A Digital Twin For Grenada

Get Answers: Questions will be answered at the end.

You can submit them at anytime through the Q&A module.

On-Demand: The recording will be posted shortly after the webinar.

You'll receive an email with the link to view or download.

Start time: The webinar will start at 8:00 am Pacfic

Contact us: For anything else, please email us:

KArroyo@esri.com

https://ditto-oceandecade.org/

A Digital Twin For Grenada

A Satellite event for DITTO

Digital Twins of the Ocean

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

https://ditto-oceandecade.org/

Today's Presenters

Kishi Logie
Systems Administrator
Grenada Central Statistics Office

Kate Hess
Solution Engineer
Esri National Government Team

Linda Peters
Global Business Development Manager
Esri National Government Team

Agenda

- What is a Digital Twin
- A Digital Twin for Grenada
- Demonstrations
- Resources
- Open Discussion

Digital Twins *are virtual representations of the real world . . .*

. . . including physical objects, processes, relationships and behaviors.

GIS creates digital twins of the natural and built environment . . .

. . . and uniquely integrates many types of digital models.

ArcGIS

A Comprehensive Geospatial Platform

Open

Services Based

Extendable

Distributed

SaaS & Software

Supporting Individuals, Teams and Organizations

Our World is Transforming

Digital Twins are Abstracting and Modeling Everything

Oceans (EMUs)

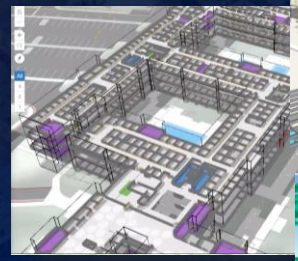
Networks (NIM)

Utilities / Telecom

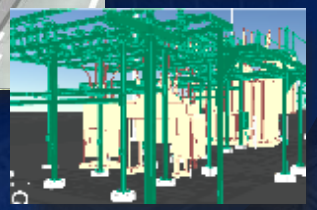
Pipelines

Roads and Highways

Buildings (BIM)

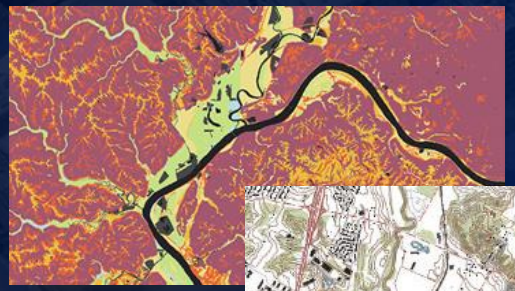


Facilities / Indoors

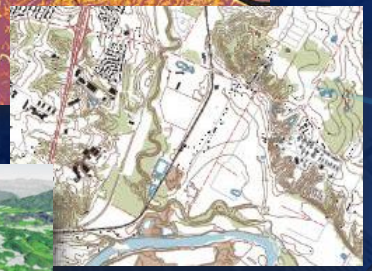


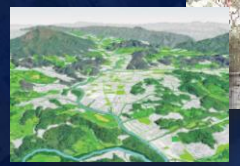
Plants / Structures

Landscapes (LIM)



Environment

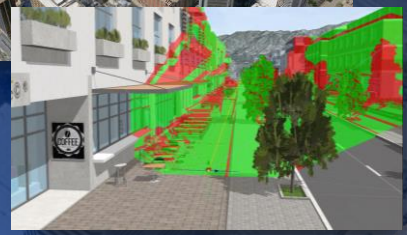




Topographic

Cities (CIM)

Smart City



Planning

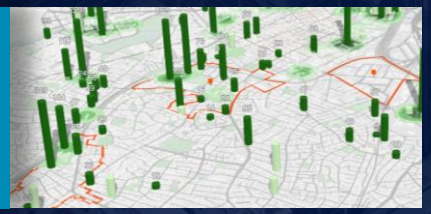
GIS is the framework for . . .
. . . Creating & Integrating Digital Twins

Business Drivers for Digital Twins

High costs of recurring updates

Increase efficiency (remove silos)

Accountability and transparency towards goals



Demonstratable sustainability

Insufficient access to current GIS data

Maximize investments (people, data, & technology)

Desire for more diverse community representation

Simplify communications

Grenada
Creating a Digital Twin

A project in collaboration with

the Grenada Central Statistics Office,

The Ministry of Agriculture and Lands and Esri

Area of Interest

- Land mass of the islands of Grenada, Carriacou and Petite Martinique as well as the smaller islands Ronde Island, Caille Island, Diamond Island, Large Island, Saline Island, and Frigate Island

- This results in a total area of 348.5 km^2 to be covered. (134.6 sq. mi.)

Goals behind the project for Grenada

- Create information that can be used in decision making in key areas
  - Sustainability
  - Economic Development
  - Public Safety
  - Disaster Planning, Preparedness and Management
  - Census planning
  - Physical planning
  - Blue Economy
  - And more!

