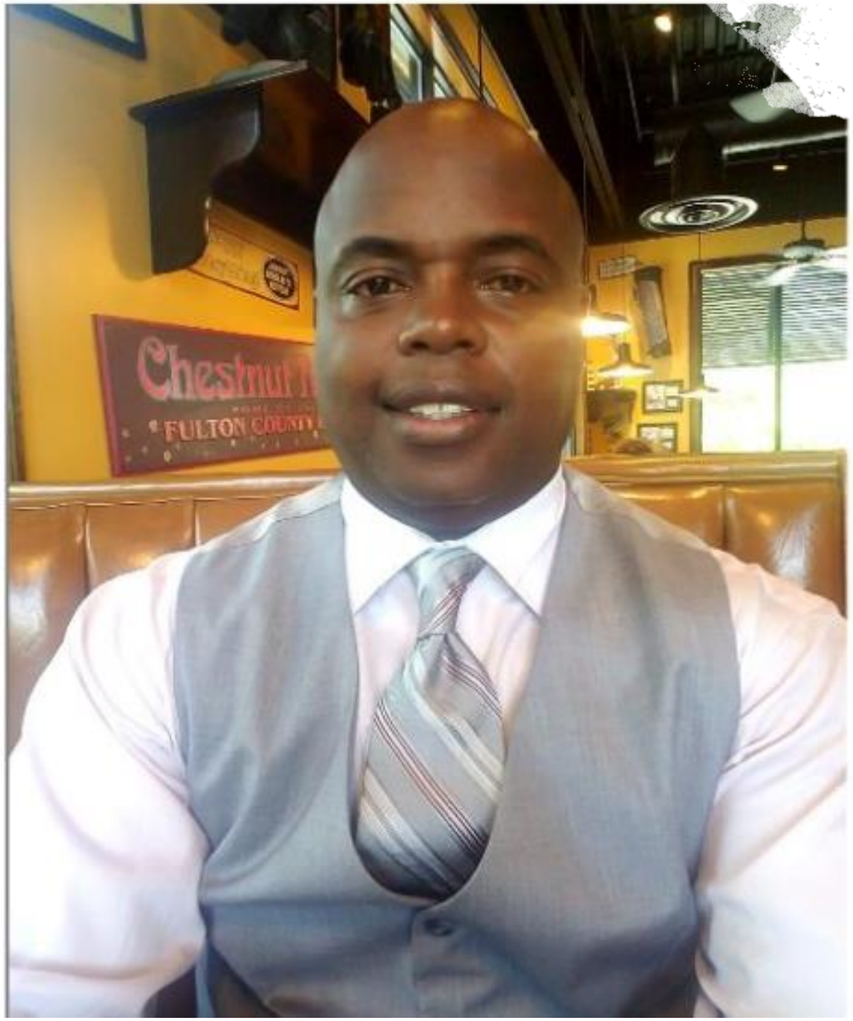
Guardians of the Galaxy: Autodesk Plus Esri: The Beginning

Kenneth L. Driscol Sr.
Senior Civil Application Consultant
Applied Software Technology

AUTODESK. UNIVERSITY



About the speaker

Kenneth L. Driscol

With a background in Civil Engineering, Survey and Construction Technology, Kenneth has over 20 years of experience in Autodesk Civil Infrastructure applications, is an Autodesk Certified Instructor at an Authorized Training Center. As an Senior Application Consultant concentrating in Civil 3D, InfraWorks, Surveying, Map 3D, Hydrology and GIS services and instruction. Kenneth is Applied Software's Senior Civil Consultant and provides software demonstrations, custom and standardized classroom training, mentoring and technical support. Kenneth has presented multiple classes and presentations at Autodesk University.

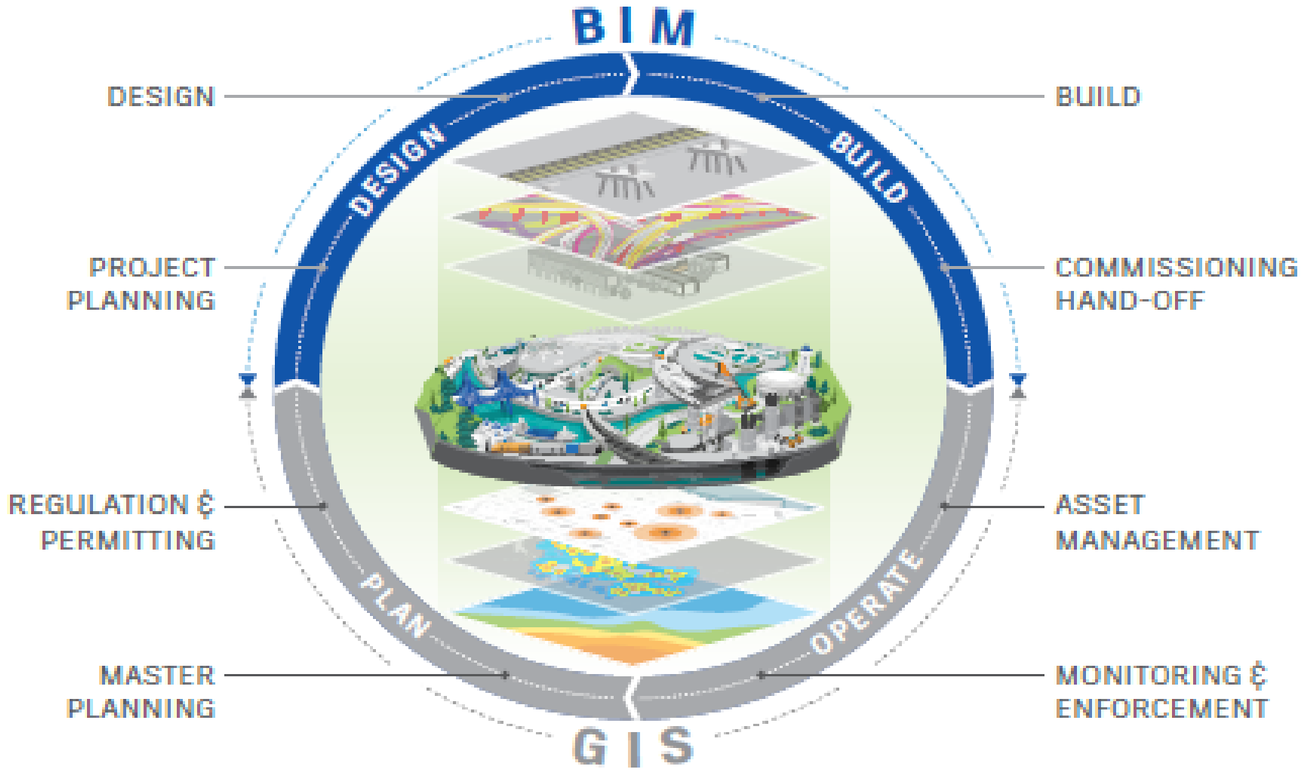
Agenda

At the end of this presentation, you will be able to: Understand the capabilities of Bridge layout from InfraWorks and the Autodesk Connector for ArcGIS

- About Autodesk connector for ArcGIS
- The Data Source Panel
- Add data from ArcGIS
- Manage ArcGIS
- Convert GIS Data into Civil 3D Objects
- Publish InfraWorks to ArcGIS
- Export InfraWorks Features to File Geodatabase (FGDB)

BIM & GIS - The power of location intelligence and design process, combined.

To deliver more, better, with less, the industry needs to think about things differently. Integrating BIM and GIS can result in workflows that move data seamlessly from one system to another. Let's take a look.



Seamless Collaboration

Esri and Autodesk are working together to provide an environment where GIS professionals and designers and engineers can **collaborate** across the project life cycle by integrating GIS and BIM.

Deeper Understanding

"Data at the Center" creates a broader and deeper understanding of infrastructure in the **larger context** of our built and natural environments – enabling earlier and better-informed decision-making, improved stakeholder engagement, and accelerated approval processes.

Better Decision-Making

Stakeholders throughout project life cycles can **leverage digital information** that includes the built and natural environment, allowing everyone on a project to look at alternatives, see what the impacts are, and make better decisions.

GIS Informs BIM. BIM Fuels GIS.

