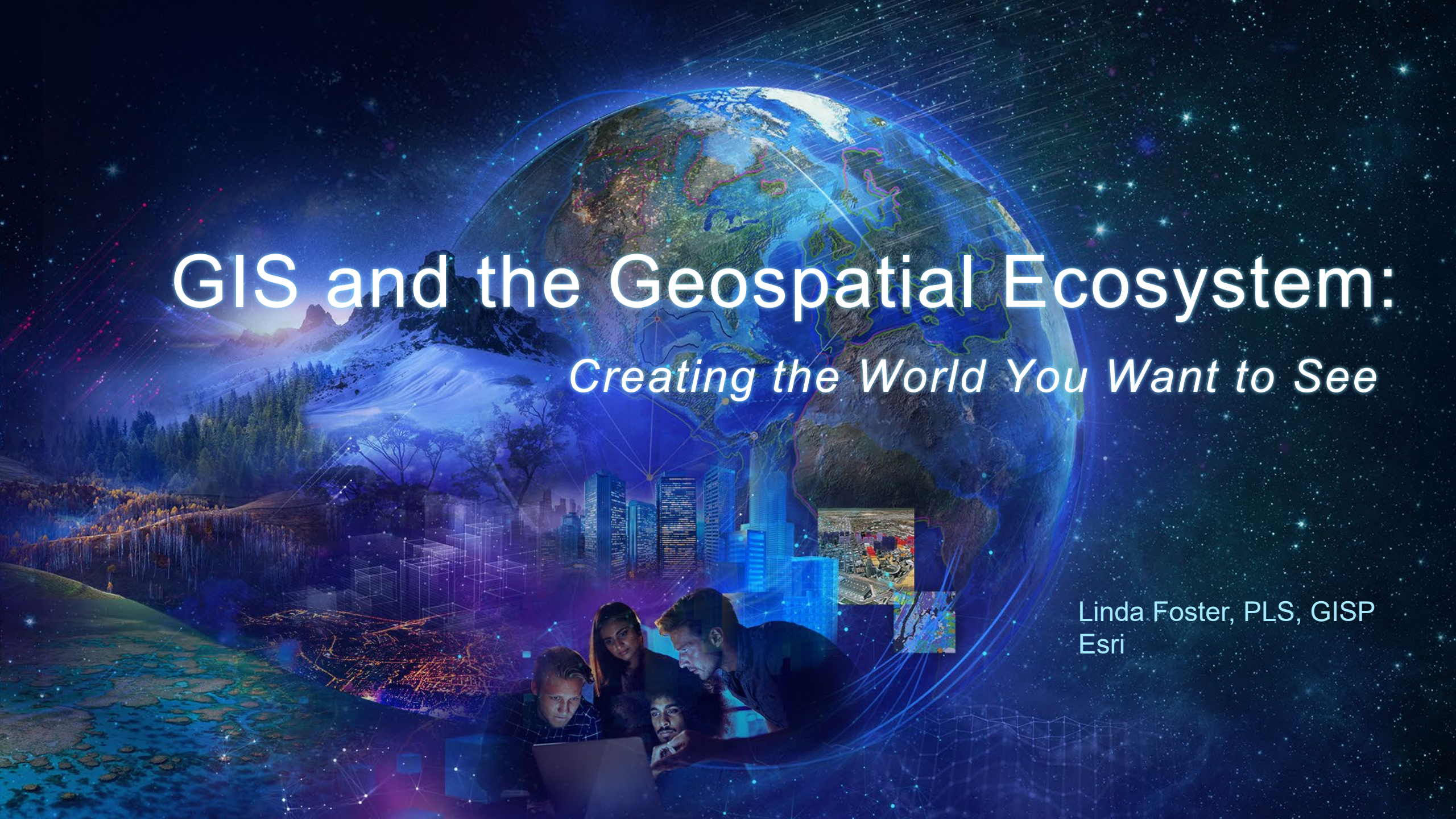


GIS and the Geospatial Ecosystem:

Creating the World You Want to See

Linda Foster, PLS, GISP
Esri

Our World Is Evolving Rapidly

Driven by Many Innovations

Changing How We Live . . .

