GeoGov Summit

Advancing The Nation's Geospatial Infrastructure in Partnership for National Development

Pre-Conference Workshop:

United Nations Integrated Geospatial Information Framework (UN-IGIF) and Geospatial Knowledge Infrastructure (GKI)

United States® Census Bureau

Meet the Panel

Pre-Conference Workshop

IGIF and GKI: Aligning a Global Framework and Strategy for National Development

Wednesday, September 6 from 8:00 - 10:00 a.m.

Moderator

Deirdre Dalpiaz Bishop
Chief, Geography Division
U.S. Census Bureau

Speaker 1

Greg Scott
Inter-Regional Advisor, UN-GGIM
United Nations Statistics Division

Speaker 2

Ananyaa Narain
Vice President of Consulting
Geospatial World

Speaker 3

Jill Saligoe-Simmel
Principal Product Manager
Esri

Speaker 4

Shashank Priya
Vice-President for Research
University of Minnesota

Future Geospatial Information Ecosystem

A United Nations Initiative

Special thanks to Dr. Lesley Arnold
Director, Geospatial Frameworks

GEOSPATIAL FRAMEWORKS
Maximising your geospatial investment

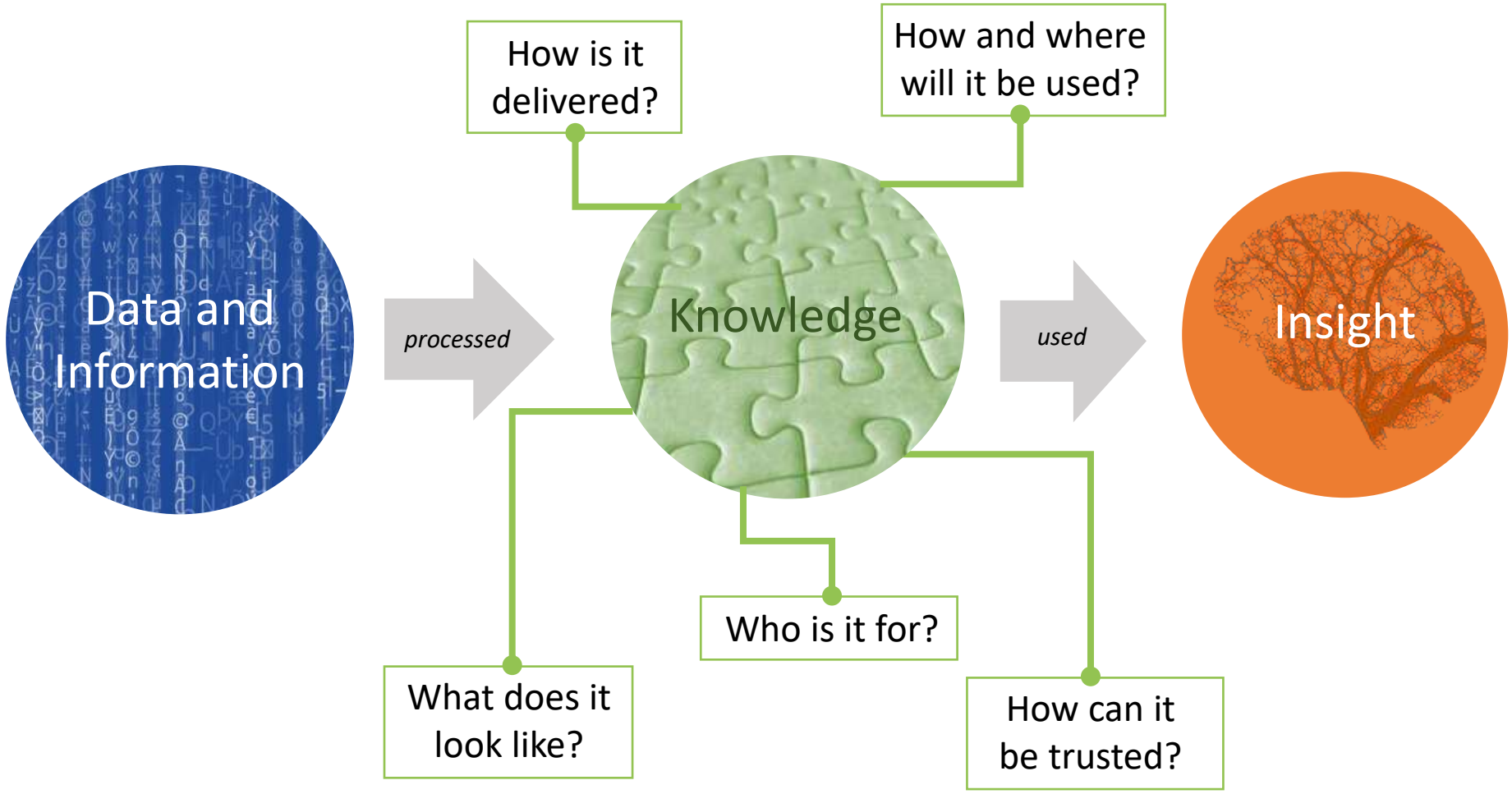
Takeaways

- What are we trying to achieve?
- Why can’t we achieve it now?
- What does transformation look like?
- What do we need to consider?

