

Future Geospatial Information Ecosystem

What is the Role of UN-GGIM

A United Nations Initiative

UN-GGIM Webinar
12 June 2023



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**GEOSPATIAL
FRAMEWORKS**
Maximising your geospatial investment

Takeaways

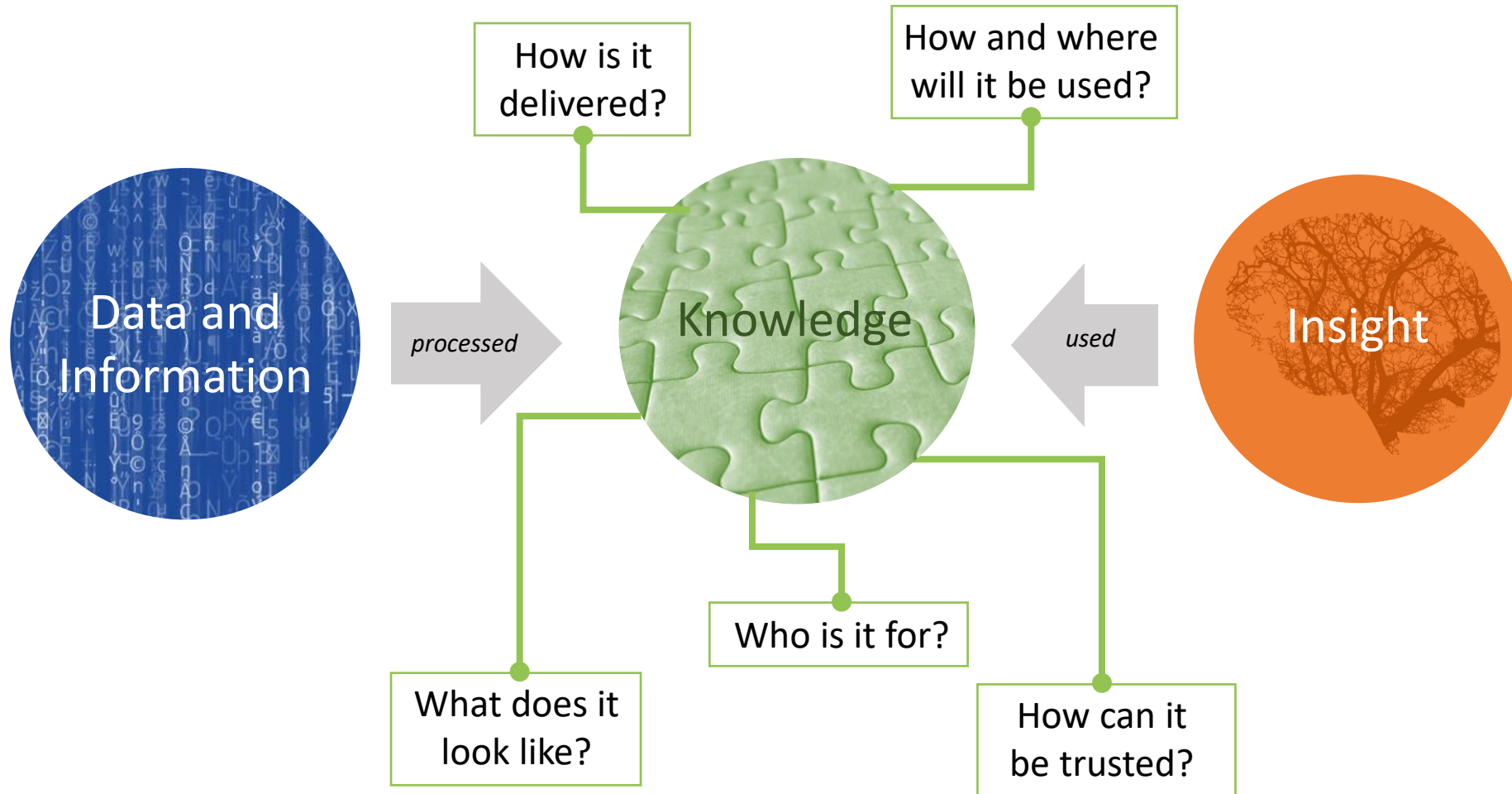
- What are we trying to achieve?
- Why we can't achieve it now?
- What transformation looks like?
- What we need to consider?



A pair of hands is shown from the bottom, holding a clear crystal ball. The crystal ball is perfectly spherical and reflects the sky and clouds from the background. The background is a bright blue sky with scattered white clouds. The hands are positioned on either side of the crystal ball, with fingers slightly curled as if supporting it. The lighting is bright, suggesting a sunny day.

What are we trying to achieve?

From Data to Knowledge and Insight



Three Drivers for Change

Technology the Enabler



Unified solutions to global problems

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



Equitable access to knowledge

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



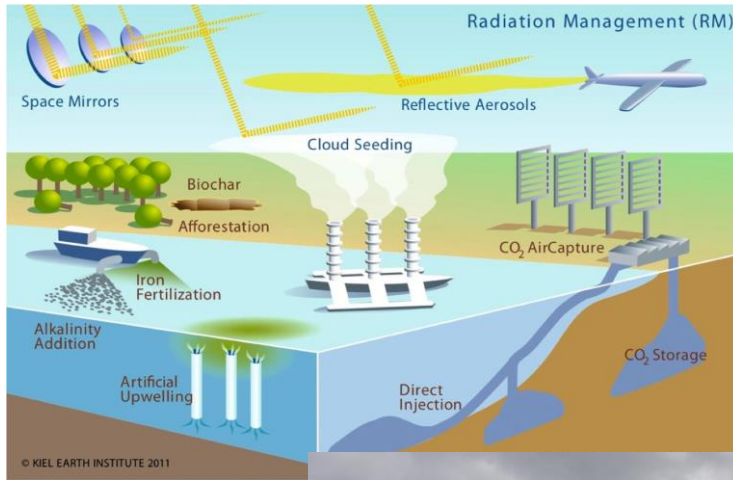
Bridge the geospatial digital divide

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

Unified Solutions to Global Challenges?

