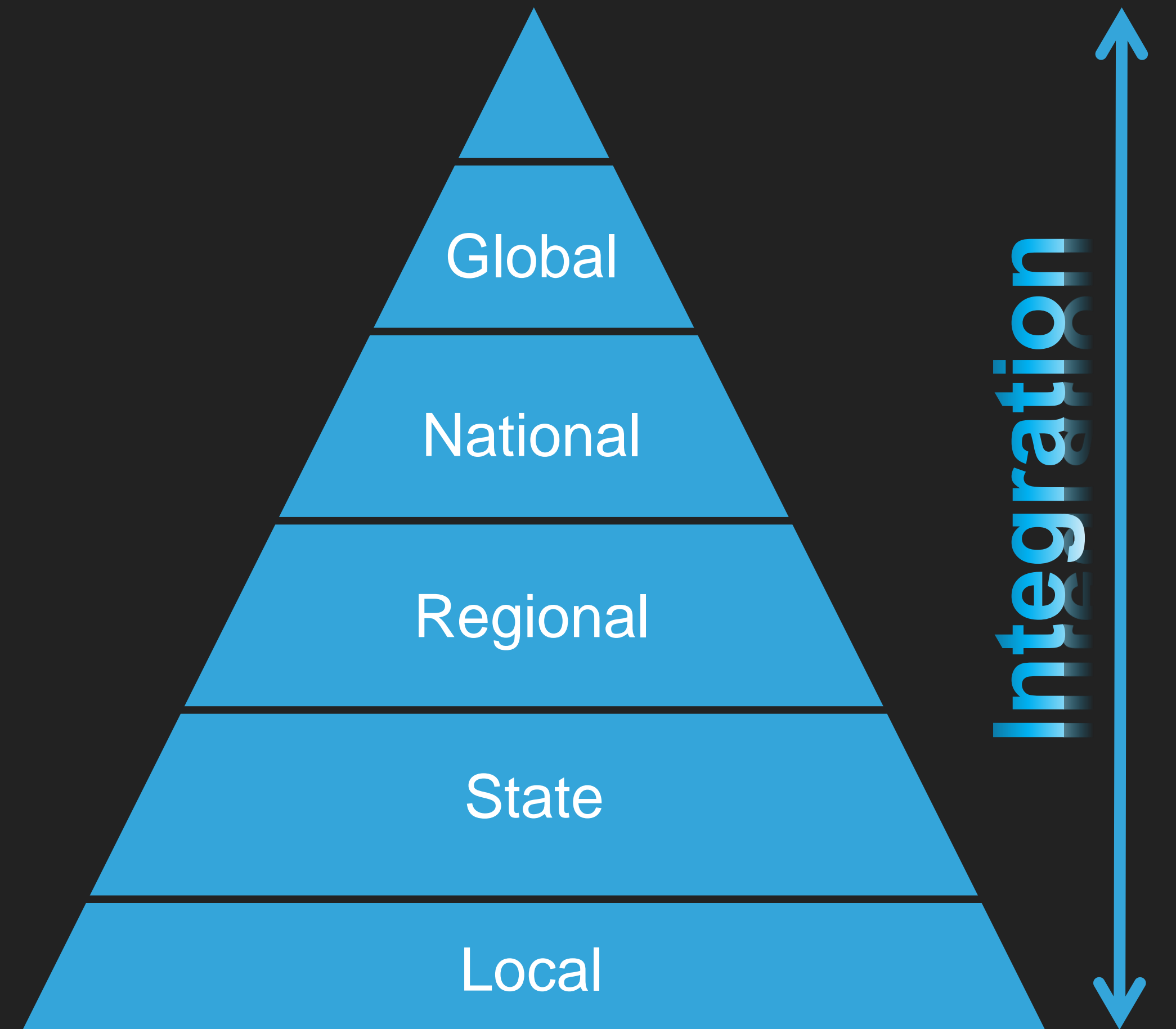


**Montana Spatial Data Infrastructure (MSDI)**



GEOSPATIAL DATA - A TOOL FOR BETTER  
INFORMATION DECISIONS AND MORE EFFICIENT  
ADMINISTRATION THE ARTIC

INTEROPERABILITY

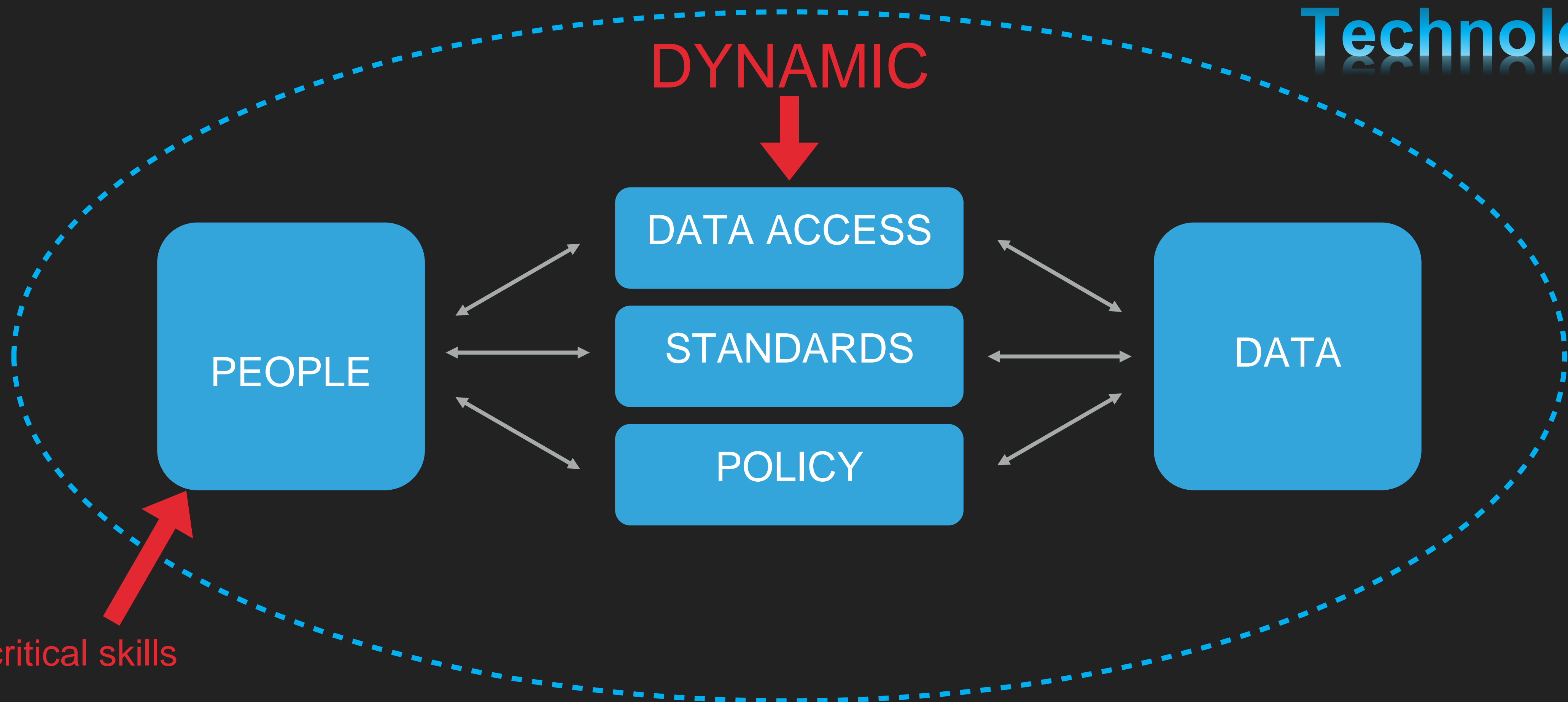


After: Rajabifard 2002