By providing a real-world context
of an asset’s existing environment
within which designers and engineers
can explore and evaluate design and
Construction

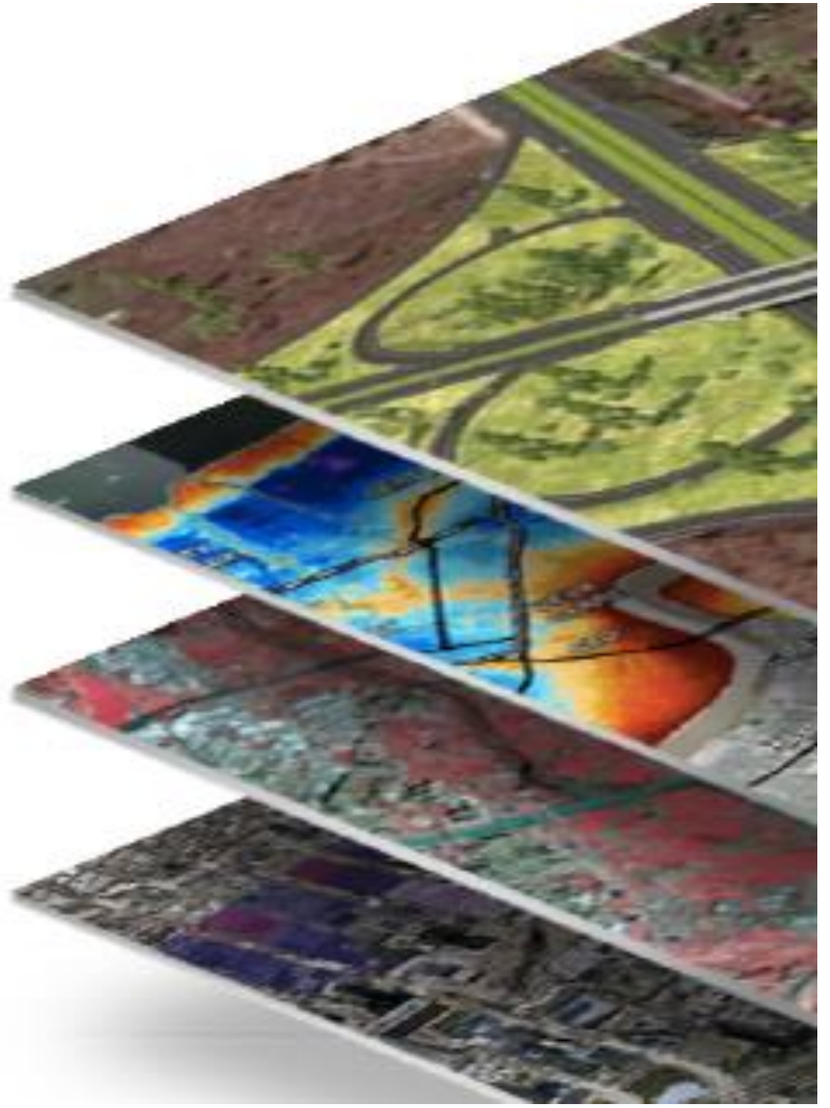
- **GIS**
  - ArcGIS®
  - Map3D
- **Reality Capture**
  - Digital Programming
  - LIDAR
  - Infrared
- **BIM**
  - Civil 3D®
  - Revit®
- **IoT**
  - Traffic
  - Parking
  - Climate
  - Lighting
  - Utilities

Building Site Context with the Environment

Sensing Site Change

Optimizing Infrastructure Operation Intelligence

Open and Extensible Systems



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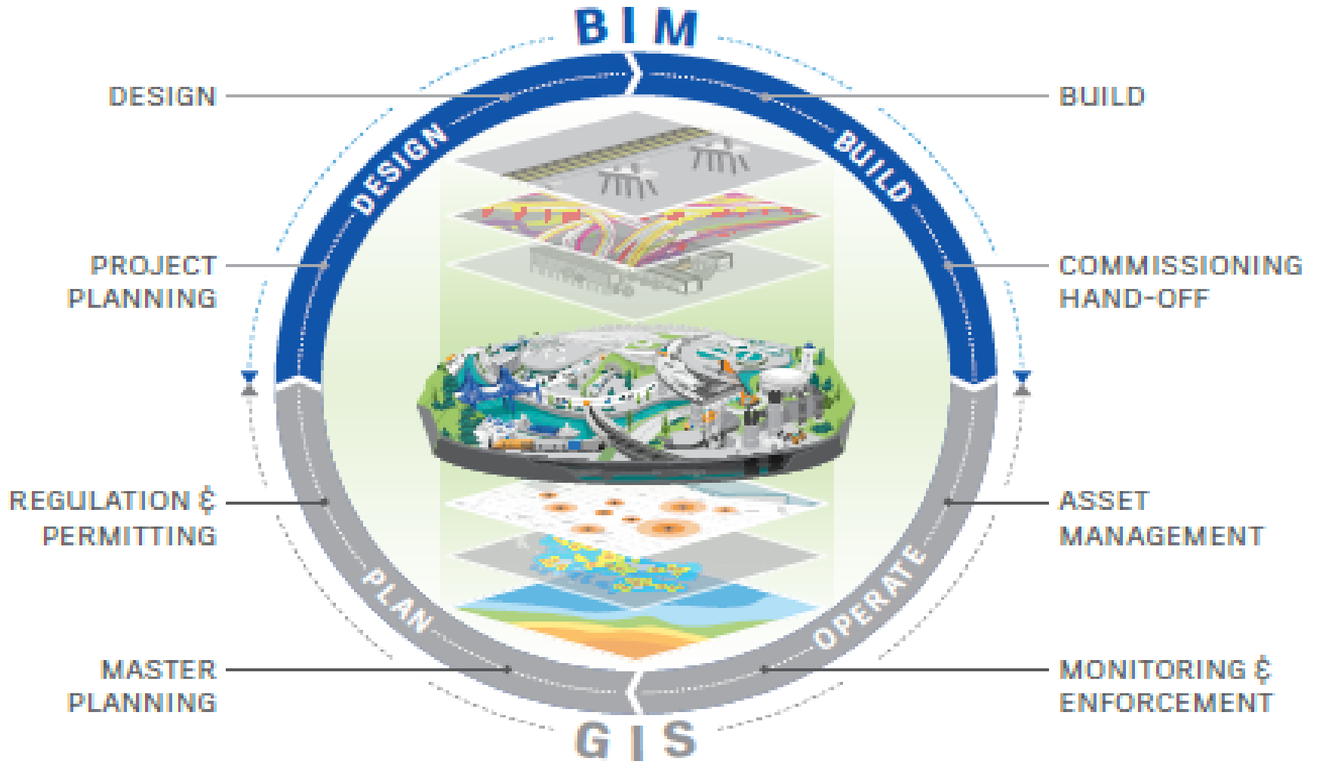

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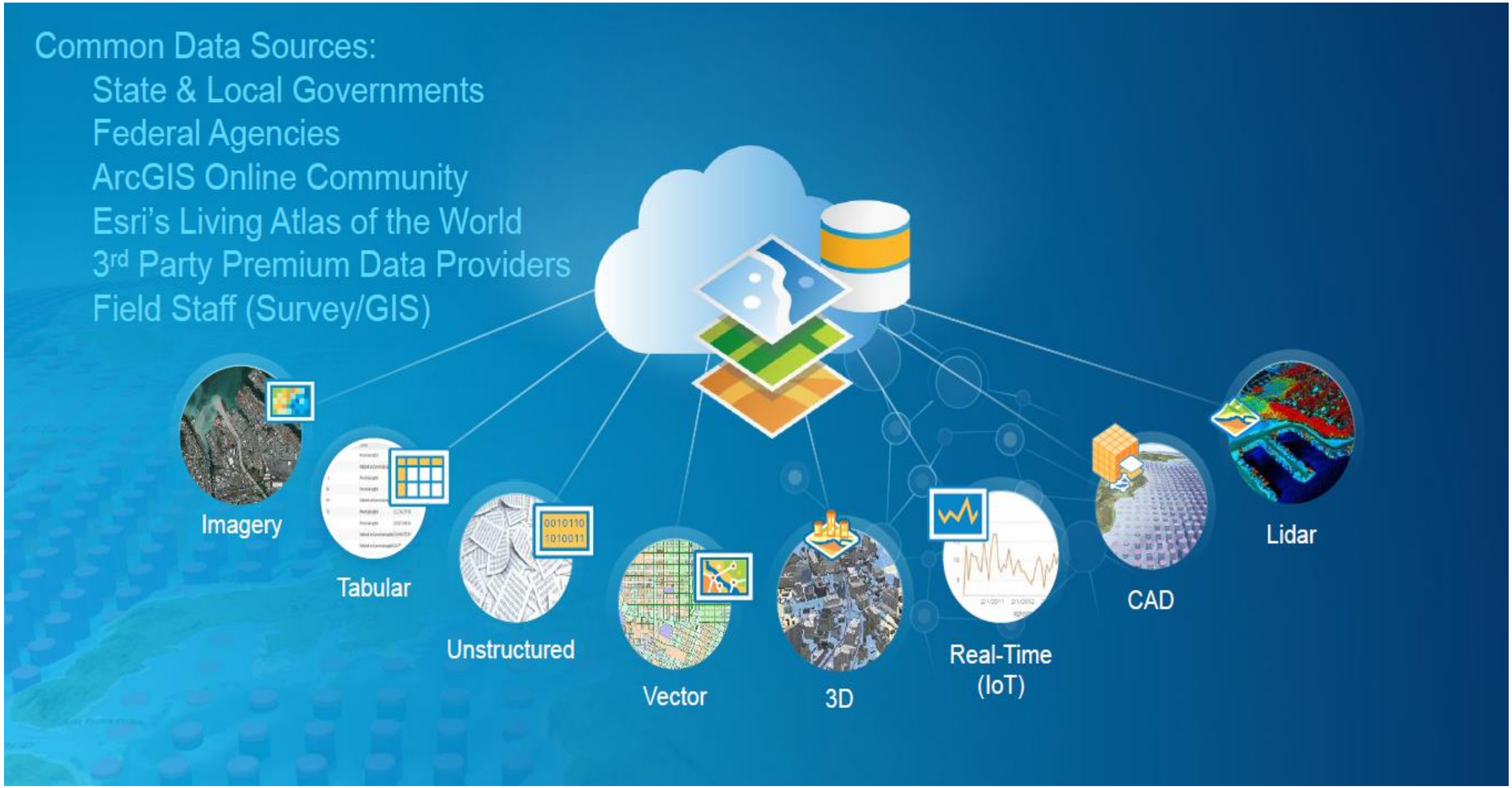
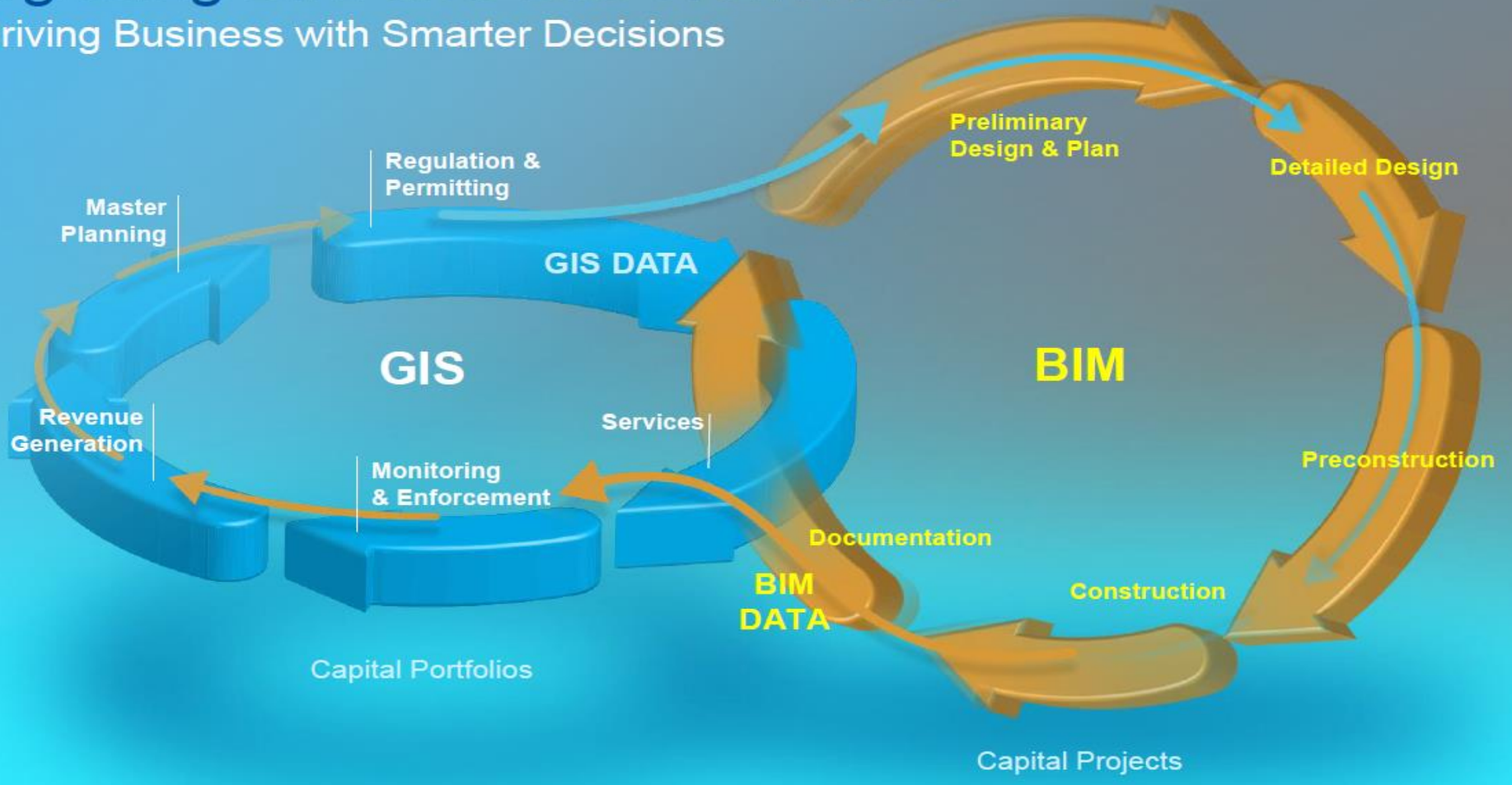
GIS + AEC