Our challenges are set to become more complex

Climate Geoengineering



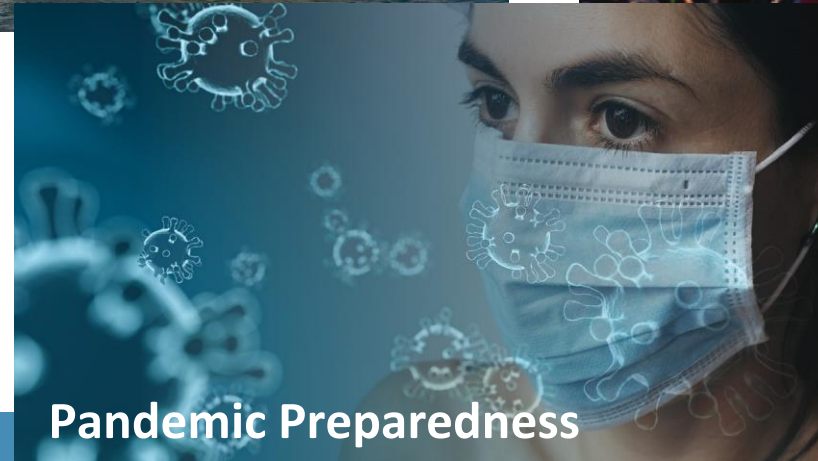
Deep Sea Mining



Migration/Refugees



Biodiversity Loss



Pandemic Preparedness

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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

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Think of the Kenyan 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

A hand holds a smartphone in the foreground. The phone's screen displays a network diagram with a central white circle and radiating lines connecting to smaller white circles. This network is overlaid on a grayscale photograph of a busy city street. In the background, there are multi-story buildings, a Starbucks logo on a storefront, and a crowd of people. The overall image conveys a sense of digital connectivity and information access in an urban environment.

**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

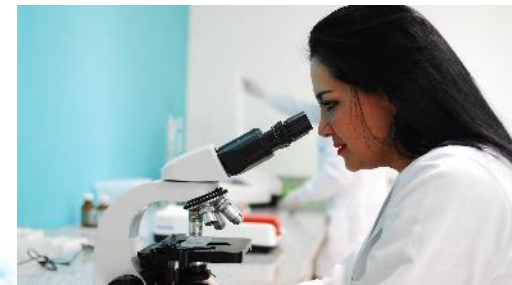
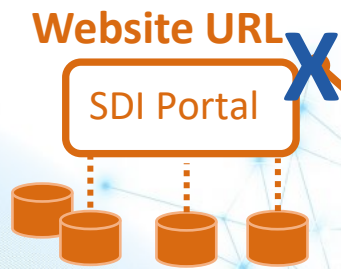


Lack opportunity



SDI Catalogues are not machine friendly

Web of Data



Scientists can compare their data to millions of datasets worldwide within seconds by running a query (script) – that traverses data linkages

Knowledge on-demand

- ChatGPT
- Virtual assistants “Hi Siri”

All require access to ‘quality’ machine actionable data.

Search Engines and Apps can't action SDI Data





It's Our "Narnia Moment"
The Data, The Metadata and The Warehouse.