What are we trying to achieve?

GEOSPATIAL FRAMEWORKS
Maximising your geospatial investment

From Data to Knowledge and Insight



Three Drivers for Change

Technology the Enabler

- Address common challenges
- Harness geospatial intelligence from a local to global level
- Leverage/share Innovation

- Societal expectations for knowledge on-demand
- Deliver contextualised knowledge for individuals
- Designed for general users

- An ecosystem accessible and usable to all
- Knowledge available to everyone
- An ecosystem that, in its design, prioritises developing nations.

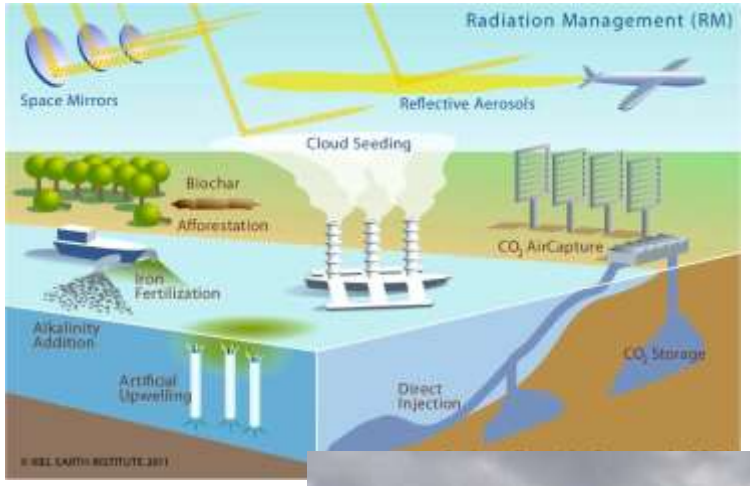
Three Drivers for Change

Technology the Enabler

Unified Solutions to Global Challenges?

Our challenges are set to become more complex

Climate Geoengineering



Deep Sea Mining

Migration/Refugees

Three Drivers for Change

Technology the Enabler

- Address common challenges
- Harness geospatial intelligence from a local to global level
- Leverage/share Innovation

- Societal expectations for knowledge on-demand
- Deliver contextualised knowledge for individuals
- Designed for general users

Knowledge needs to be individualized

People have similar questions of data content…..asked in different contexts

Question: Will this property be flooded?

Emergency Responder

Yes, you should evacuate the area

Home Buyer

Yes. Reevaluate buying this property

Insurance Broker

Yes. Higher insurance fees apply

Urban Planner

Yes. Avoid building in this area

Three Drivers for Change

Technology the Enabler

- Address common challenges
- Harness geospatial intelligence from a local to global level
- Leverage/share Innovation

- Societal expectations for knowledge on-demand
- Deliver contextualised knowledge for individuals
- Designed for general users

- An ecosystem accessible and usable to all
- Knowledge available to everyone
- An ecosystem that, in its design, prioritises developing nations.

Think of the Local Farmer

“How much fertilizer and where?”

- Able to answer questions
- Geoanalytics that understand their individual needs
- Able to access globally available data
- Cheap accessible infrastructure
- No need for a degree in geospatial technologies
- Confidence in answers

Why can’t we achieve knowledge on-demand now?

Current SDI Capabilities

Data sharing

Analytics

Policy Setting

Integrated data

Applications

Benefits accruing

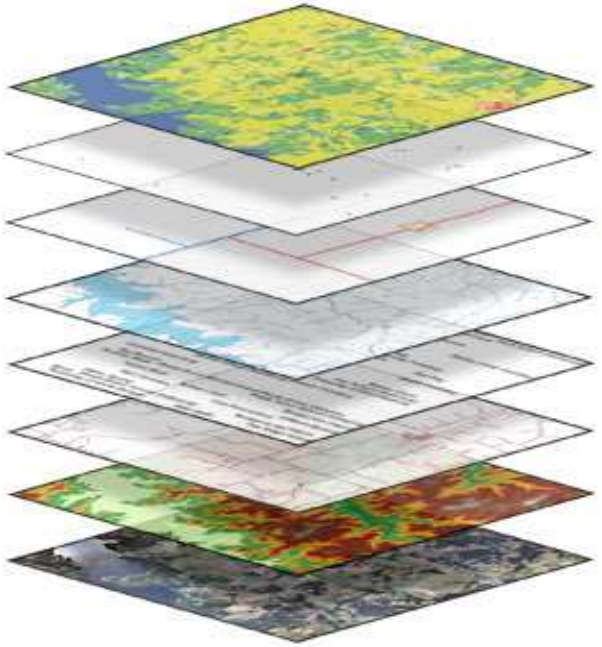
Reuse / repurpose

Decision-making

So why change?