COLLECTION &  
STORAGE



Technology



Develop critical skills

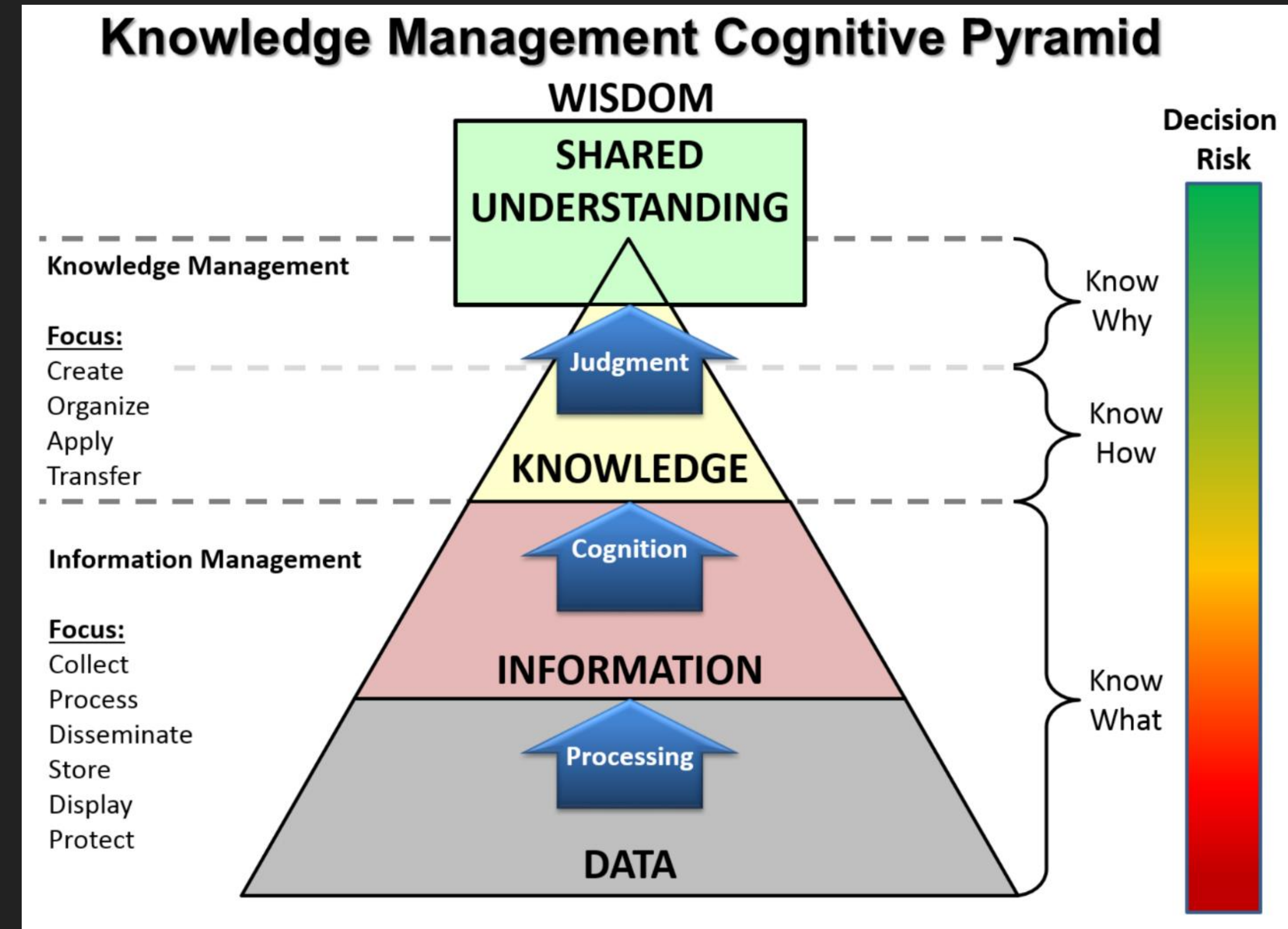
Engage stakeholders

Connect with new/non-expert users

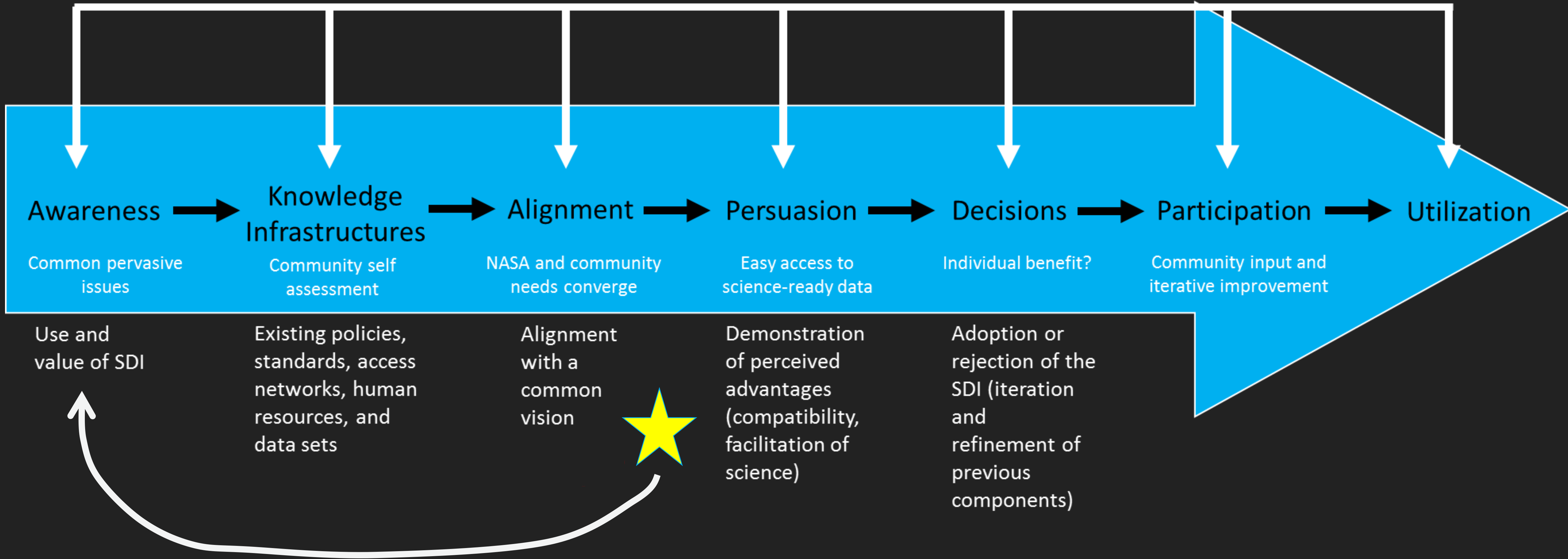
Why should I care?

# GOALS AND BENEFITS

- ▶ Improved **discoverability and accessibility** of science-ready data products
- ▶ Improved confidence in the **accuracy and interoperability** of spatial data
- ▶ Development and maintenance of community-wide **standards and best practices**
- ▶ Increased efficiencies ultimately leading to improved **facilitation of science and decision making**
- ▶ Coordinated, long-term, **development and support** of the infrastructure → shared understanding
- ▶ **Formalized communication** platforms/channels for community input



# Communication Channels



Community input is critical → panel discussion!