Findable



Accessible



Interoperable

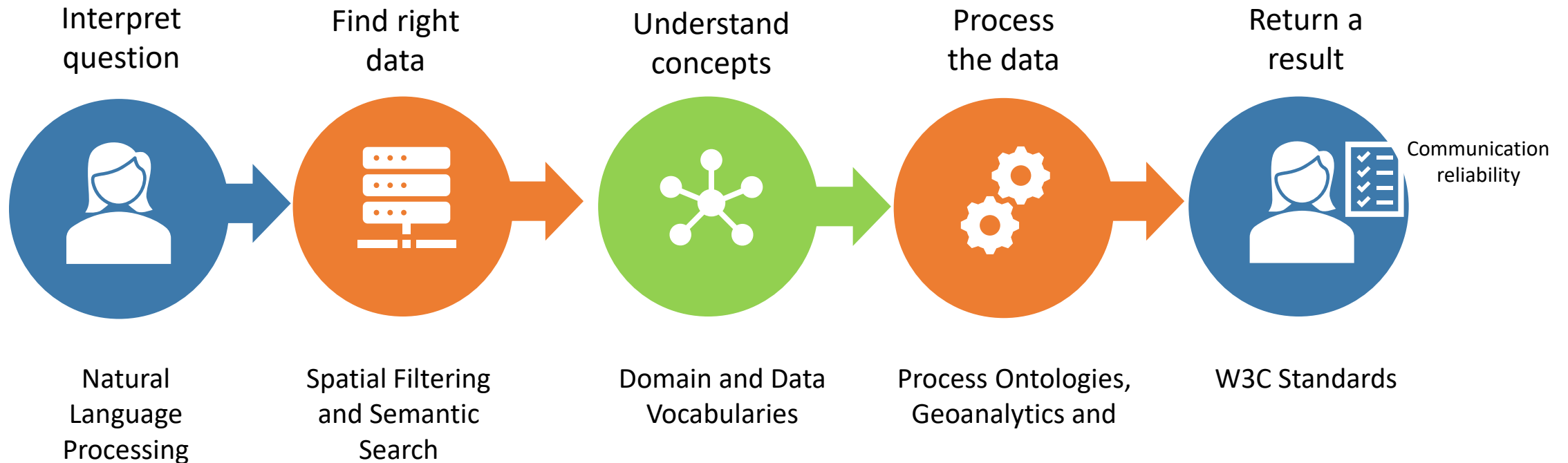


Reusable



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



Infrastructure

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

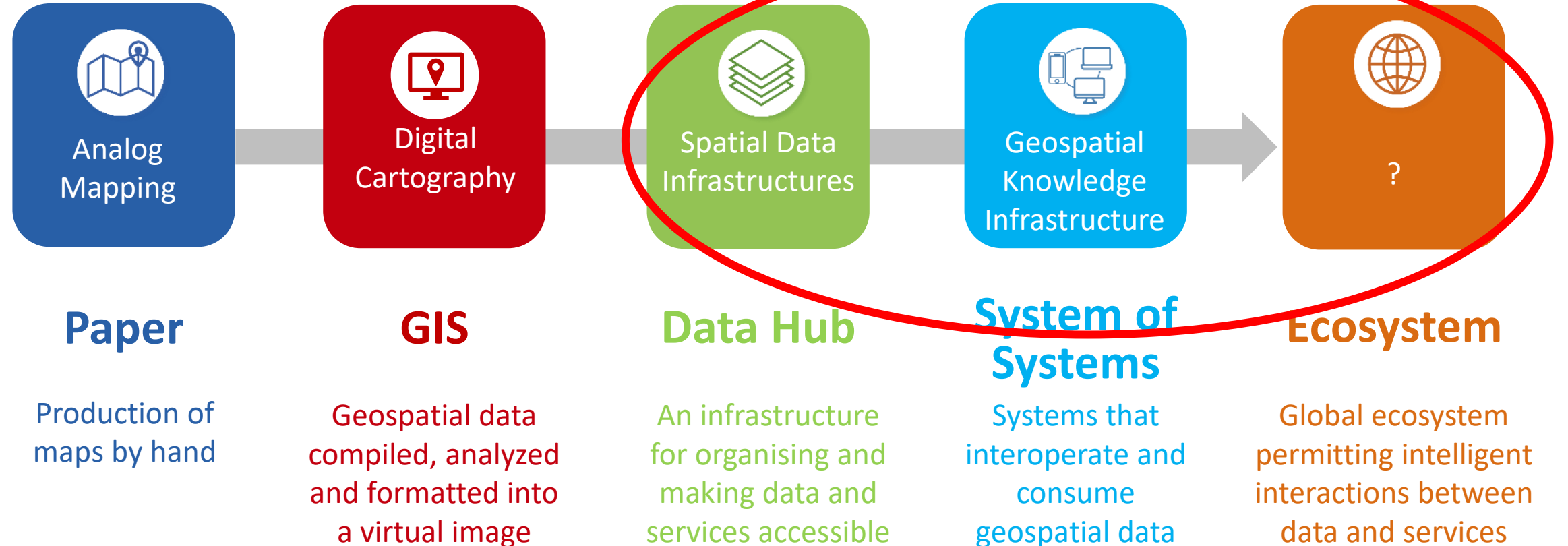


Ecosystem

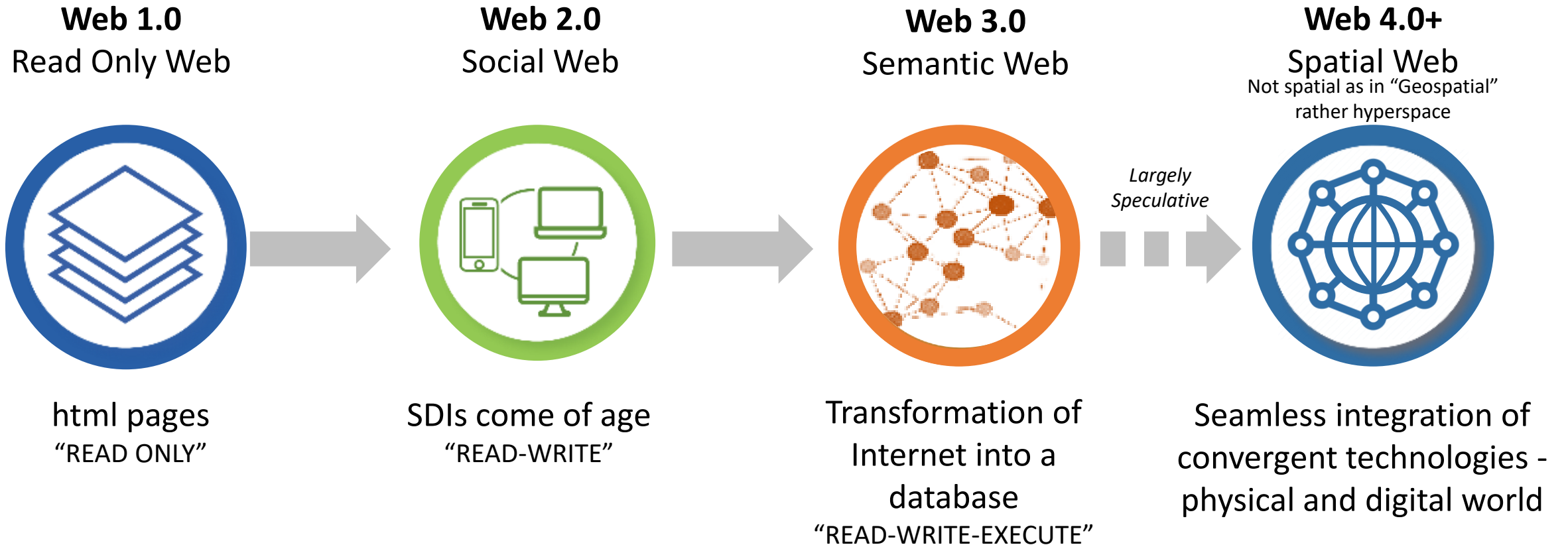
An ecosystem evolves – it is an environment consisting of component parts that interact with one another - IoT and the Web of Data.