SDI Limitations

- Human accessible
- Knowledge Delay
- Push data vs get answers
- Limited integration
- Professional users only
- Lack opportunity

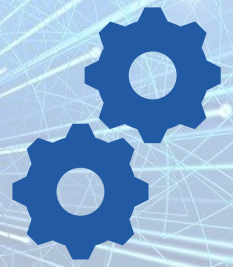


SDI Catalogues are <u>not</u> machine friendly

Findable

Accessible

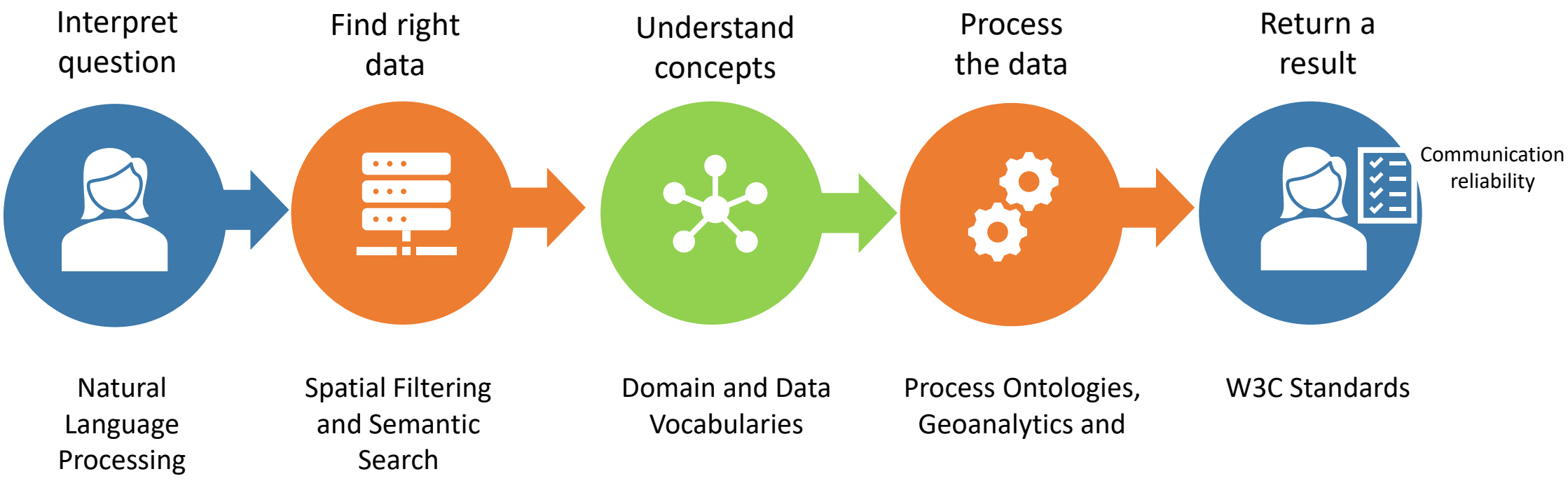
Interoperable



Reusable

Data Needs to be FAIR.
But that’s only one aspect.

Teach Machines to Think Like Us



Artificial Intelligence and Semantic Web Technologies

What will the transformation to a future Geospatial Information Ecosystem look like?

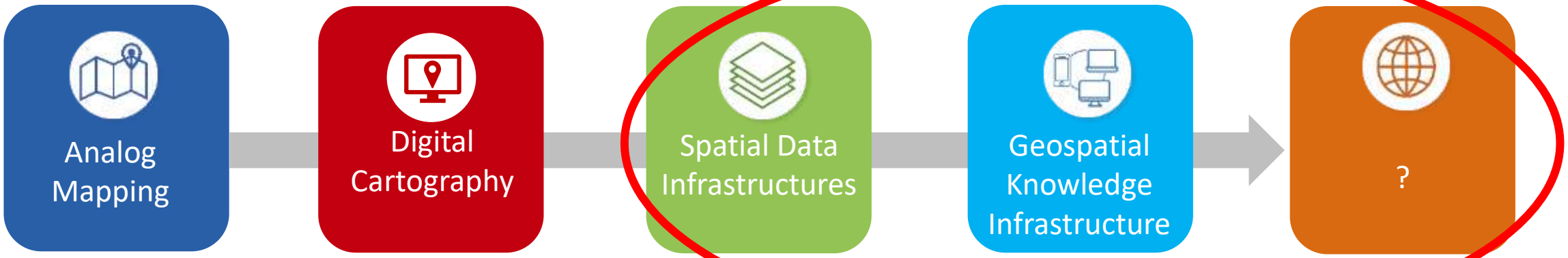
Differentiating an Infrastructure and Ecosystem

An infrastructure is built – it consists of the physical and organizational structures and facilities needed for an operation - SDIs and System of Systems.

An ecosystem evolves – it is an environment consisting of component parts that interact with one another - IoT and the Web of Data.

