



**NORTH CAROLINA**

Department of Transportation



# Project ATLAS: Improving Project Development at NCDOT using GIS

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2/13/2019



## What is Project ATLAS?

- Project ATLAS is an effort to increase efficiency of Transportation Project Delivery
- Project ATLAS: **A**dvancing **T**ransportation through **L**inkages **A**utomation and **S**creening



# What prompted ATLAS?

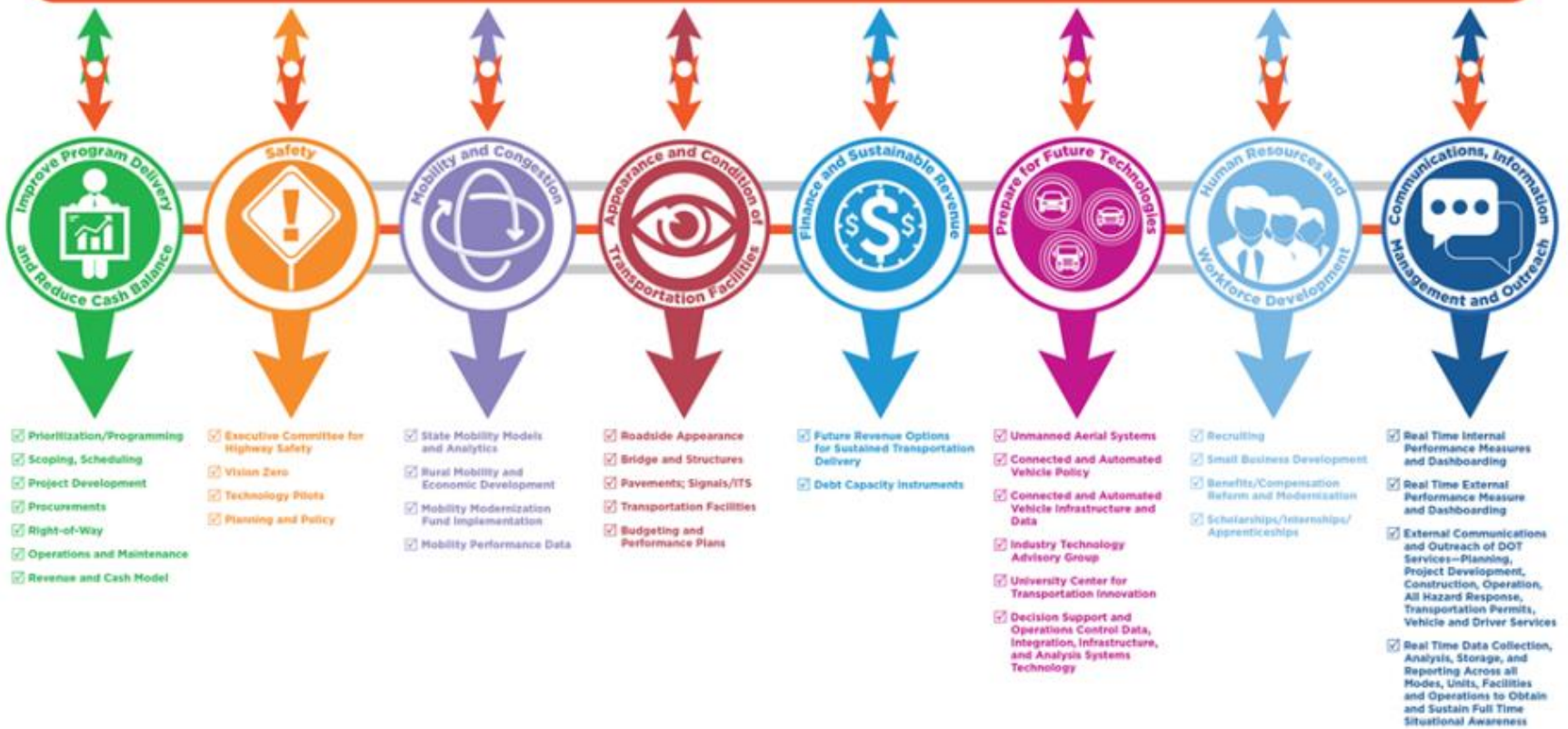
- NCDOT was not meeting expectations for project development timeframes
- Management expects to meet the goal of “3,2,1”
  - 3 years to complete and Environmental Impact Statement
  - 2 years to complete a Environmental Assessment
  - 1 year to complete a Categorical Exclusion
- This goal was communicated effectively to everyone throughout the agency (this will come into play later....)