Geospatial Continuum

On the same journey, just unique starting points



Web Continuum



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

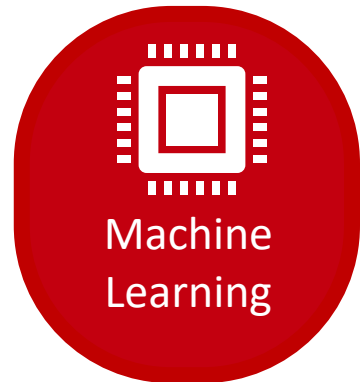
AI Continuum

**Translation,
question/answer,
sentiment analysis**



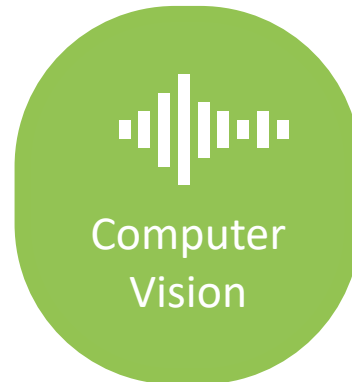
Understand,
interpret,
generate human
language

**Image
recognition/
classification**



Learn from data
without being
explicitly
programmed

**Auton. vehicles,
surveillance
systems, medical
imaging, AR**



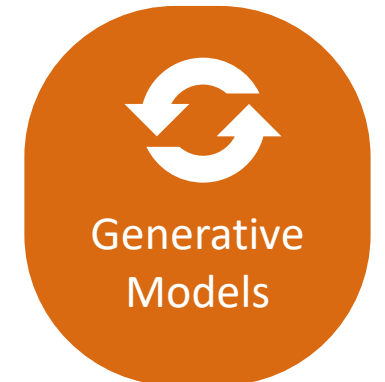
Understand and
interpret visual
information

**Speech/gesture
recognition,
scene
understanding**



Perceive/understand
world through
sensors - sight,
sound, touch, taste

**Image, text,
virtual reality,
art, music
composition**



Generate new
data similar to a
given dataset

Generative AI

Generate an answer to almost any question

ChatGPT

DeepArt.io

DeepDream

DALL-E

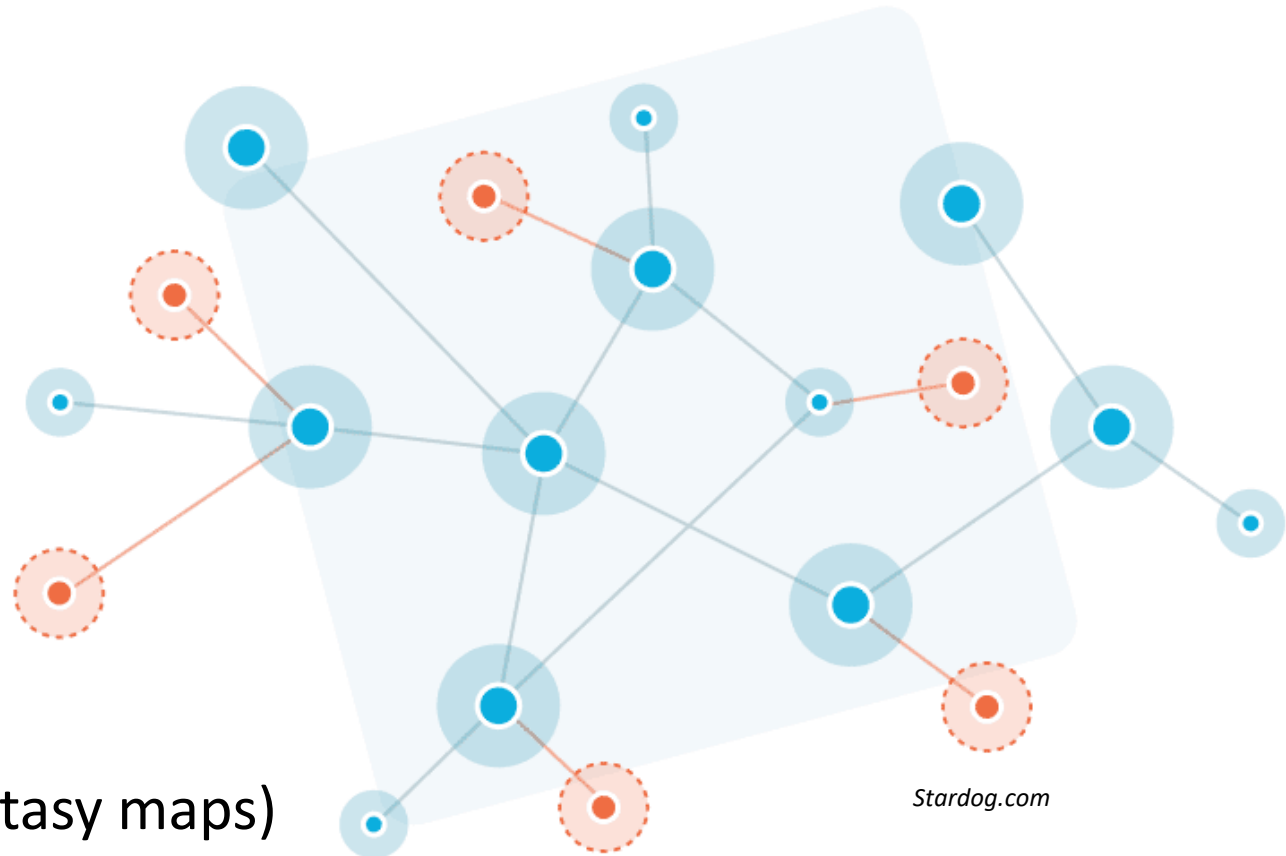
Chatbots

Make-a-Video

Jukedeck

Lyrebird

GAN Terrain Generation (fantasy maps)