Common Data Sources:
State & Local Governments
Federal Agencies
ArcGIS Online Community
Esri's Living Atlas of the World
3rd Party Premium Data Providers
Field Staff (Survey/GIS)
Imagery
Tabular
Unstructured
0010110
1010011
Vector
3D
Real-Time
(IoT)
CAD
Lidar

Integrating BIM and GIS Workflows

Driving Business with Smarter Decisions



State of Integrations Today

AUTODESK. Make anything.

esri THE SCIENCE OF WHERE

AUTOCAD CIVIL 3D → ArcGIS Online

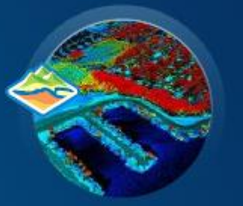
AUTODESK INFRAWORKS → ArcGIS Online

AUTODESK REVIT → ArcGIS Pro → ArcGIS Online

AUTODESK AUTOCAD → ArcGIS Online

AUTODESK BIM 360 ✕ ArcGIS Online


Imagery


Lidar


CAD


3D


Real-Time (IoT)


Tabular


Vector

Unstructured

INDUSTRY TRENDS

Unprecedented demand for built assets

200K MOVING TO CITIES EVERY DAY

13K BUILDINGS BUILT EVERY DAY

CHANGING ECONOMIC CYCLES

$3.7T INFRASTRUCTURE SPEND NEEDED

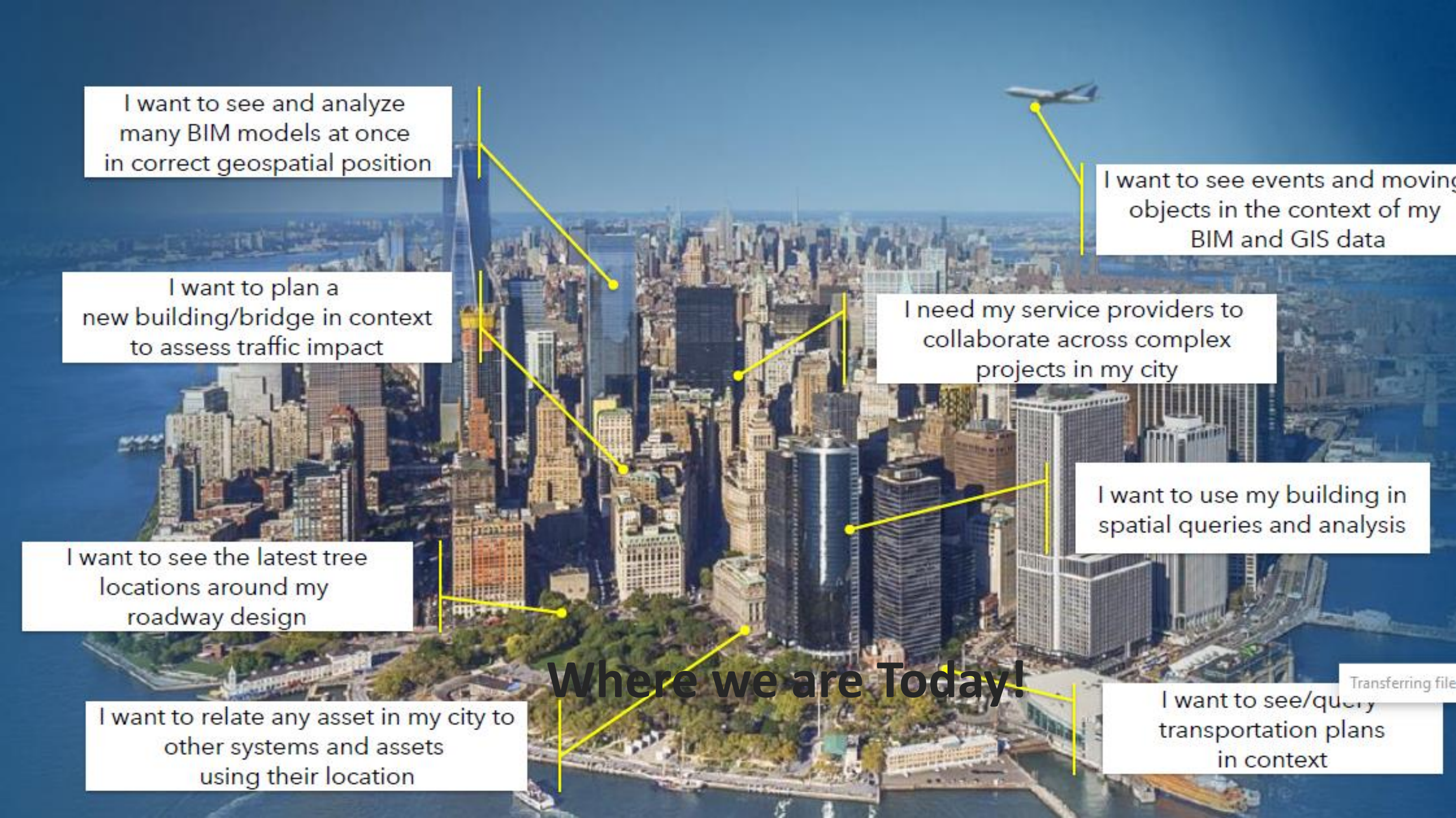
PROJECT COMPLEXITY INCREASING

BIM is the process for collaboratively creating and using detailed information about built assets throughout their lifecycle!