Geospatial Continuum

On the same journey, just unique starting points



Paper

Production of maps by hand

GIS

Geospatial data compiled, analyzed and formatted into a virtual image

Data Hub

An infrastructure for organising and making data and services accessible

System of Systems

Systems that interoperate and consume geospatial data

Ecosystem

Global ecosystem permitting intelligent interactions between data and services

Web Continuum

Web 1.0
Read Only Web

html pages
"READ ONLY"

Web 2.0
Social Web

SDIs come of age
"READ-WRITE"

Web 3.0
Semantic Web

Transformation of Internet into a database
"READ-WRITE-EXECUTE"

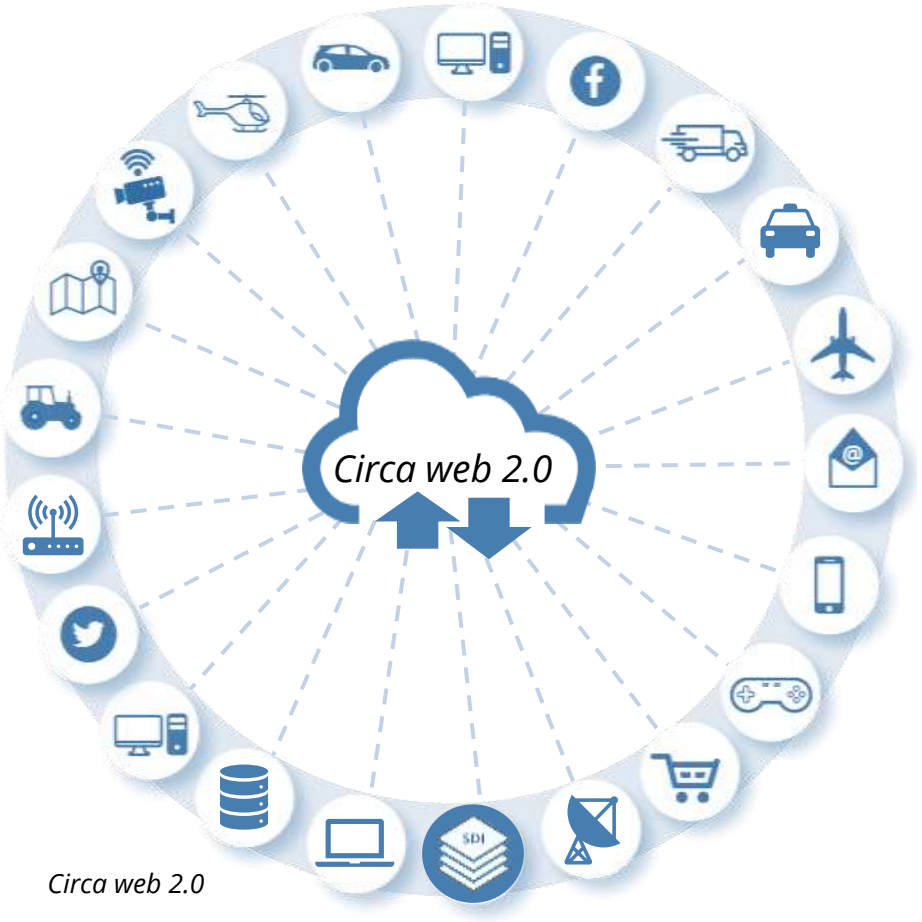
Largely Speculative

Web 4.0+
Spatial Web
Not spatial as in "Geospatial" rather hyperspace

Seamless integration of convergent technologies - physical and digital world

Note: Categorization of web stages is not universally agreed and boundaries between are blurry