. . . Improving Our Quality of Life

Geospatial

geo·spa·tial

jē-ō-ˈspā-shəl

adjective

Consisting of, derived from, or relating to data that is directly linked to specific geographic locations

GEOSPATIAL

GEODESY

EARTH

OBSERVATION

SURVEYING

POSITIONING

UAVS

GIS

IMAGING

LIDAR

“CHANGE IS THE ONLY CONSTANT IN LIFE.”
Heraclitus

Surveying

UAV – 1849 Balloons

early to mid-1900s RC craft

GIS – 1854 Dr. John Snow

Ancient Times -1960

1878 – FIG Founded

1910 – ISPRS Founded

Pos/Meas – Optical & Mechanical

Surveying

GIS – Roger Tomlinson

1960 - 1970

1960s – Computers Advance

Pos/Meas – GPS in Infancy

Surveying

Pos/EO – 1972 1st Landsat Satellite Launched

1970 - 1980

Pos/Meas – 1978 1st GPS satellite launched

Computing 1970s – continued advancement

Surveying

GIS – 1981 First GIS user conference

Pos/Meas – 1983 GPS Available; Scrambled

1980 - 1990

1985 – First in-car (digital) navigation emerges

Computing – 1989 World Wide Web

Surveying – Instrumentation is evolving

Computing – 1990s Workstations and data storage; websites for public use

1990 - 2000

Pos/Meas – 1998 First terrestrial Lidar

1999 – First GIS day

Surveying

UAV – FAA debate UAV use

Pos/Meas – 2000 U.S. government stops scrambling GPS

GIS – 2001 One million GIS users

2004 – Web 2.0

2000 - 2010

2005 – Google Maps emerges

2006 – Cloud computing – AWS released

2007 – iPhone introduced

2009 – Uber founded

Disruption

dis·rup·tion

disˈrəpSH(ə)n/

noun

noun: **disruption**; plural noun: **disruptions**

radical change to an existing industry or market due to innovation

Surveying

GIS – 2018 AI & GIS come together = GeoAI

Pos/Meas – 2010s Other GNSS systems maturing

2020s – Communication and IT infrastructure mature

2010 - 2020

UAV – 2016 FAA Part 107

GIS – 2020 GIS supports Covid-19 response

Pos/Meas – 2010s Machine control emerging

Surveying

GIS – Big data and big data analytics