Emerging Ecosystem

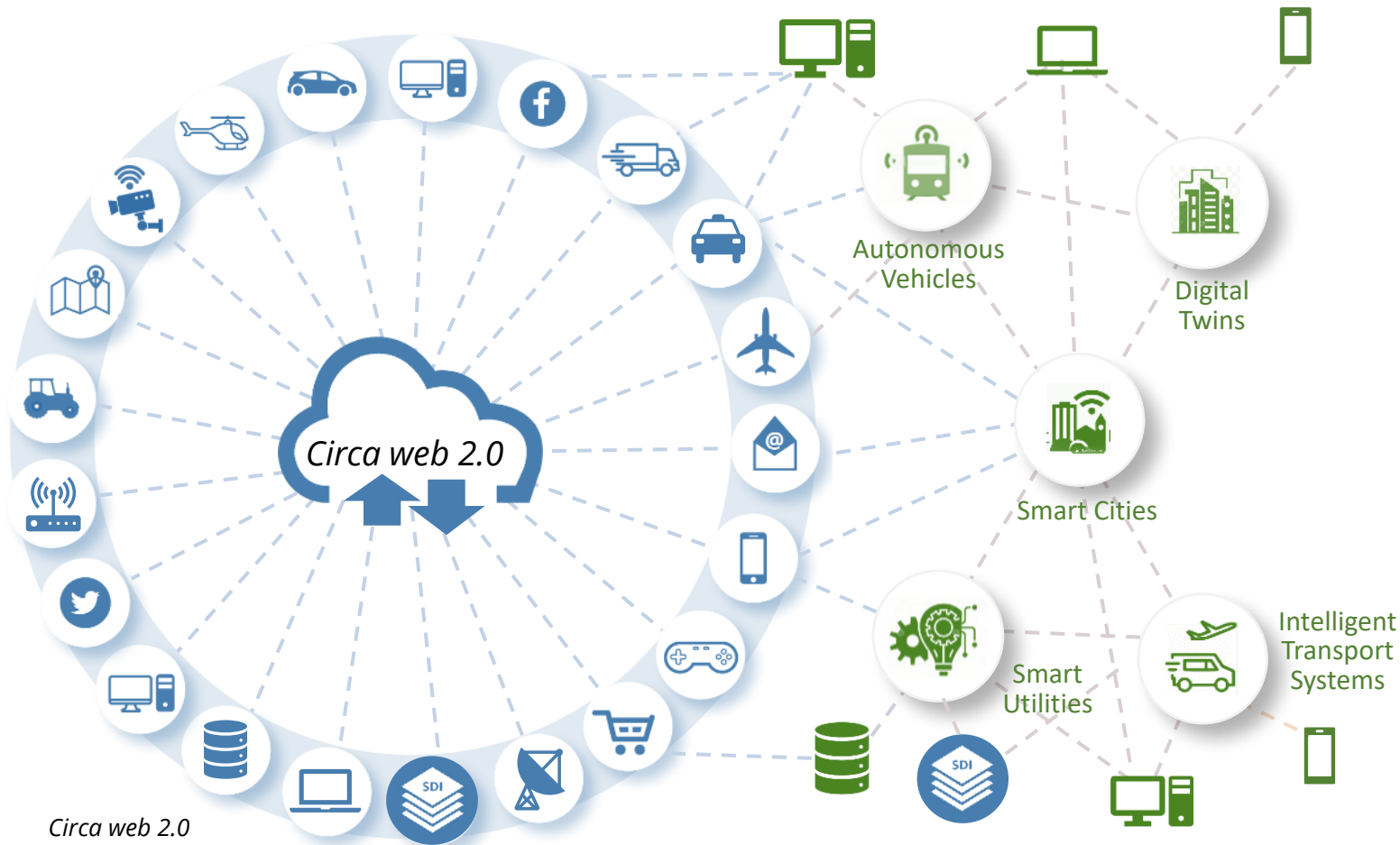


Circa web 2.0

Spatial Data Infrastructures

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

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

Emerging Ecosystem



Spatial Data Infrastructures

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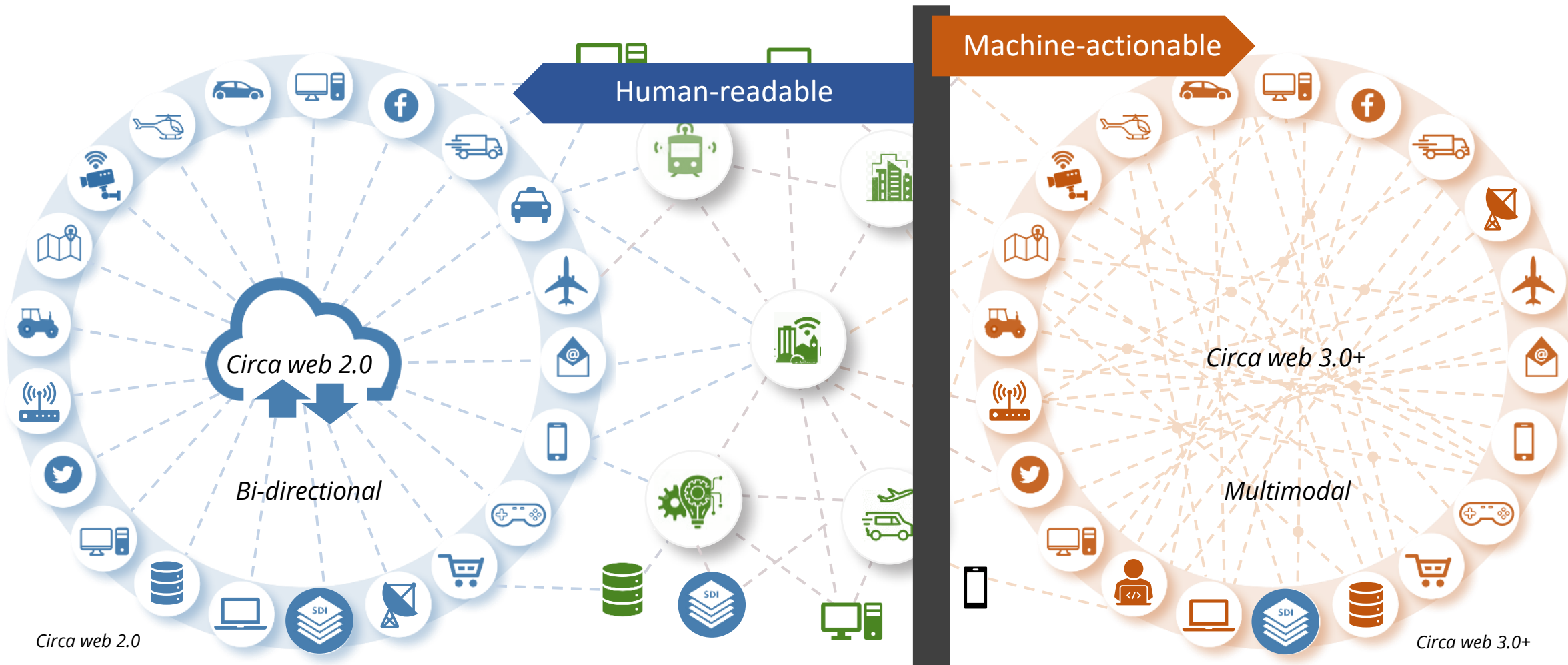