Emerging Ecosystem

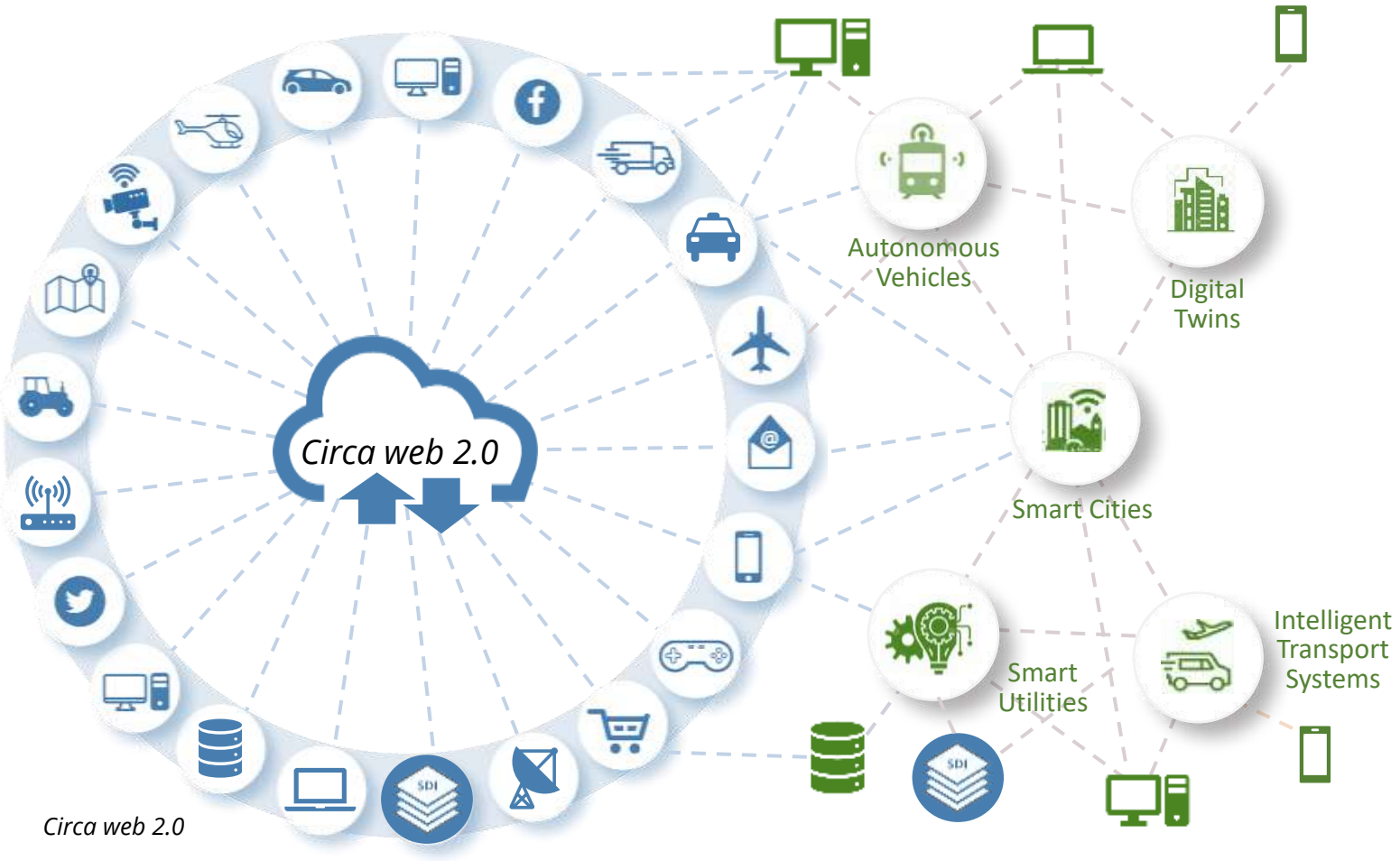


Circa web 2.0

Spatial Data Infrastructures
Human centered – A person searches, retrieves, processes and analyses data via a web catalogue to obtain knowledge.

GEOSPATIAL FRAMEWORKS
Maximising your geospatial investment

Emerging Ecosystem



Circa web 2.0

Spatial Data Infrastructures
Human centered Data Hubs – A person searches, retrieves, processes and analyses data via a web catalogue to obtain knowledge.

System of Systems
Distributed/federated interconnected systems managed under the control of humans and include advanced machine analytics and AI

GEOSPATIAL FRAMEWORKS
Maximising your geospatial investment

Emerging Ecosystem

GEOSPATIAL FRAMEWORKS
Maximising your geospatial investment

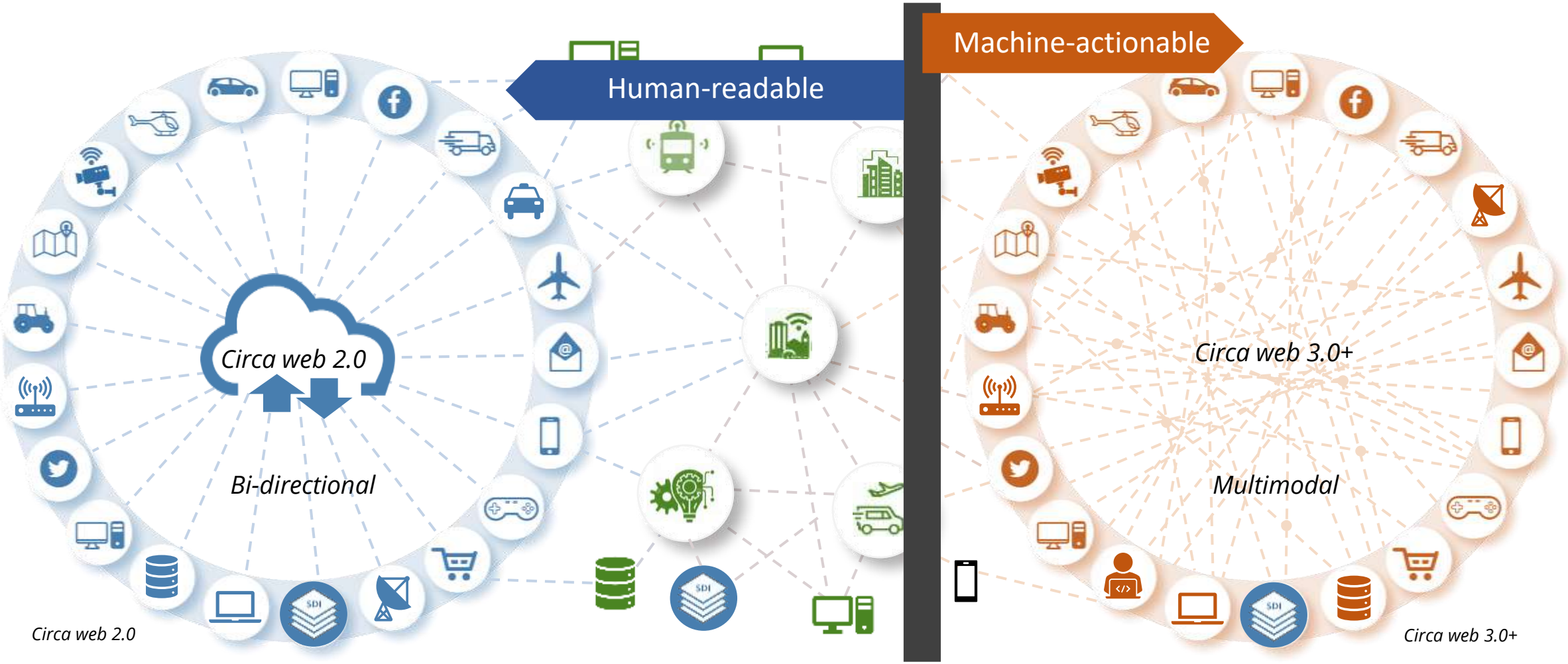
Spatial Data Infrastructures
Human centered – A person searches, retrieves, processes and analyses data via a web catalogue to obtain knowledge.