Pos/Meas – Widespread spatial data collection; IoT

2020 - NOW

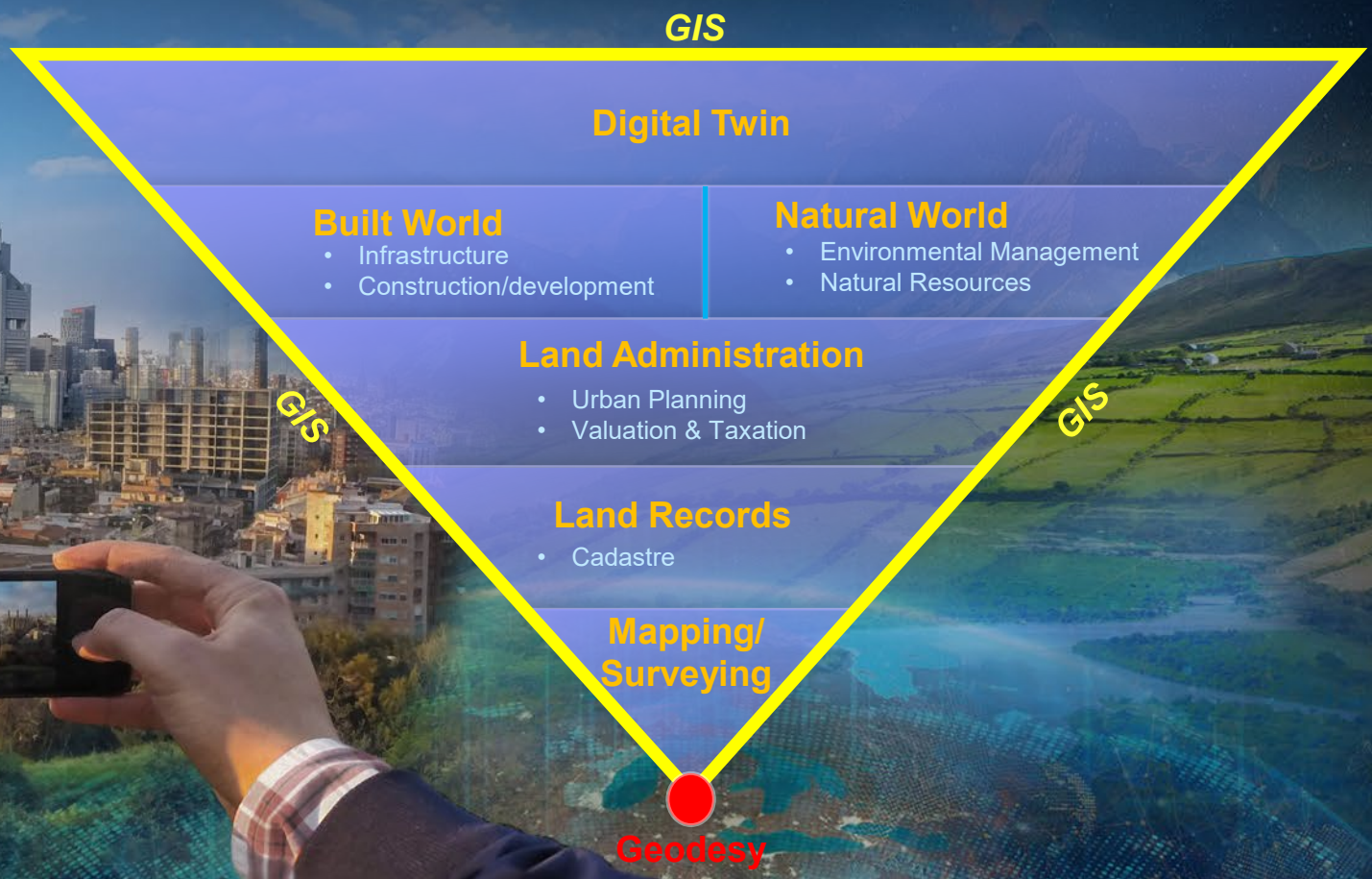
UAV – 2020s Accelerated adoption

2020s – Generative AI emerges

Pos/Meas – 2020s Spatial reference system modernization

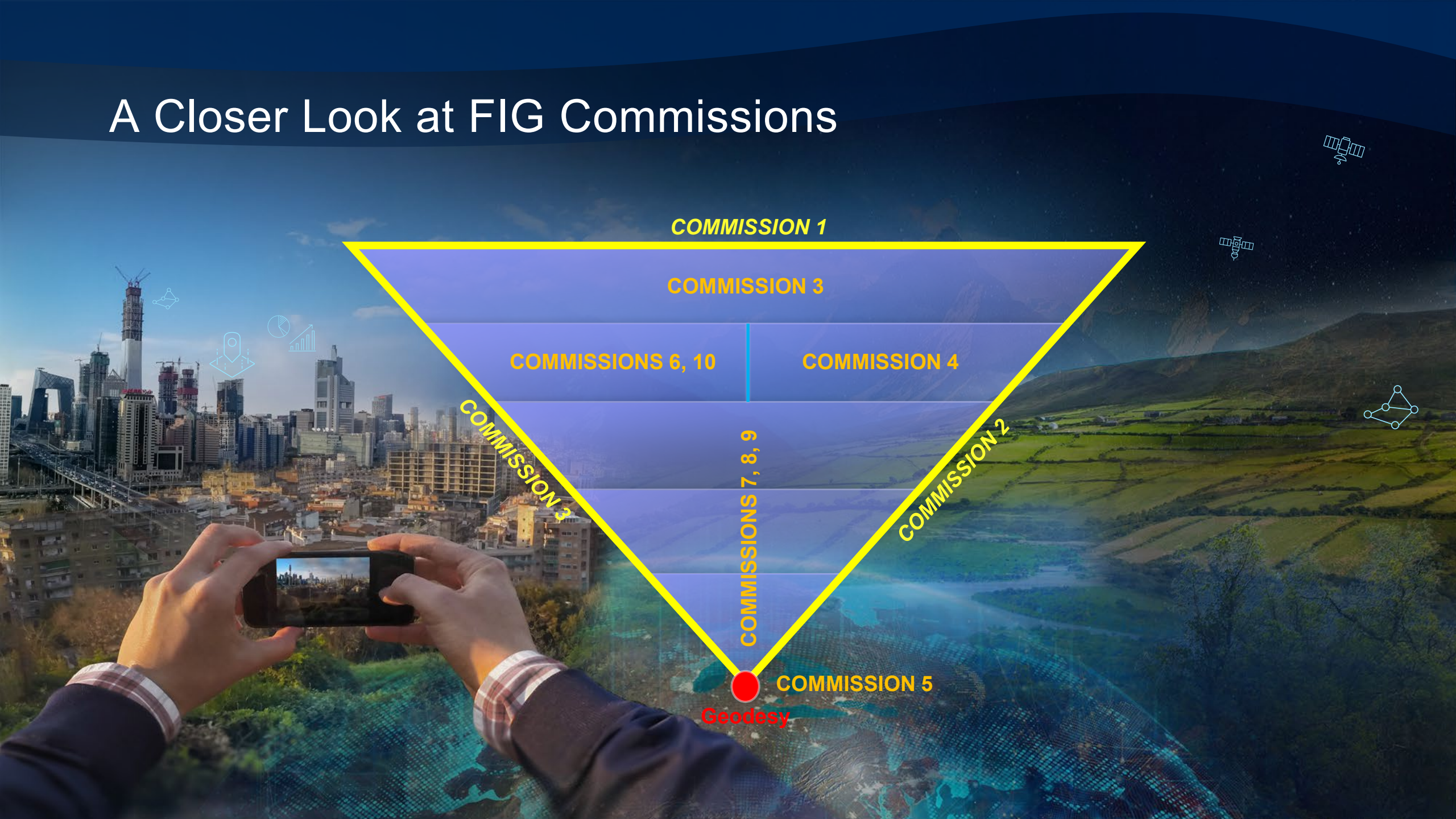
How does it all stack up?

Finding some order in the chaos…



. . . And bringing it all together . . .

A Closer Look at FIG Commissions



GEOGRAPHY

The Science of Our World

Helps Organize **Everything** We Know

What

When

Where

Seeing the World . . .
as an Interconnected Ecosystem

GIS

Expands the Language of Geography

Making Everything We Know . . .
. . . Available to Everyone

Integrating Geographic Knowledge
into Everything We Do

Creating a Revolution in Understanding Everything

GIS

and The Geographic Approach

Provide the Framework . . .
. . . and Process

Integrating All the Factors . . .

Creating Understanding . . .

Finding Solutions . . .