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Emerging Ecosystem

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

Emerging Ecosystem



Circa web 2.0

Circa web 3.0+

Spatial Data Infrastructures

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Emerging Ecosystem

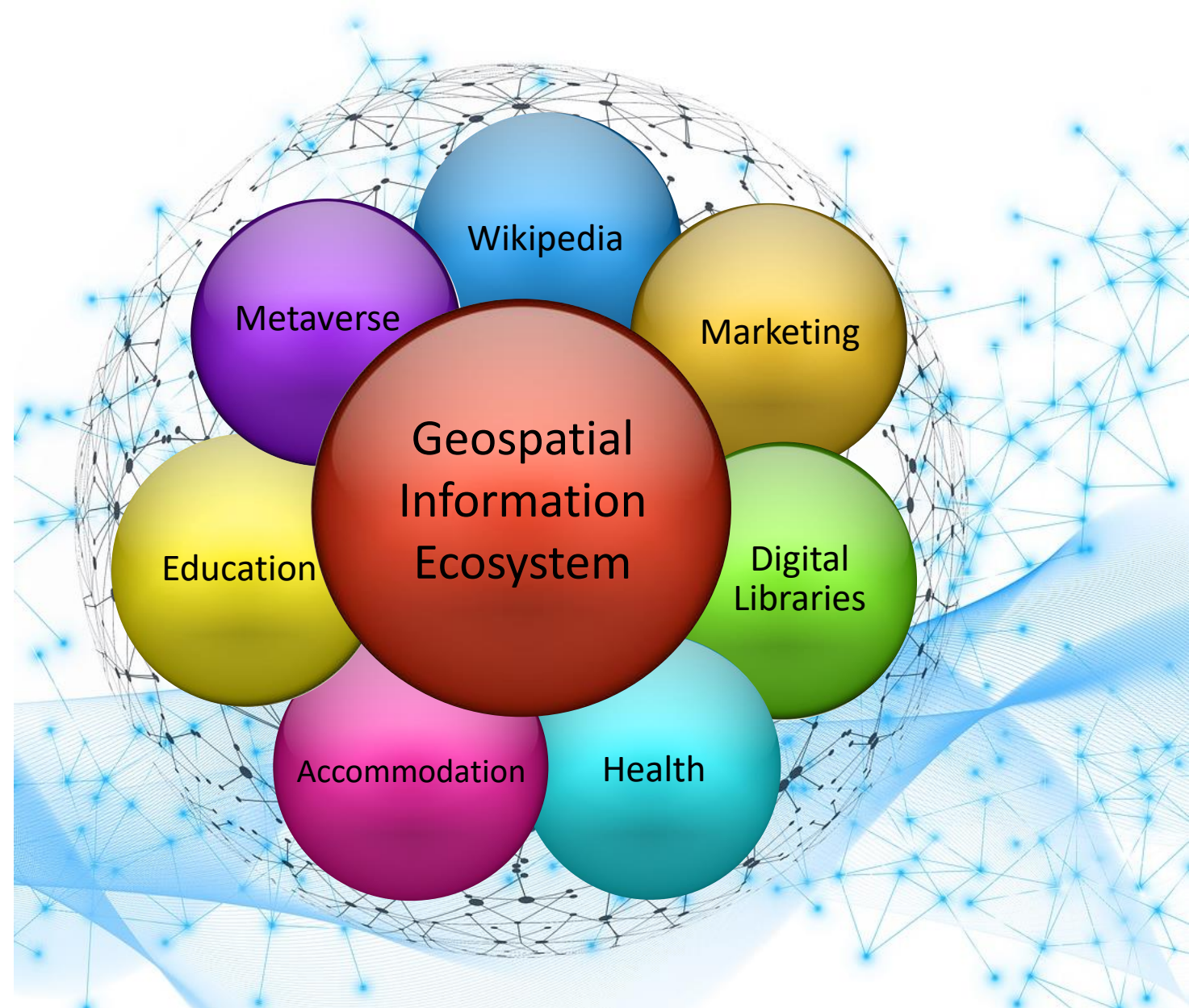
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Web of Data