# Secretary's Priorities

## Better Transportation Service for North Carolina

*Our Mission: Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina.*







# NCDOT Project ATLAS



Advancing **T**ransportation through **L**inkages, **A**utomation, and **S**creening

- Goal is to streamline project development by utilizing GIS tools, applications, and data
- Adheres to Secretary's Priorities for Improved Program Delivery
- Accelerated project delivery has strong economic impact and enhances NC's economic competitiveness

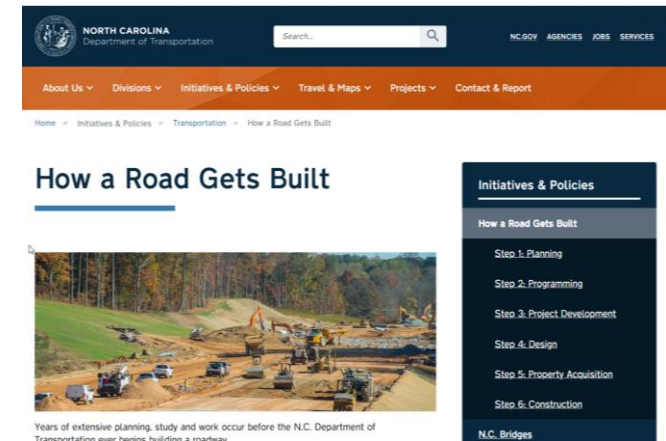


- ☒ Prioritization/Programming
- ☒ Scoping, Scheduling
- ☒ Project Development
- ☒ Procurements
- ☒ Right-of-Way
- ☒ Operations and Maintenance
- ☒ Revenue and Cash Model



# Where does ATLAS fit into Project Delivery at NCDOT?

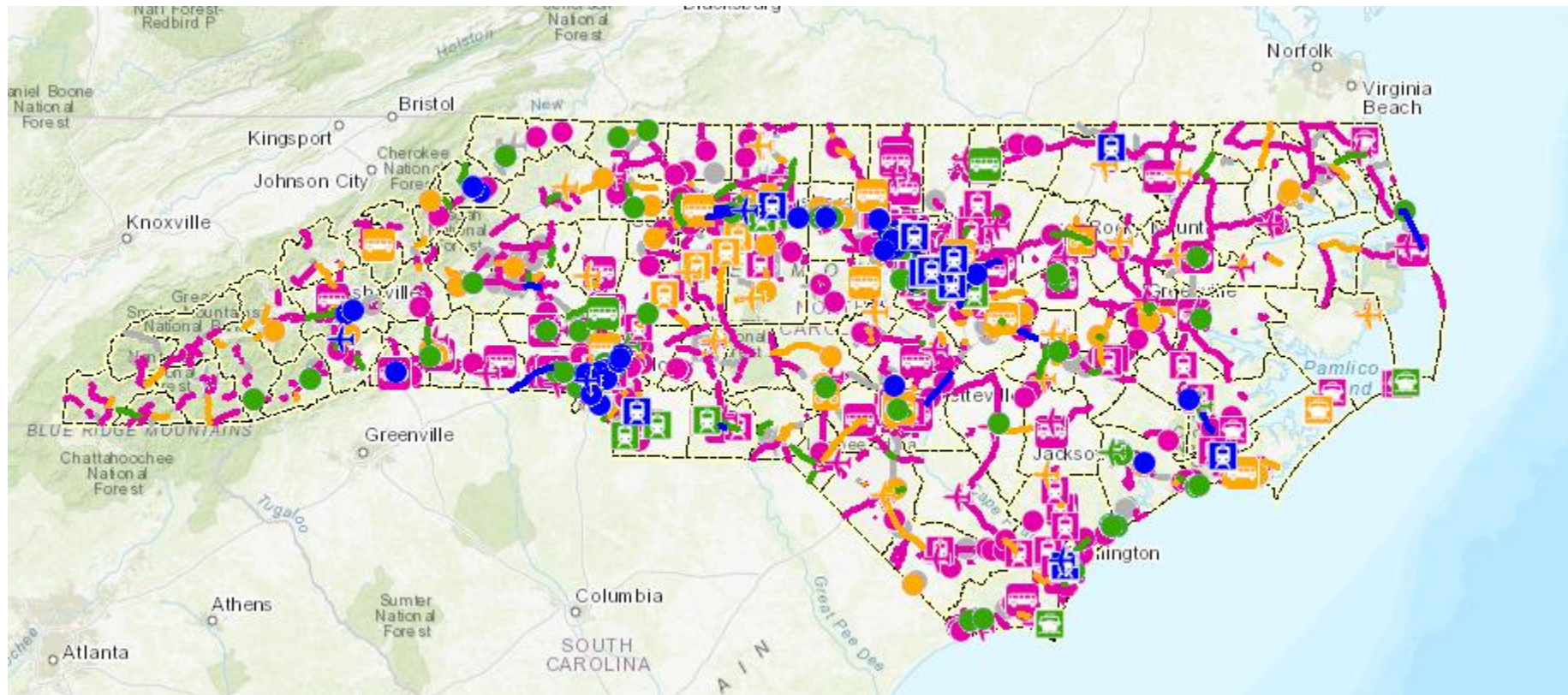
- Step 1: Planning
  - Comprehensive Transportation Planning (20-25 years)
- Step 2: Prioritization and Programming
  - State Transportation Improvement Program (10 years)
- **Step 3: Project Development and Env. Analysis**
  - Project is funded and proposed project is evaluated for environmental impacts
- Step 4: Design
- Step 5: Property Acquisition
- Step 6: Construction