. . . and Improving Collaboration

Data Collection

Visualization & Mapping

Analysis & Modeling

Planning & Geodesign

Decision-Making

Action

MAPS

The Language of Geography

Communicating . . .
Content and Context

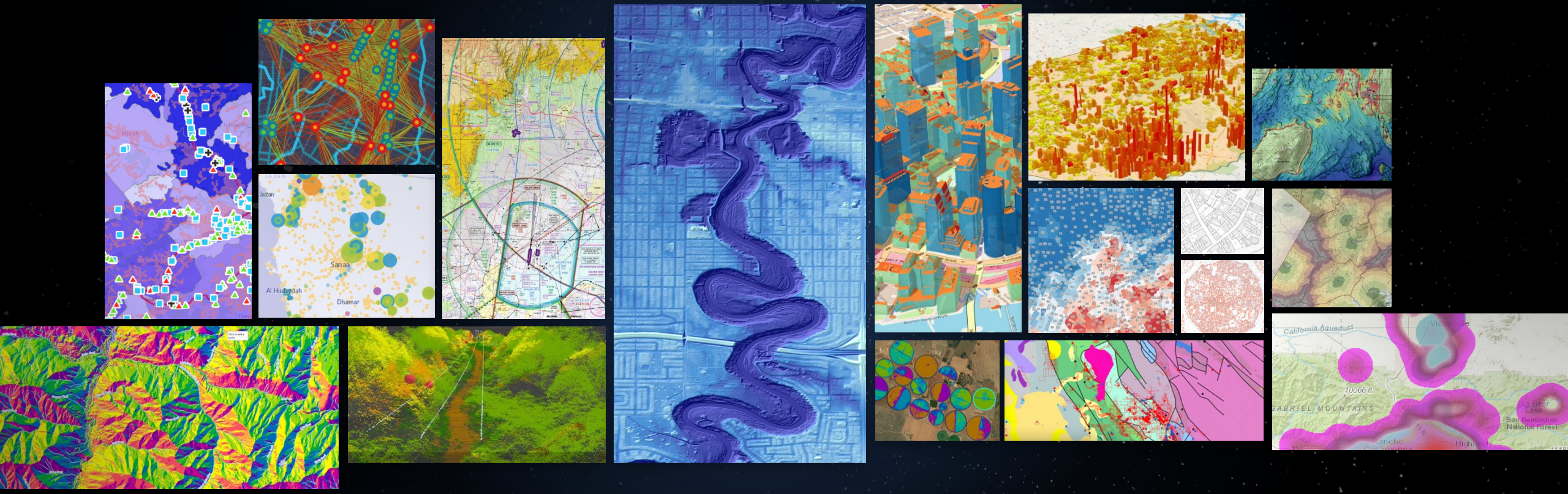
Providing Clarity
. . . and Valuable Insights