System of Systems
Distributed/federated interconnected systems managed under the control of humans and include advanced machine analytics and AI

Emerging Ecosystem
Machined centered – AI searches, retrieves, processes and analyses data to deliver knowledge direct to a person's device or another machine.

Emerging Ecosystem

GEOSPATIAL FRAMEWORKS
Maximising your geospatial investment



Spatial Data Infrastructures
Human centered – A person searches, retrieves, processes and analyses data via a web catalogue to obtain knowledge.

System of Systems
Distributed/federated interconnected systems managed under the control of humans and include advanced machine analytics and AI

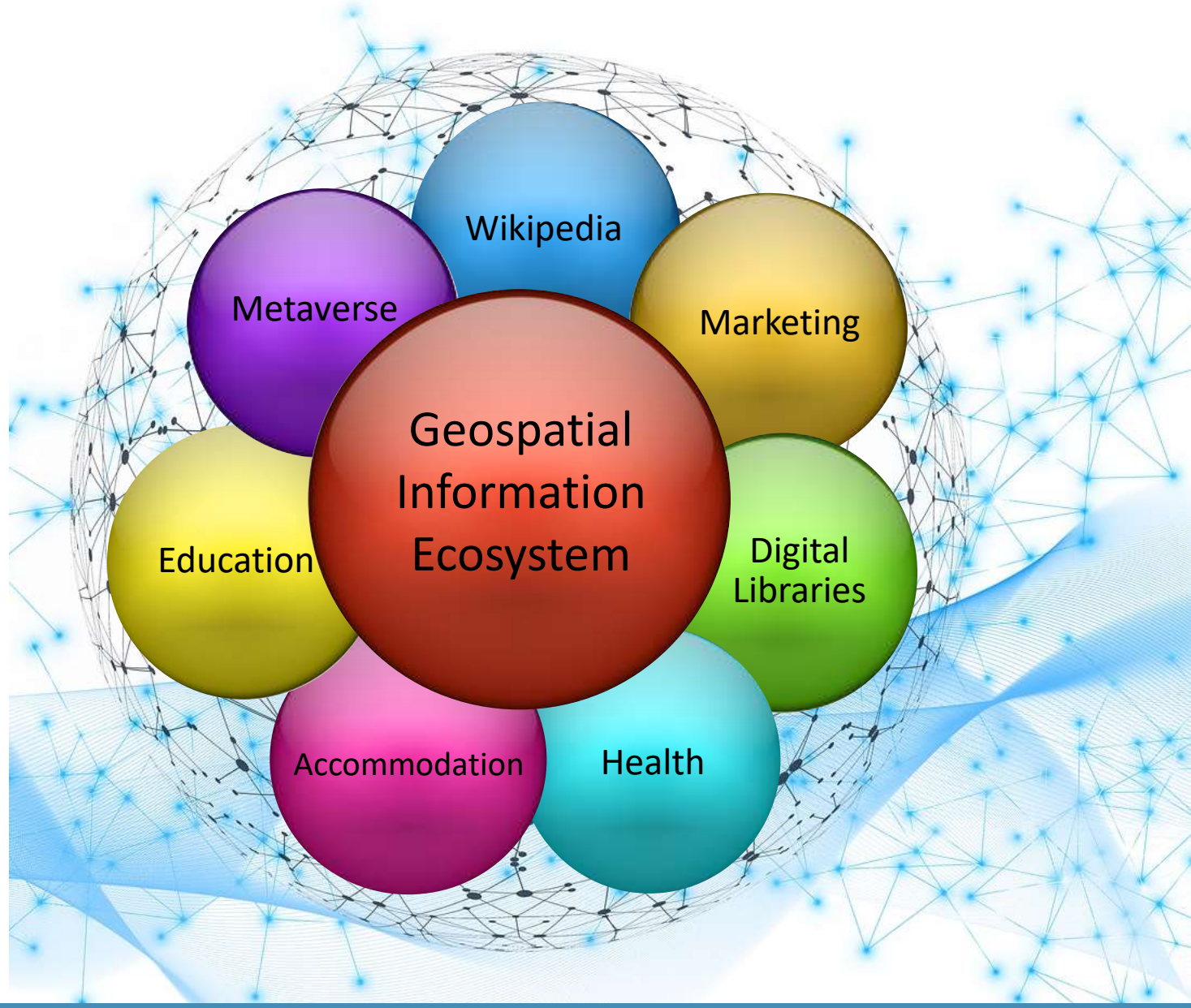
Emerging Ecosystem
Machined centered – AI searches, retrieves, processes and analyses data to deliver knowledge direct to a person's device or another machine.