# State Transportation Improvement Program

We have over a 1,500 projects coming next cycle!





# Business Analysis Commences

- Goals:
  - Identify Key Stakeholders
  - Identify and map current business processes
  - Identify improvements to those processes
  - Identify data sources currently in use
  - Identify data that will enhance efficiency
  - Document everything



# Starting Out

What does expediting project delivery really mean?

What have other DOT's done?

Isn't "everything" we do related to project delivery?

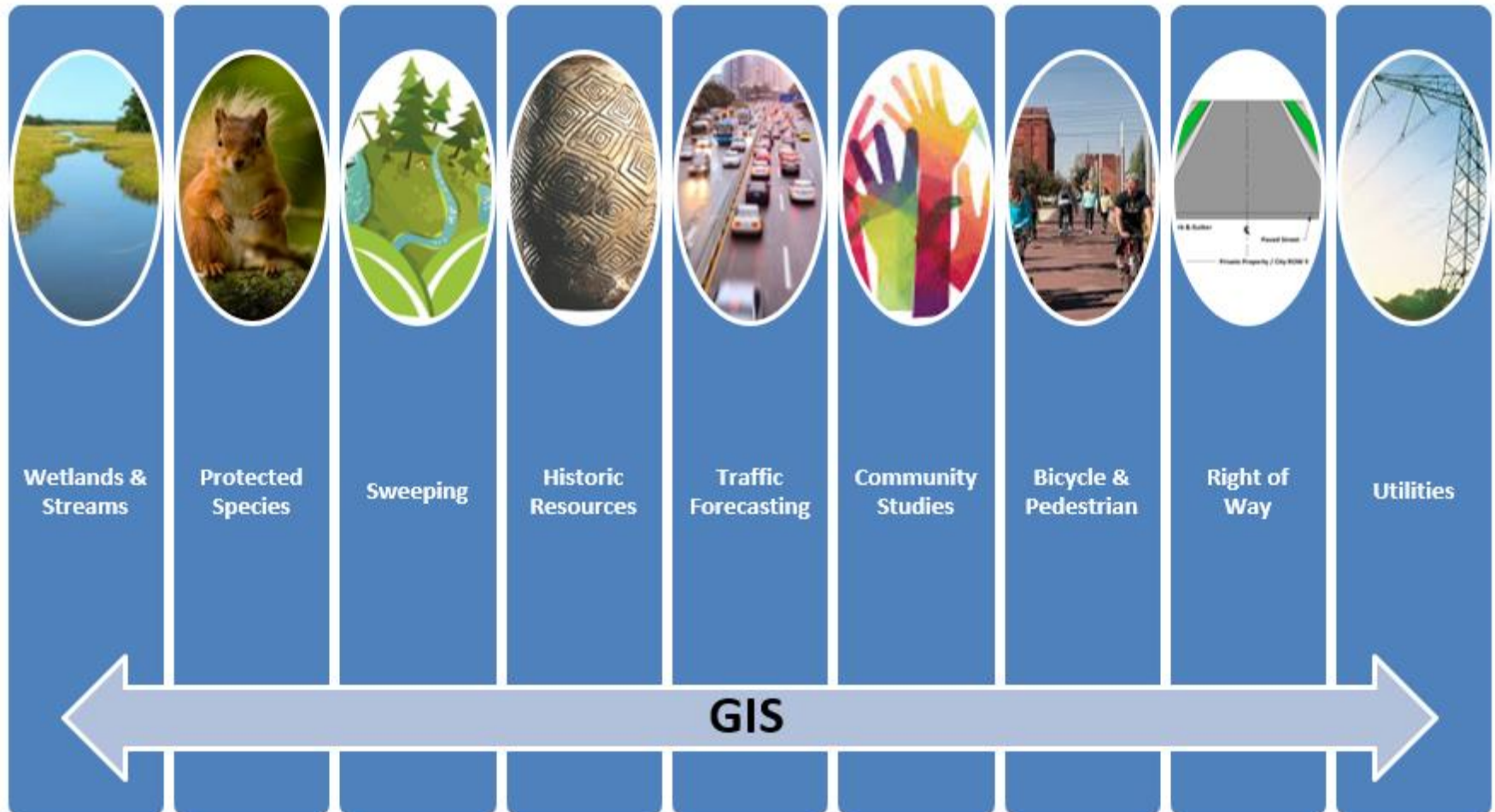
Who is involved in project delivery?