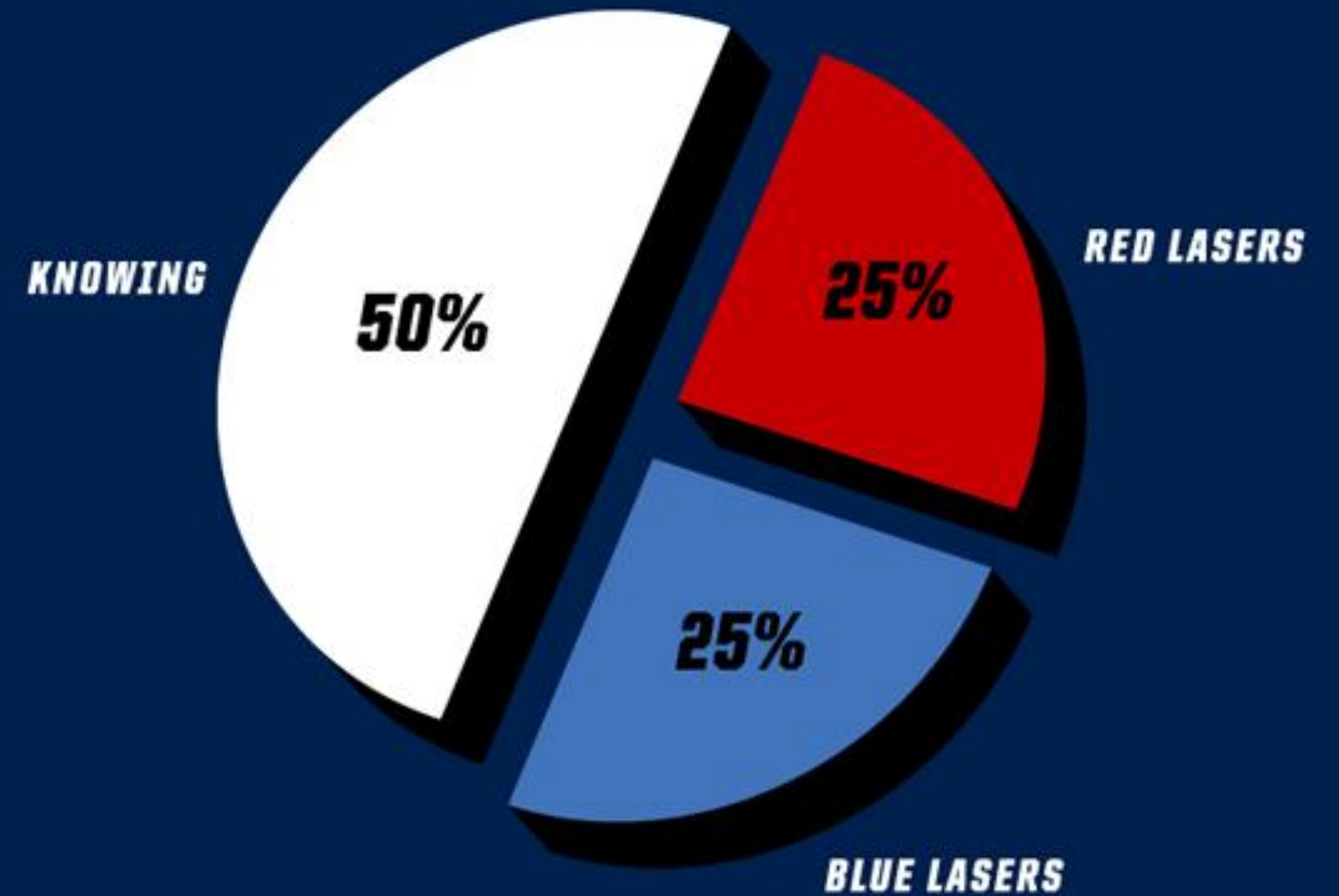


**KNOWING**  
*IS HALF THE BATTLE*

THE BATTLE

Code Name: PIE CHART

**THE BATTLE**





---

# SUMMARY & QUESTIONS

- ▶ PSDI is a theoretical framework for a community, not a canned solution
  - ▶ Mechanism to ID spatial data, data practitioners, & data interoperability
  - ▶ Supporting the broadest possible user base → facilitate science and exploration!
- ▶ We are in the beginning stages (left side of the communication arrow) and still need to assess the state of the community → implementation (right side of arrow)
- ▶ MAPSIT is actively working on the broader PSDI - we need your input
  - ▶ [Discussion panel at end of this session!](#)
  - ▶ [2017 AGU – Special Session on PSDI](#)
  - ▶ [Laura et al \(2017\) Toward a PSDI](#)
- ▶ Contact: [jhagerty@usgs.gov](mailto:jhagerty@usgs.gov)

Thank  
you!