- 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

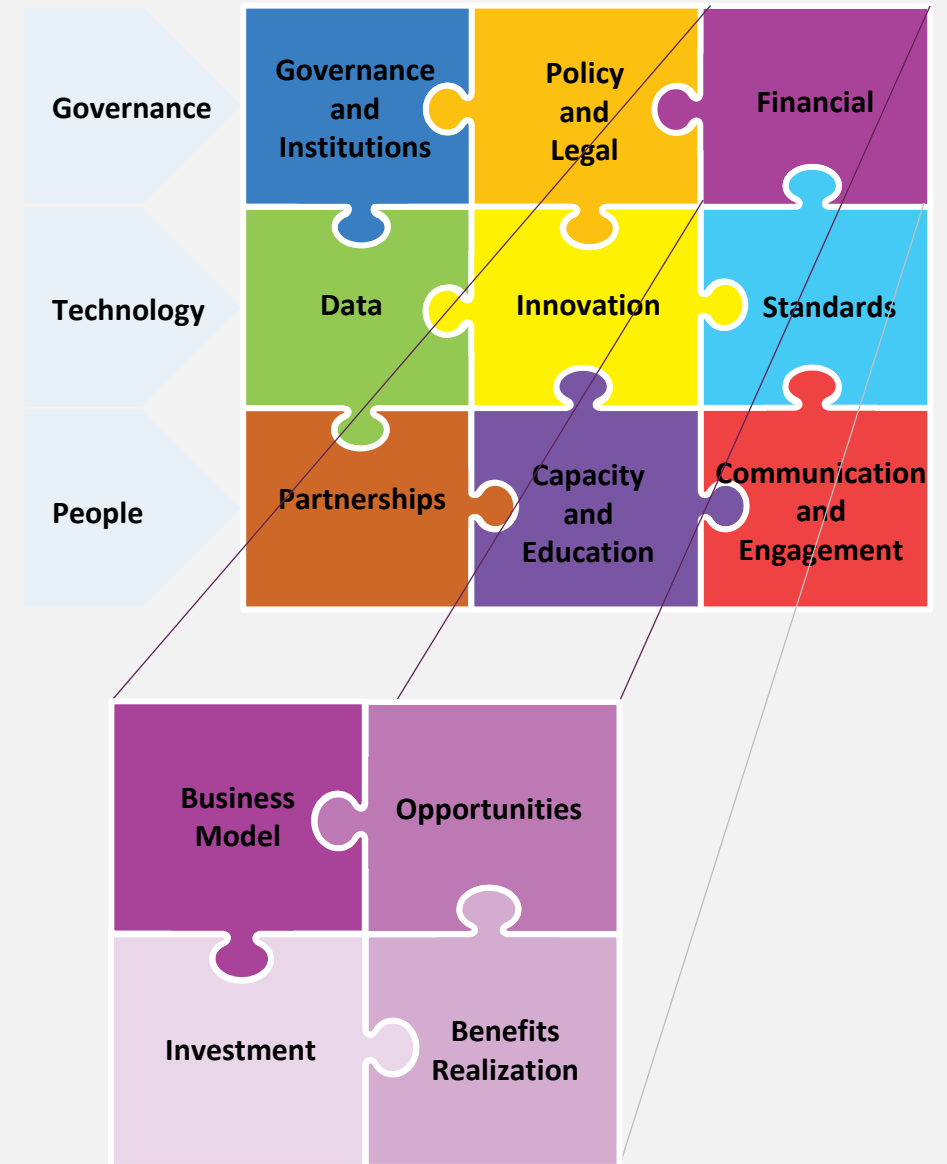




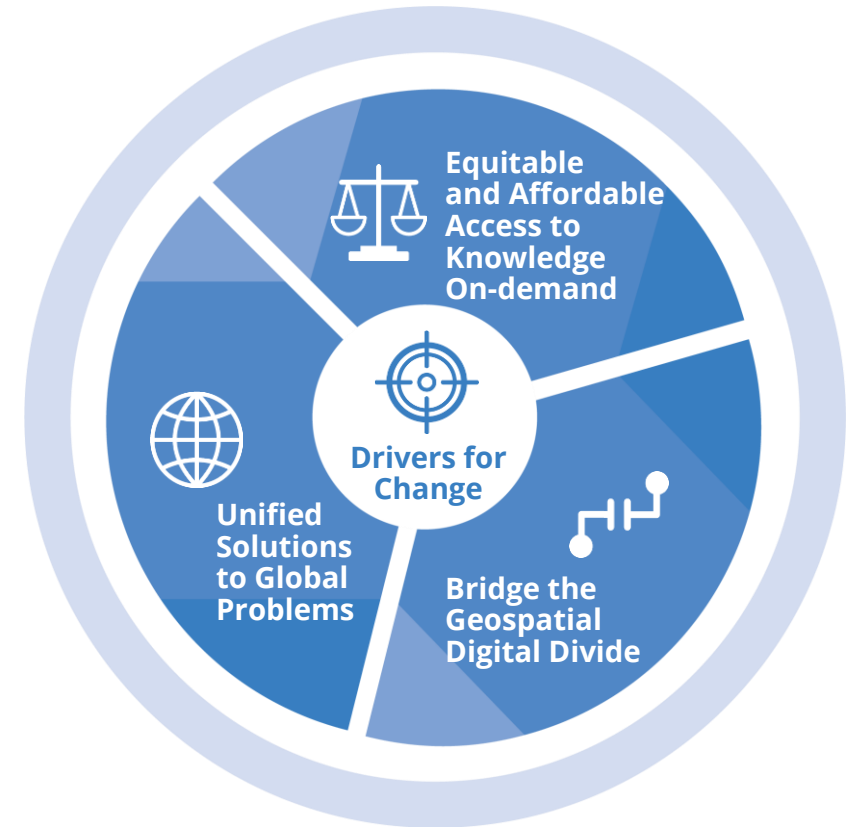
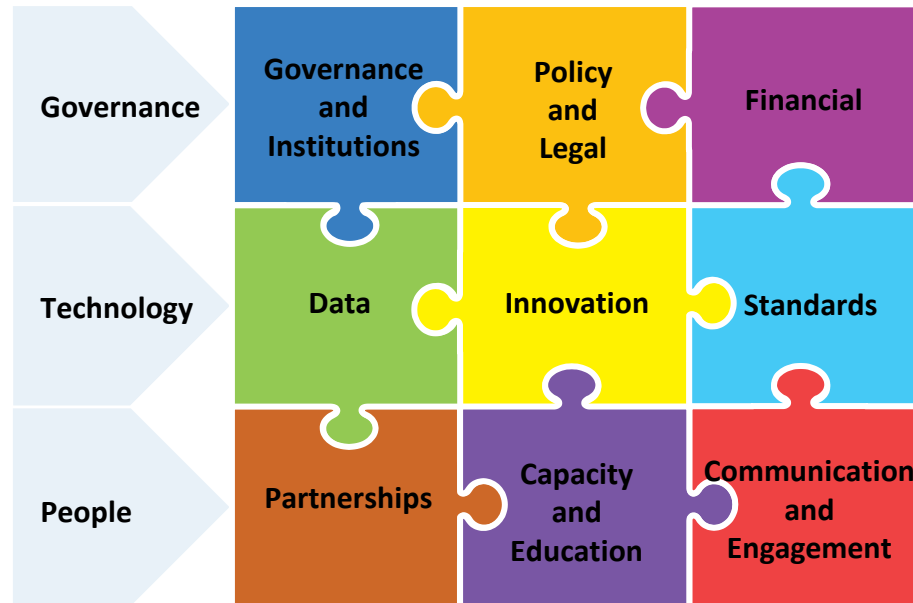
What next?

Integrated Geospatial Information Framework

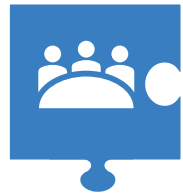
- Strengthen geospatial information management
- IGIF provides a 360 degree view for what needs to change to move to a future geospatial information ecosystem
- 3 areas of focus
- 9 strategic pathways
- 4 elements in each pathway
- IGIF being rollout across the globe



Step change to address the Drivers for Change



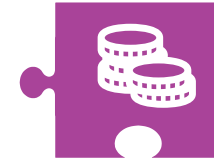
Taking control of our destiny



Global Governance Framework



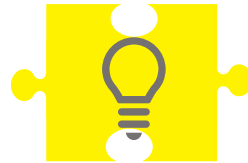
Geospatial Policy and Legal Framework



Scope new 4IR business models



Global Use Case Framework to prioritise data and analytics for SDGs



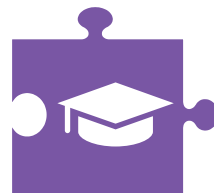
Road Map for knowledge-sharing



Knowledge representation standards



Partnerships in multimodal ecosystem



Workforce ready skills development framework



Consistent brand and messaging



Future Business Models

- Move beyond the sale of data to knowledge-on demand services
- Move toward more secure digital identities, transactions and content ownership
- Transactions are peer to peer



Decentralized Apps

Applications built on Blockchain

Tokenized Economy

Digital tokens representing ownership for trading assets

Peer to Peer Marketplaces

Transacting directly without intermediaries

Content Creation Platforms

Decentralized platforms where user pays for direct access - DRM

Taking control of our destiny