Where is the data to support this?





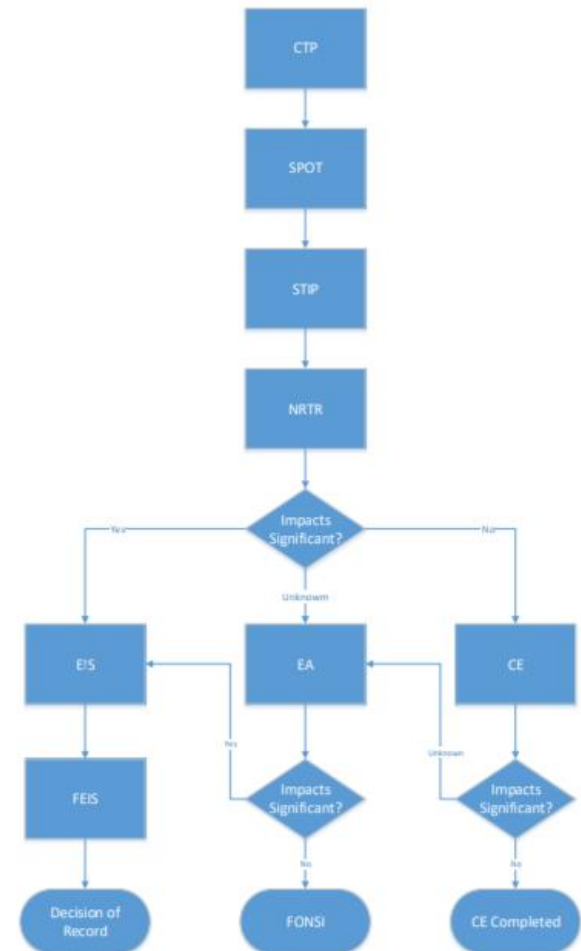
# Disciplines involved





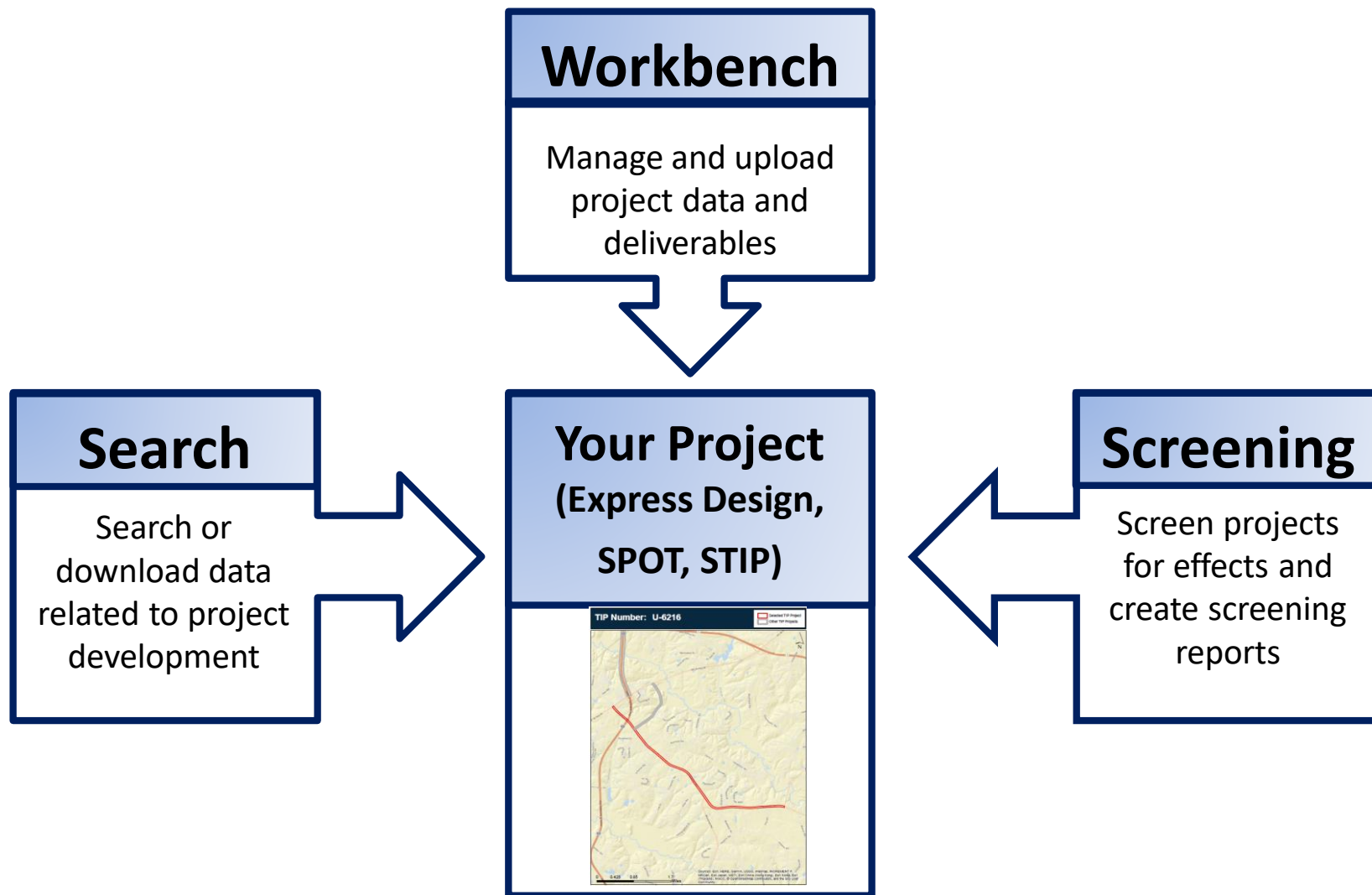
# Overall Picture Takes Shape

- Over 80 interviews with business units across the agency by October 2017.
- Understanding emerges that there are deficiencies with many aspects of the project development process- not just data itself
- The Project Managers need better information before a project begins...  
"An informed scoping meeting"