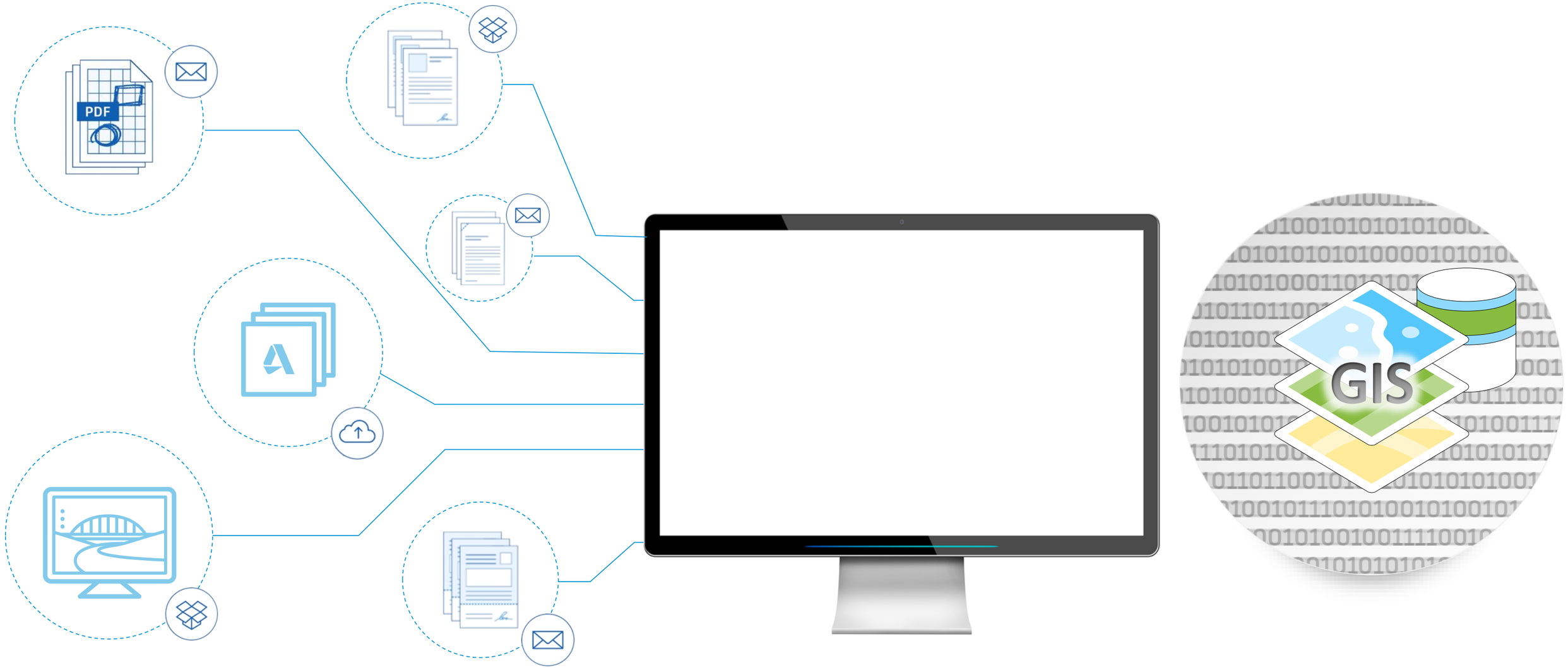
Interest in integrating GIS and BIM on the rise – <u>WHY?</u>

- **BIM** information repurposed from design data can be a great source of information for ongoing operations and maintenance of infrastructure.

- Typically, this information is needed in the context of other buildings, infrastructure, and people that make up an entire system - **GIS**.


I want to see and analyze many BIM models at once in correct geospatial position
I want to see events and moving objects in the context of my BIM and GIS data
I want to plan a new building/bridge in context to assess traffic impact
I need my service providers to collaborate across complex projects in my city
I want to use my building in spatial queries and analysis
I want to see the latest tree locations around my roadway design
Where we are Today!
I want to relate any asset in my city to other systems and assets using their location
I want to see/query transportation plans in context
Transferring file