Demonstration

A Video Tour

Data Processed

- Topographic Lidar (digital 3D/elevation data)
- Min. 8 points per square meter, 5 cm vertical accuracy (RMSE), 15 cm horizontal accuracy (RMSE)

- Aerial color (RGB) photography
- Aerial near infrared (NIR) photography
- Orthophotos: 20 cm resolution (ground sampling distance), 3 pixel absolute horizontal accuracy

Data Processed

- Classified point cloud (ground, buildings, land vegetation, temporary objects, outliers, others)
- Interpolated topographic digital surface model (DSM) as 0.5 m grid
- Interpolated topographic digital terrain model (DTM) as 0.5 m grid
- RGB orthophoto mosaic with 0.2 m resolution
- NIR orthophoto mosaic with 0.2 m resolution
- DSM and DTM adjusted and combined with the UKHO bathymetry data

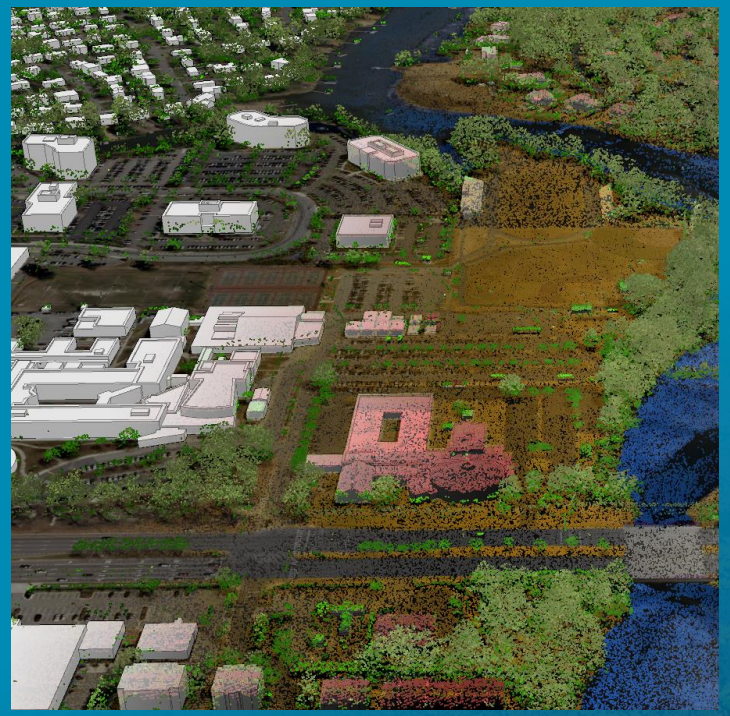
Poll Question

Please Tick the Boxes that Apply to Your Organization

Step #1

Obtaining Data

Foundational imagery and LiDAR content



Step #2

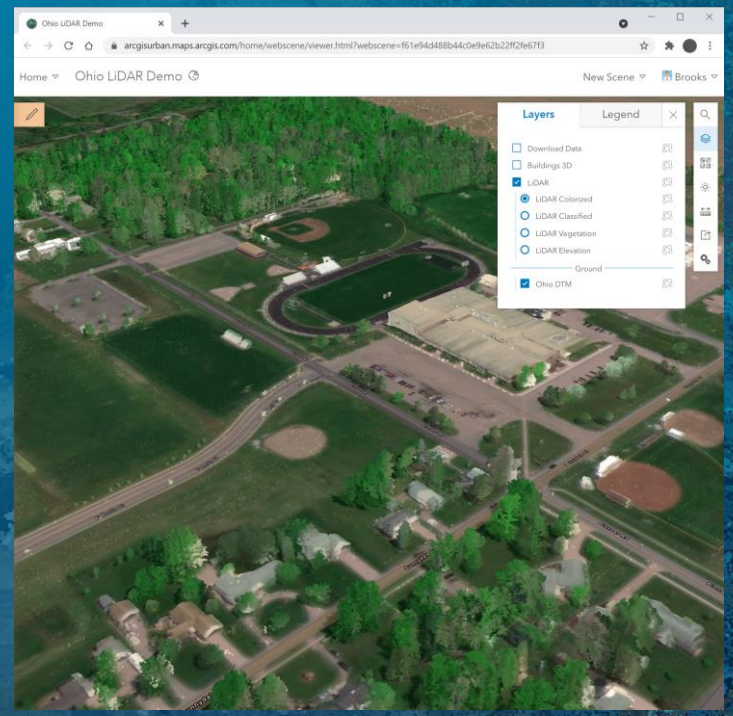
Processing Data

Automation and data production

Step #3

Dissemination

Publishing and stakeholder engagement



Benefits of a Digital Twin

Enabling Us to Do More with Less

- Responsiveness - Speeding Timely Information to Decision Makers
- Expanding use of Technology, Data Analysis & Information Delivery
- Saving Time, Money, Labor and Environmental Impact
- Increasing Efficiency and Expanding Capacity
- Improving Accuracy and Engagement with User Community

Value to Grenada

- Identifying future projects working with other govt agencies
  - Sea Level rise – protection of critical infrastructure
  - Ocean governance
  - Police and Planning interested in transportation planning and safety improvements
  - Postal addressing project
  - Public Safety – emergency response services
  - Oil spill modelling
  - Sustainable blue economy
  - And more…

Resources

- **Digital Twins at Esri** https://www.esri.com/en-us/digital-twin/overview
- ArcNews A Foundation for Digital Twins
- Raster Analytics and Deep Learning in ArcGIS Blog
- Video ArcGIS Image for ArcGIS Online
- Learn lessons https://learn-arcgis-learngis.hub.arcgis.com/
- Deep Learning models in Living Atlas
- Lidar Magazine article on Digital Twin for Grenada

A Digital Twin for Grenada

Question & Answer

Please Enter Questions in the Questions Window

esri
THE
SCIENCE
OF
WHERE