Making the Complexity
of Our World More Understandable

Maps

Reveal Patterns, Relationships and Systems

. . . Helping Us Think Differently



Our World is
Evolving Rapidly
Driven by Accelerating Change

Transformation

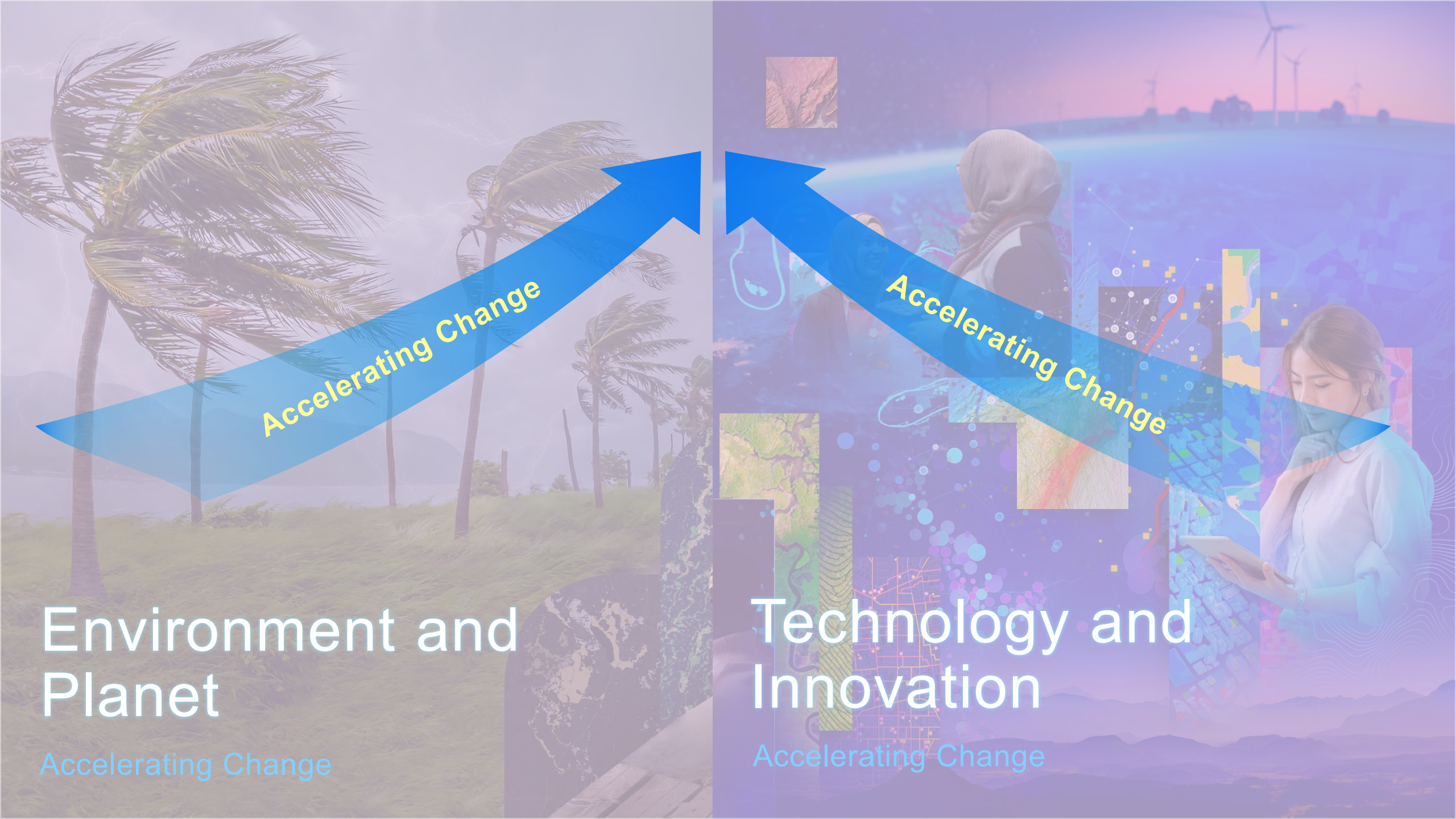
trans·for·ma·tion

tran(t)sfərˈmāSH(ə)n/

noun

noun: **transformation**; plural noun: **transformations**

a thorough or dramatic change in form or appearance


Accelerating Change
Accelerating Change
Environment and Planet
Accelerating Change
Technology and Innovation
Accelerating Change

OUR
WORK
Leveraging Technology
Embracing Innovation and Disruption
Ever
Changing

To Achieve a Sustainable and Resilient World
. . . We Must Leverage Technology and Innovation
Creating Geospatial Infrastructure . . . GIS for the World
A Key Consideration is Data Sustainability
Collect Once, Use Many Times
Our Systems are Only as Robust and Reliable
As Our Best Information
. . . Metadata and good Data Governance
Key to Solving Problems and
Ensuring Long-Term Sustainability and Resilience

Our Future-

BUILDING THE NEXT GENERATION

GIS and the Geospatial Ecosystem:
Creating the World You Want to See
Thank you!
Linda Foster, PLS, GISP

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