The Current Way of Working

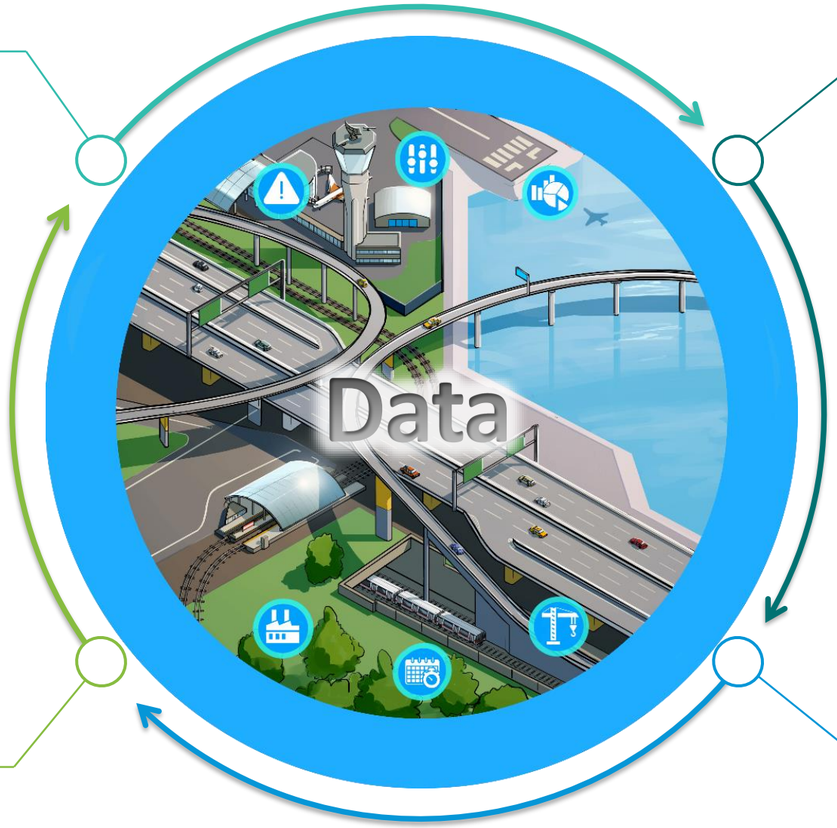


Why Change

Smarter Decisions and Better Outcomes

PLAN

DESIGN



OPERATE

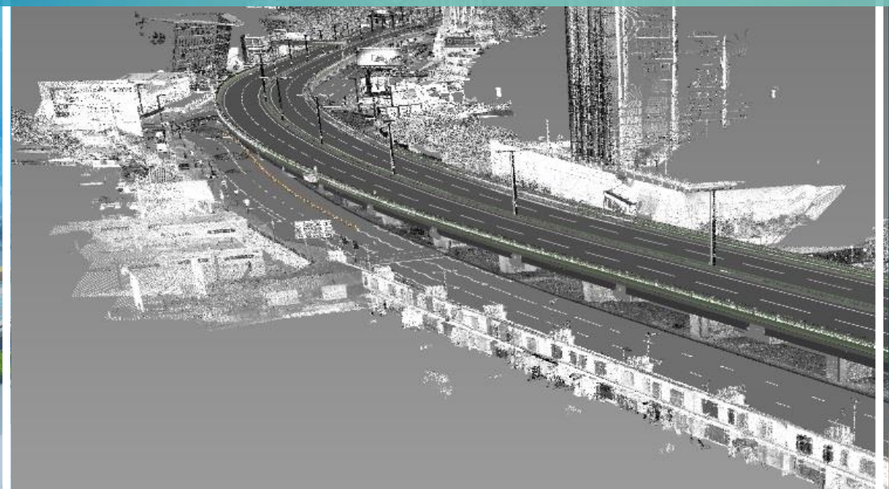
BUILD

Why Now

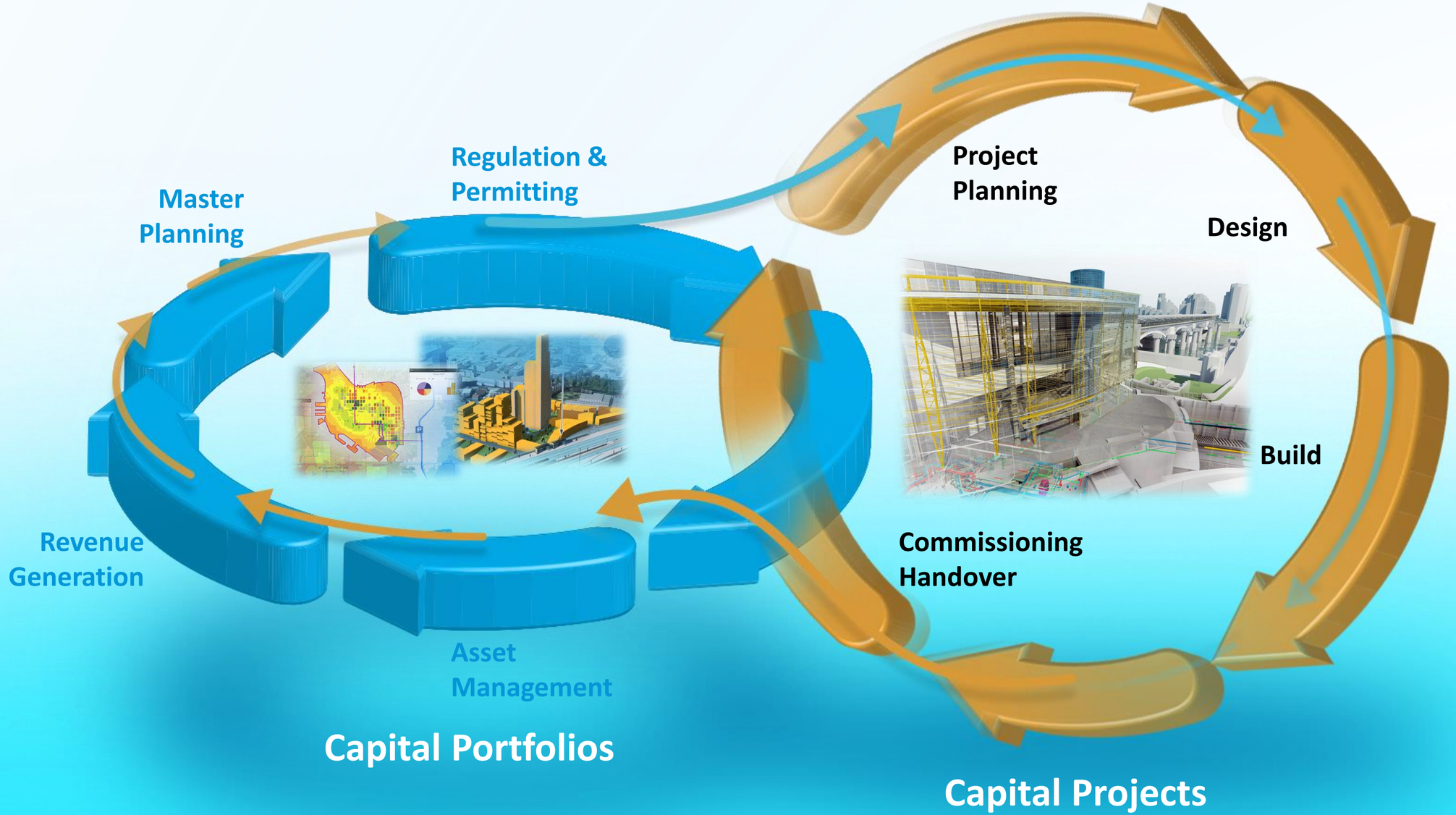
More

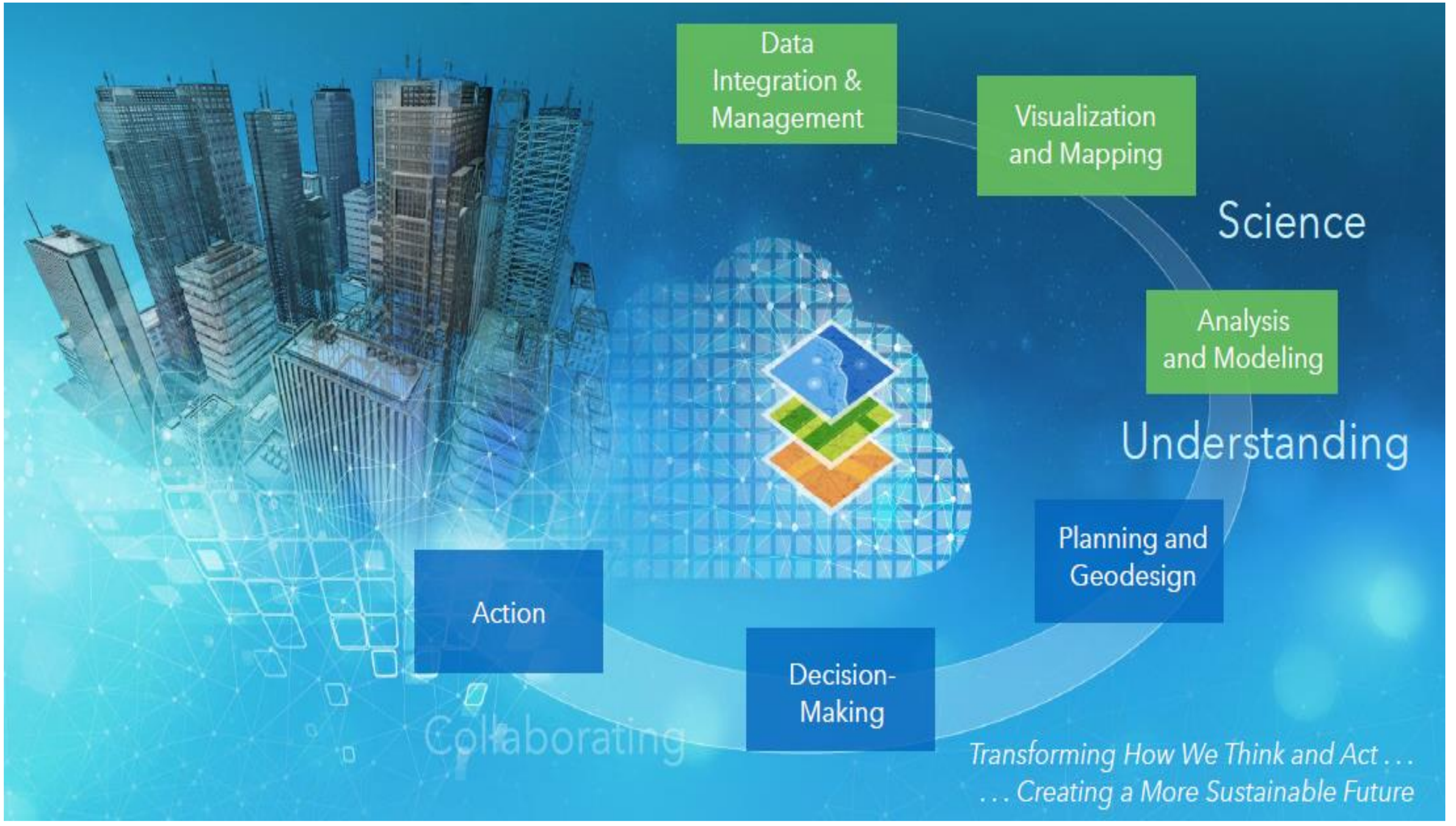
Better

Less



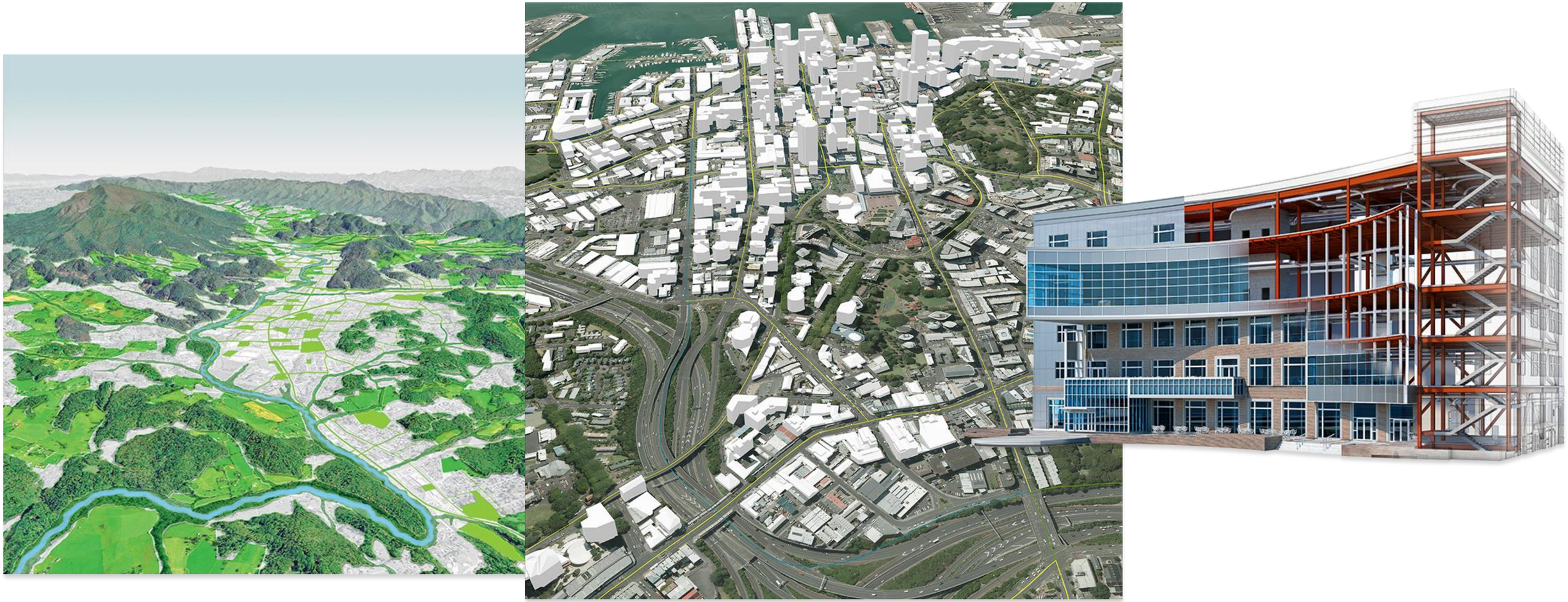
GIS Informs BIM - BIM Fuels GIS