Global Governance Framework



Global Use Case Framework to prioritise data and geanalytics for SDGs



Partnerships in multimodal ecosystem



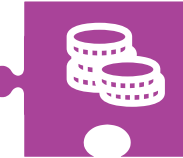
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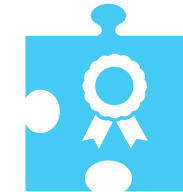
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Shaping Ethical and Legal Frameworks

National Governments

Formulating policies and regulations on **ethics, privacy, security, societal impact**

International Organizations

UN initiatives and **frameworks for AI** governance and ethics.
OECD guidelines on AI principles and policies.

Industry Consortia and Alliances

Partnership on AI developing **responsible AI practices**.
The Global Partnership on AI (GPAI) fostering **cooperation btw countries**

Regulatory Agencies

Regulations on **consumer protection, competition, data privacy, transparency, accountability** and societal well-being

Research Institutions

Analyzing the societal impact of AI and advocating for **responsible AI practices**

Civil Society and NGOs

Advocating for AI policies that prioritize **human rights, fairness, and ethical considerations**

Final Takeaway

“Web 2.0 was a front-end evolution; Web 3.0 is a backend revolution”.

Shermin Voshmgir, Token Economy



Spatial Data
Infrastructures

Data access won't
change for average users



Geospatial
Information
Ecosystem

The use of Web and 4IR
technologies will change how
people receive knowledge

Future Geospatial Information Ecosystem

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A United Nations Initiative

Thank you



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