Web of Data

- Generative AI Apps operate within the Web of Data
- Made up of many ecosystems

Where does geospatial fit?

- Geospatial is a ‘key’ integrator – of this digital fabric.
- Cross-sector and cross-discipline
- It ties together suppliers, users and service providers in real-time



What next?

What is the UN-IGIF?

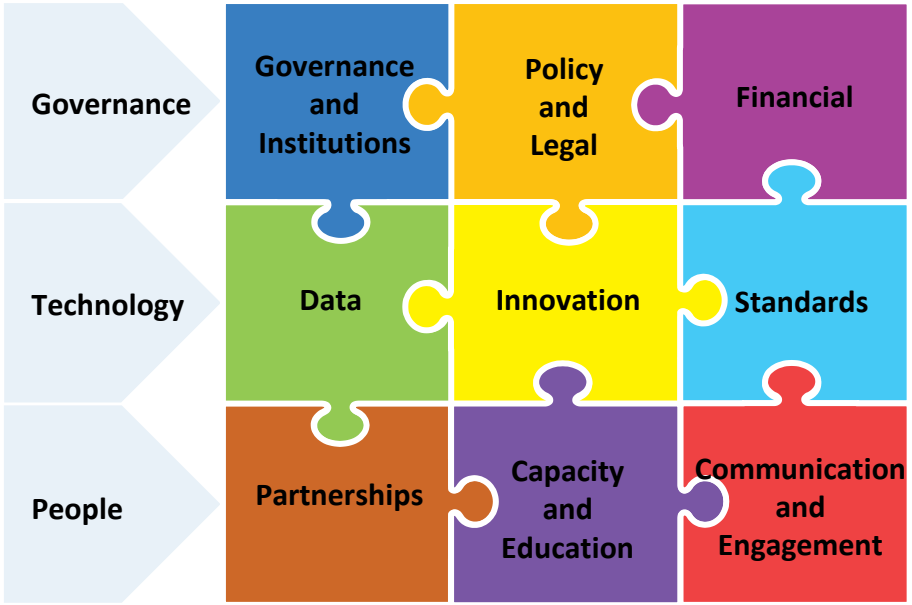
The UN-IGIF is a United Nations endorsed framework to strengthen geospatial information management.

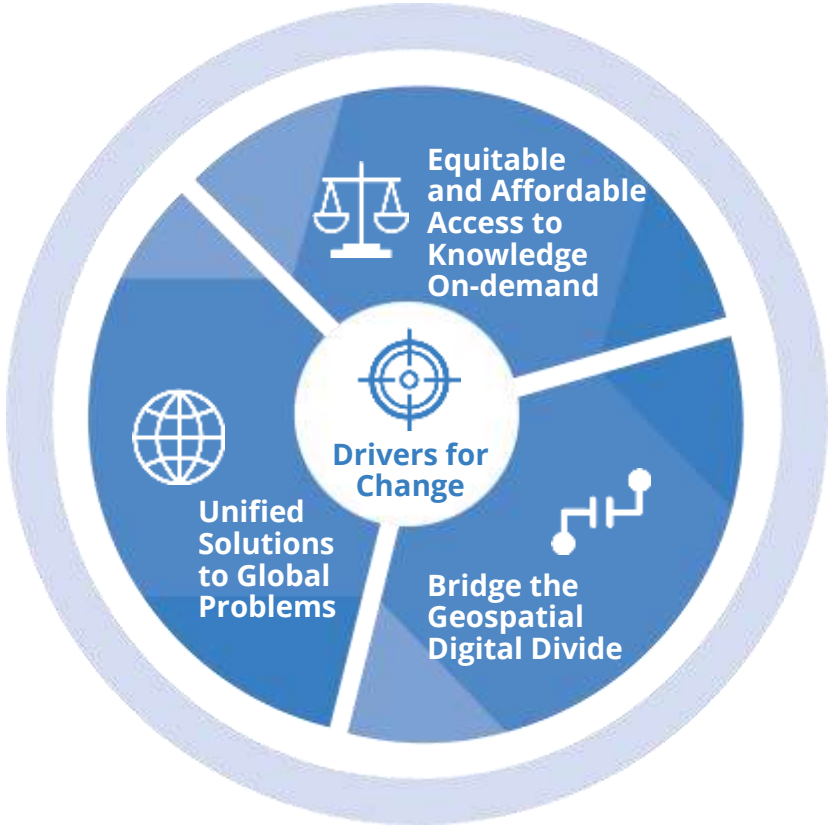
Includes 9 Strategic Pathways focused on three areas:

1. Governance
   - Governance and Institutions
   - Legal and Policy
   - Financial
2. Technology
   - Data
   - Innovation
   - Standards
3. People
   - Partnerships
   - Capacity and Education
   - Communication and Engagement

UN-IGIF provides a 360 degree view of what needs to change to move toward the future geospatial information ecosystem.

Step to address the Drivers for Change

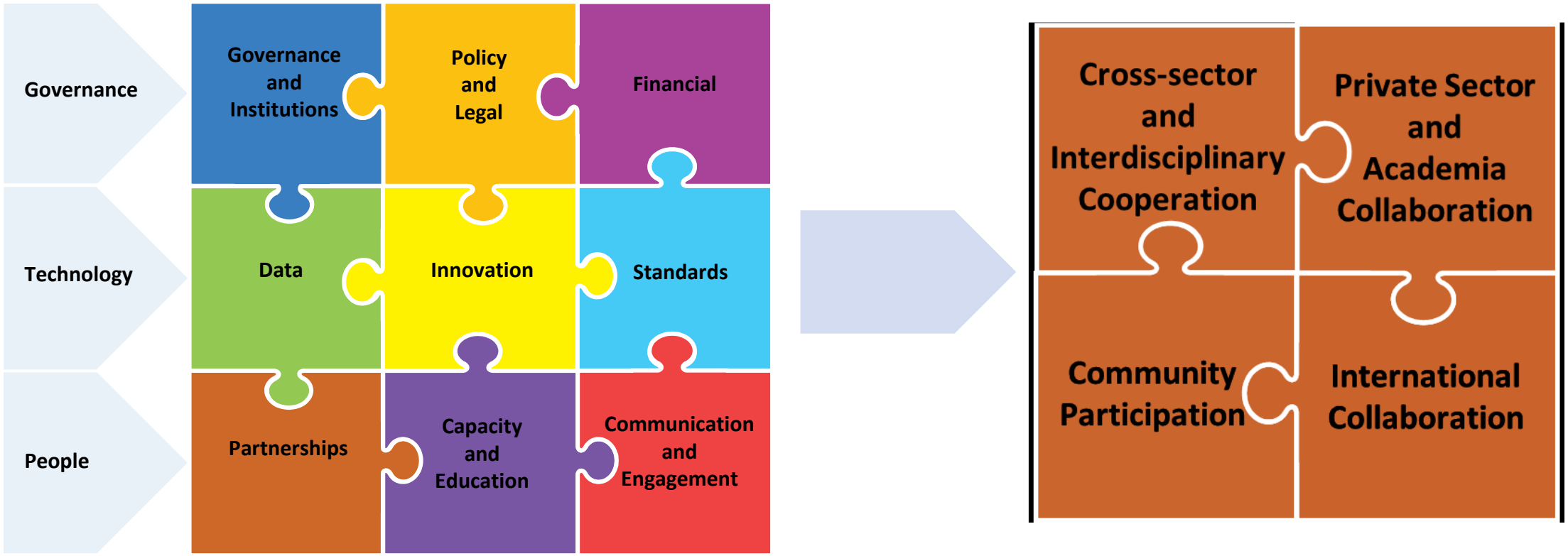




Shaping Policy and Legal Frameworks

National Governments	International Organizations	Industry Consortia and Alliances	Regulatory Agencies	Research Institutions	Civil Society and NGOs
Formulating policies and regulations on **ethics, privacy, security, societal impact**	UN initiatives and **frameworks for AI** governance and ethics. OECD guidelines on AI principles and policies.	Partnership on AI developing **responsible AI practices**. The Global Partnership on AI (GPAI) fostering **cooperation btw countries**	Regulations on **consumer protection, competition, data privacy transparency, accountability** and societal well-being	Analyzing the societal impact of AI and advocating for **responsible AI** practices	Advocating for AI policies that prioritize **human rights, fairness, and ethical considerations**

Shaping Future Partnerships



Future Geospatial Information Ecosystem

Thank you

GEOSPATIAL FRAMEWORKS

Maximising your geospatial investment