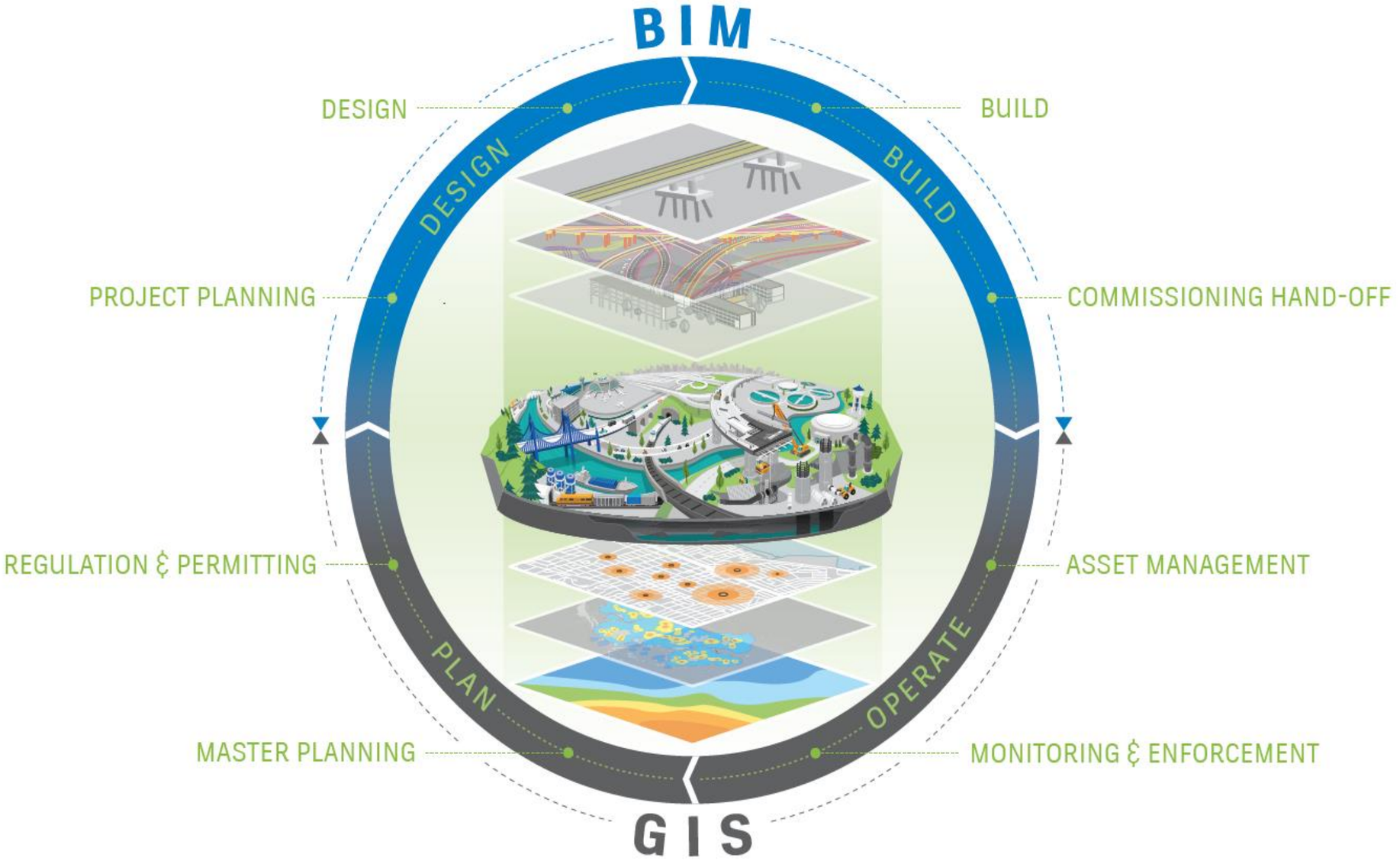

Data Integration & Management
Visualization and Mapping
Science
Analysis and Modeling
Understanding
Planning and Geodesign
Decision-Making
Action
Collaborating
Transforming How We Think and Act . . .
. . . Creating a More Sustainable Future

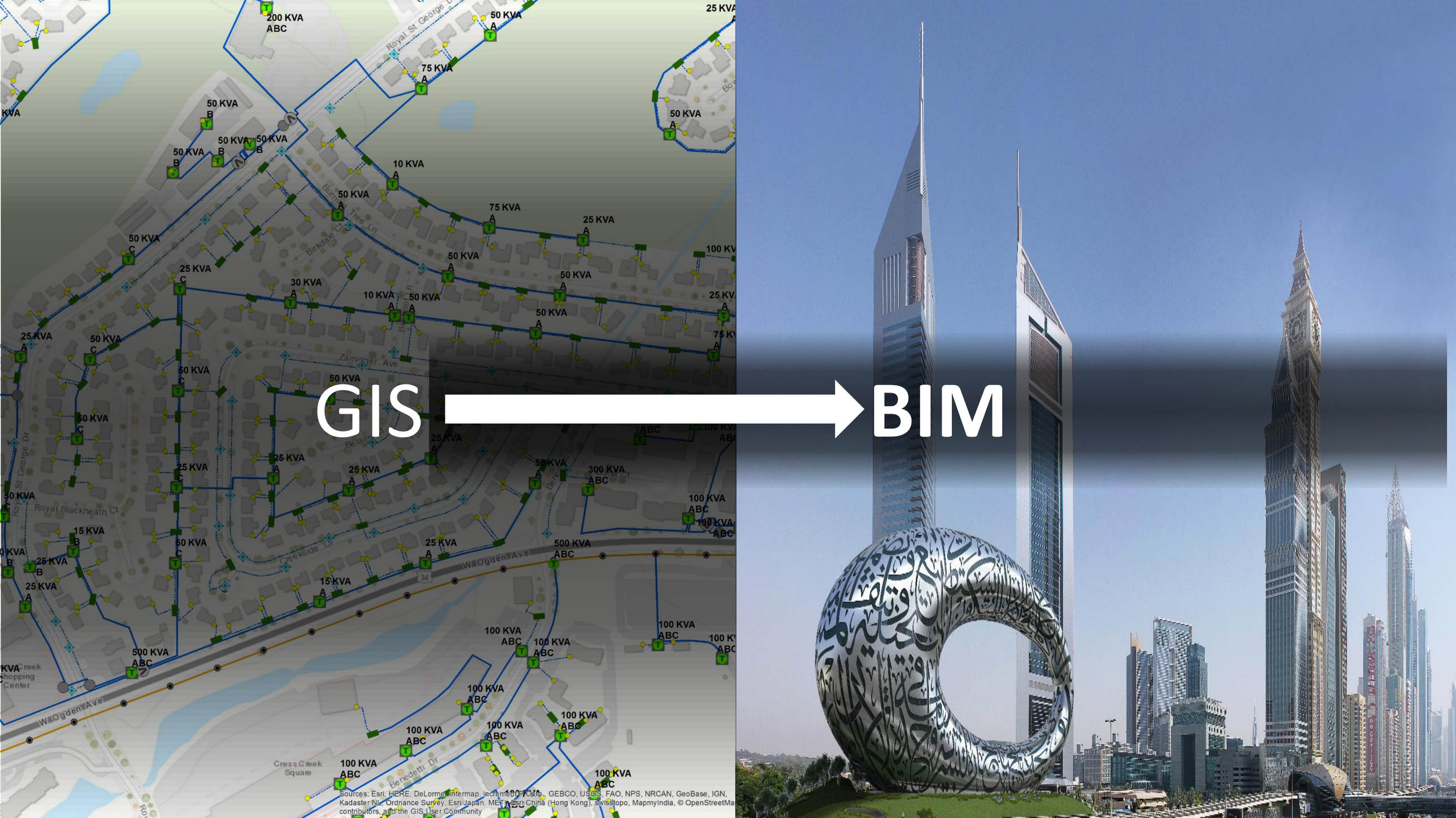
Plan, Design, Build and Manage in Context

Requires and integrated and holistic approach

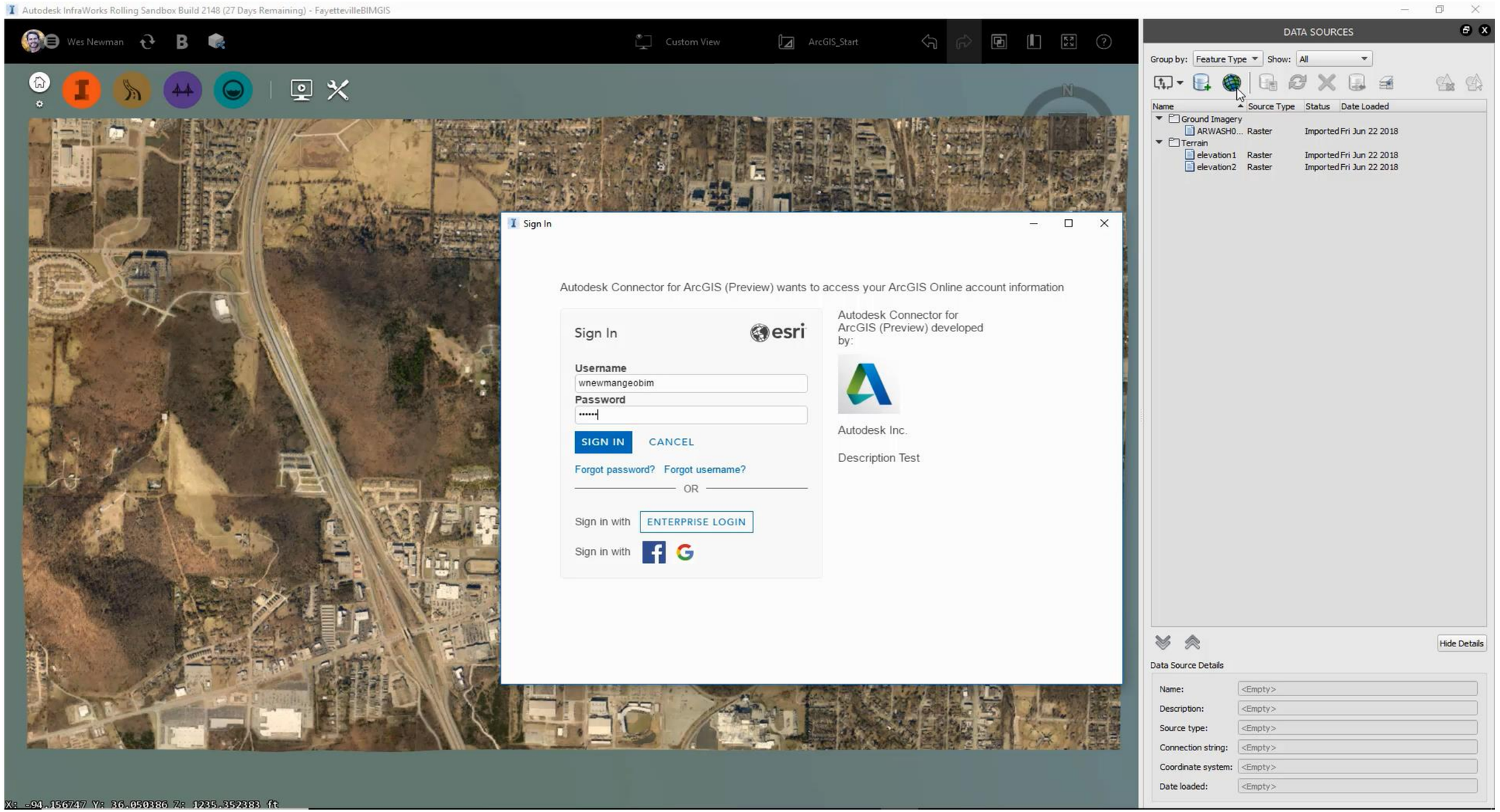


Geography Provides the Common Language for Collaborating

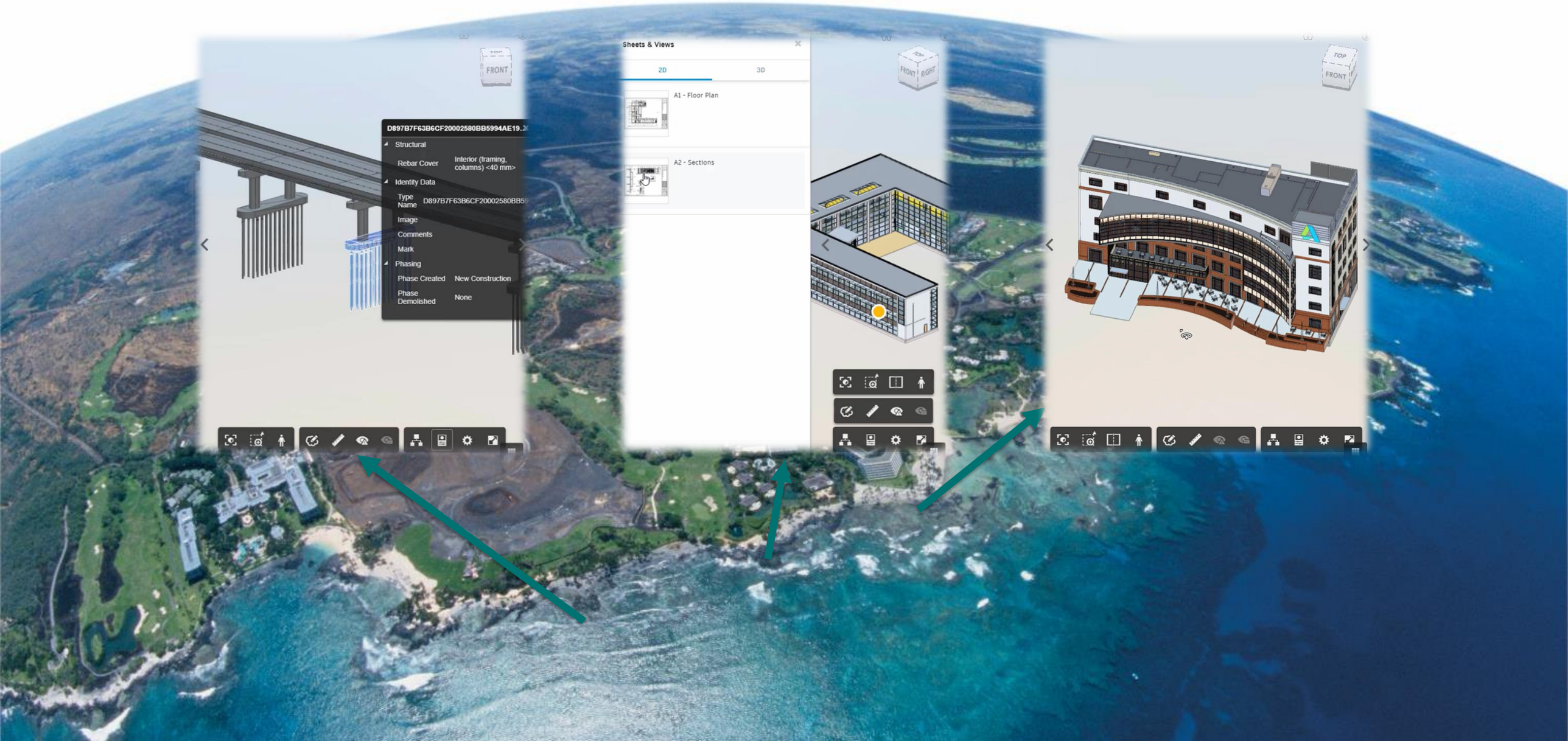

BIM
DESIGN
BUILD
PROJECT PLANNING
COMMISSIONING HAND-OFF
REGULATION & PERMITTING
ASSET MANAGEMENT
MASTER PLANNING
MONITORING & ENFORCEMENT
GIS
DESIGN
BUILD
PLAN
OPERATE


GIS
BIM

Autodesk® Connector for ArcGIS®

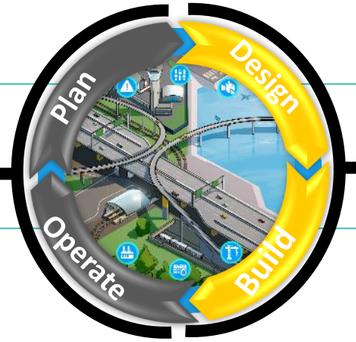


Location-intelligence provides map to BIM data



Proof of Concept: Linking to BIM 360® from

Why Integration of BIM and GIS is Important

GIS  **BIM**

Deliver increasingly complex projects in less time

- Remove “old way” technology restraints and silos
- Improve team collaboration
- Accelerate design decisions

Effectively communicate project intent to stakeholders

- Build context models enriched with GIS data
- Deliver enhanced project insights
- Accelerate regulatory approvals

Reduce risk

- Minimize data loss and leverage data across entire project lifecycle
- Provide for more efficient and less error-prone project handover
- Improve operational efficiency


Connected
Delivery
Construct New bridge

Buford Dam, Georgia

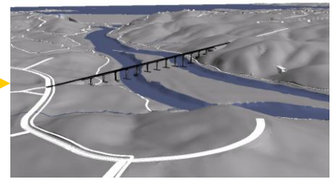
Buford Dam, Georgia

Civil Infrastructure Workflows

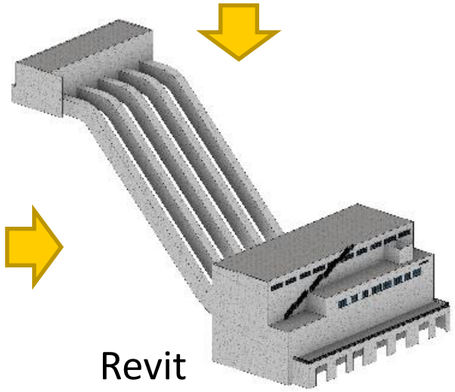
Reality Capture
Point Cloud

InfraWorks
Conceptual Design

Civil 3D
Terrain



Navisworks: Timeline Simulation,
Clash Detection & Quantification

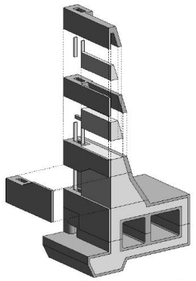


Revit
Hydro Power Plant

BIM 360 Glue
Coordination

AUTODESK® BIM 360™
Project Mgmt.
BIM 360 Field

FM
COBie

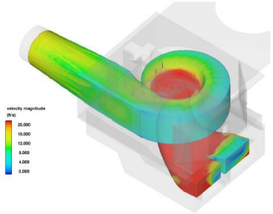


Revit Parts for
Hydro Power Plant

Inventor Parts
for Dams

Inventor Parts
for Infrastructure

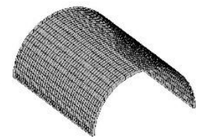
Vehicle Tracking



CFD
Analysis

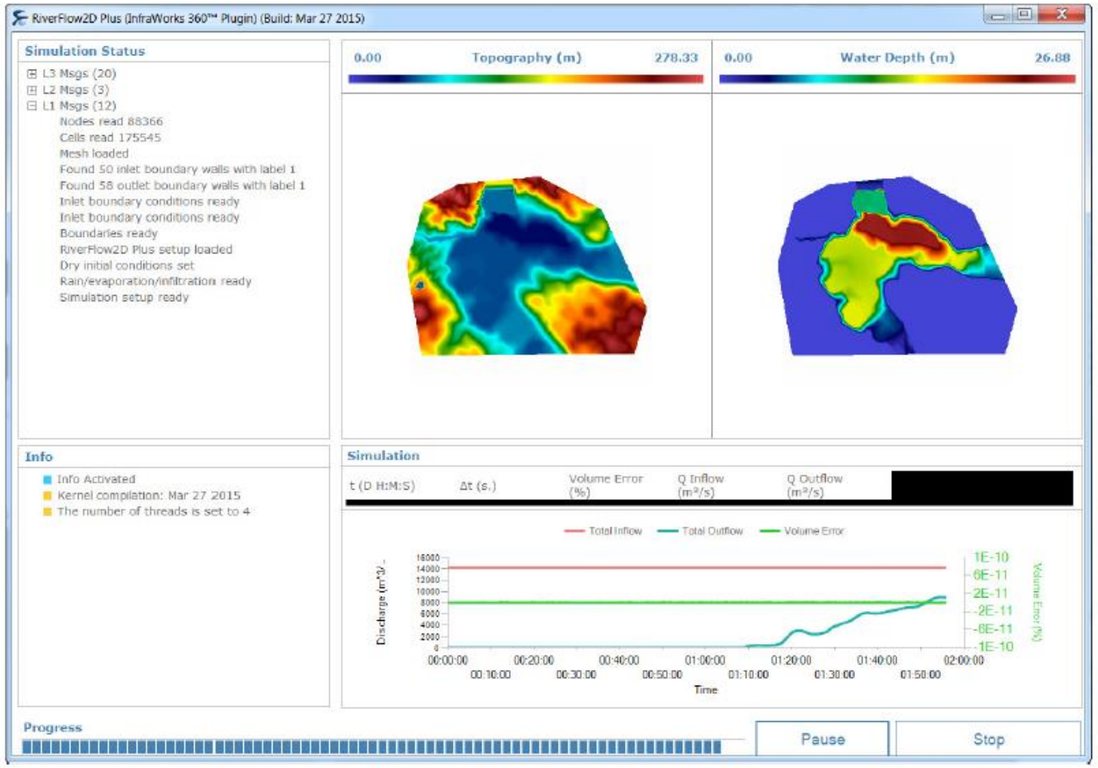
Dynamo

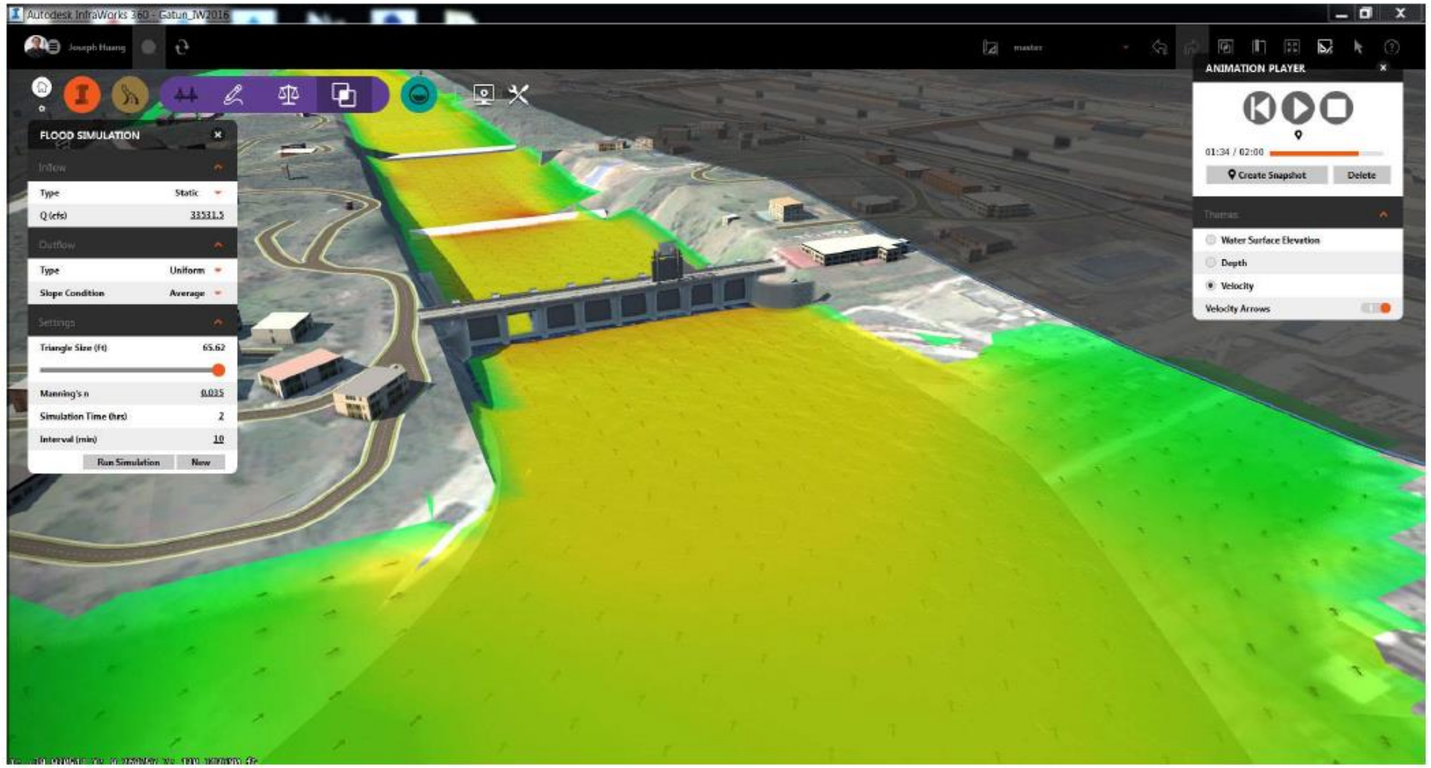
Free-Form
Concrete Rebar
Design



Robot
Structural Analysis

Infraworks Flood Simuation

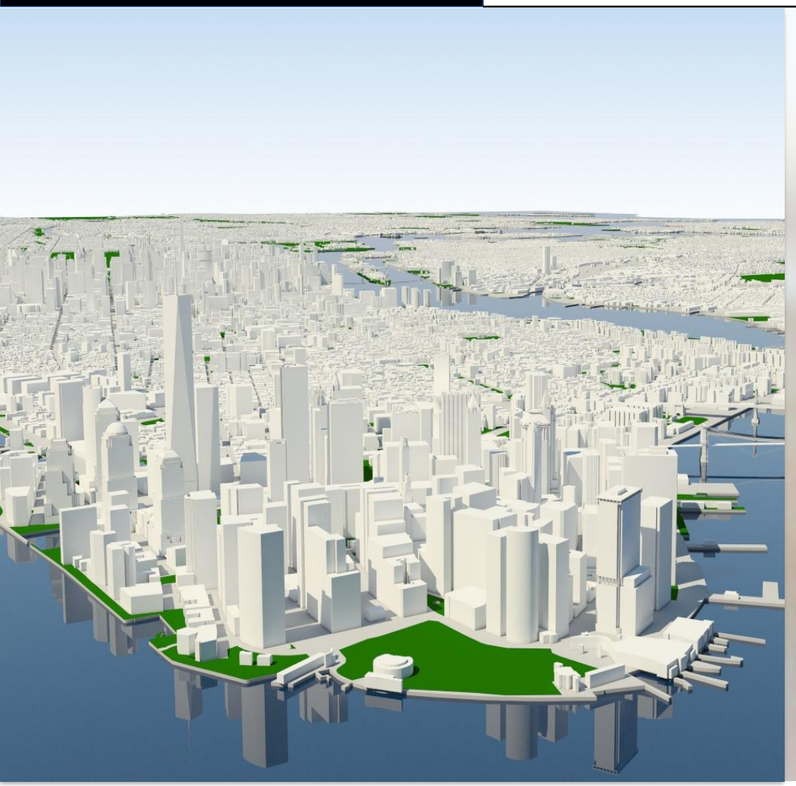




courtesy Autodesk | NWH | STANTEC

BIM+GIS

Value to your company



Increase Company Revenue

- Offer **new** types of **services** to clients

Save Time & Money

- **Minimize** time spent searching for data, or requesting and receiving data from others
- **Eliminate** manual workflows involving file downloads, repeating the process as updates to data are made
- No GIS expertise required

Enhanced Productivity/Improved Quality

- **Accelerate** design processes by providing a more complete, up-to-date view of data
- Uncover **impacts** and evaluate **solutions** using GIS analysis in BIM workflows
- **Reduce** risk of duplicating data

Applied Software

- Full-service professional services firm serving the AEC and manufacturing industries
- Leading (BIM) services provider
- One of the largest Autodesk partners in the United States
- Since 1982, the firm has helped more than 10,000 clients
- Autodesk Platinum Club award winner in 2013
- www.asti.com

Empower Clients
Transform Industries
Champion Innovation

Autodesk® Specializations

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Building Specialized
Process Plant Specialized
Advanced MEP Specialized
Civil Infrastructure Specialized
Product Support Specialized
Consulting Specialized
Factory Specialized
Authorized Development Center
Authorized Training Center
Authorized Certification Center

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Autodesk Certified Instructors
Autodesk Certified Developers
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