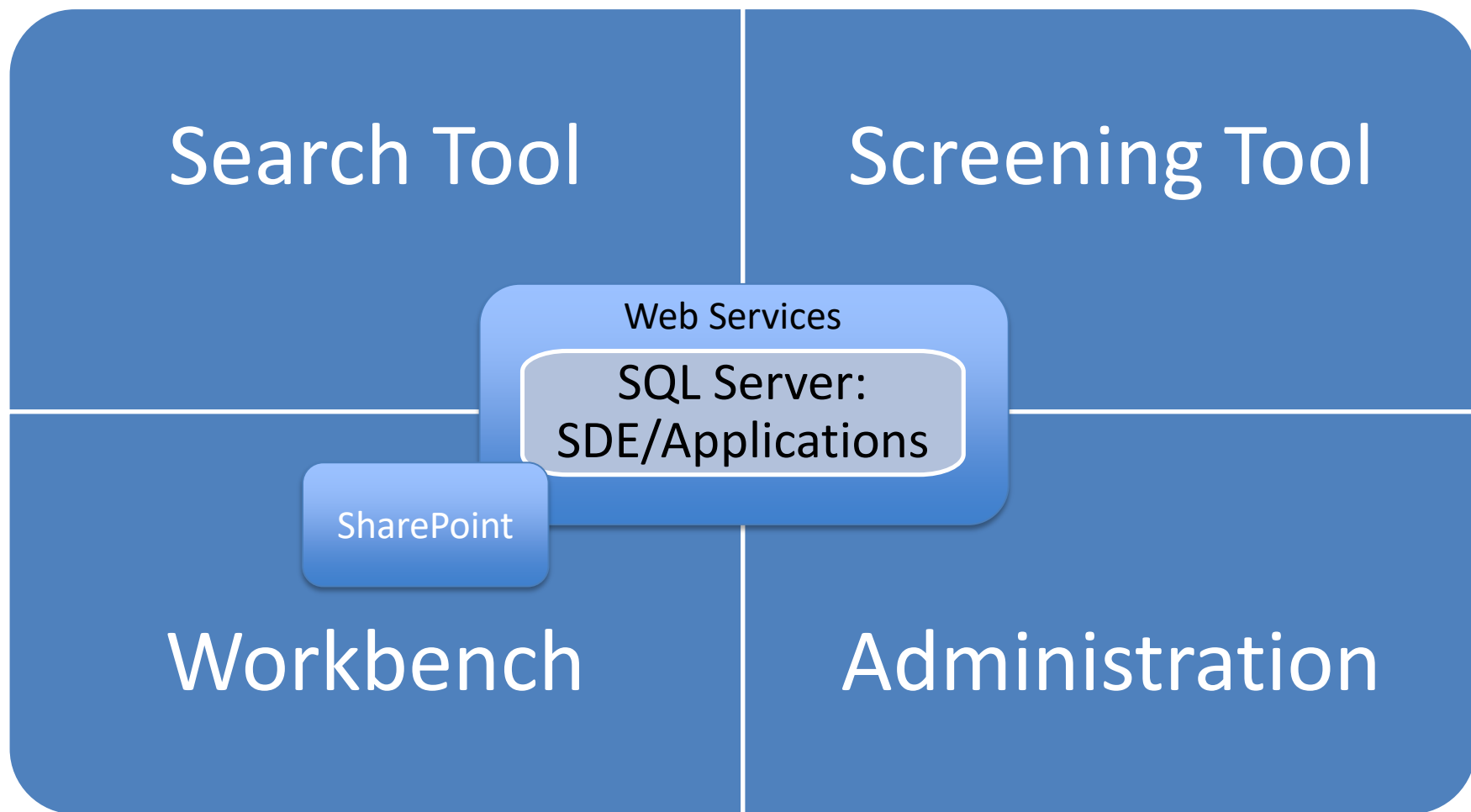


# From Goals to Tools





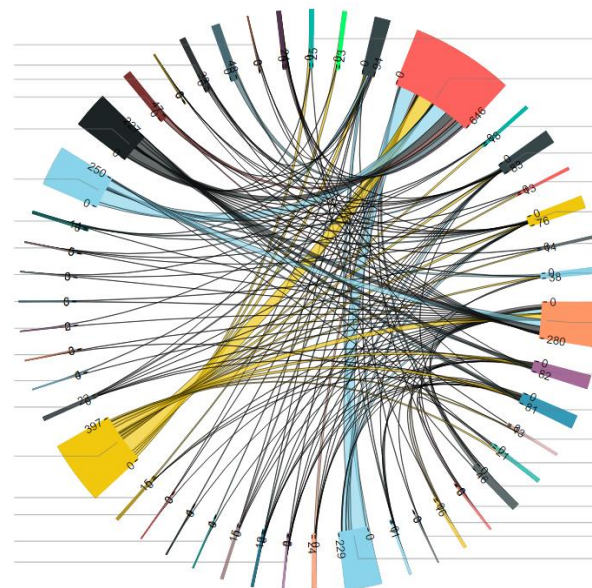
# Application Design





# Data Facts

- 27 Parent Agencies
- 54 Root Web Service Locations
- 590+ Total Layers
- 130+ Used in Screening a project



## Layers Top 5 Contributors

Organization	Count
NCDOT, GIS Unit	154
US Geological Survey (USGS)	75
NC Center for Geographic Information and Analysis (CGIA)	74
NC Department of Environmental Quality (DEQ)	60
US Department of Homeland Security (DHS)	33

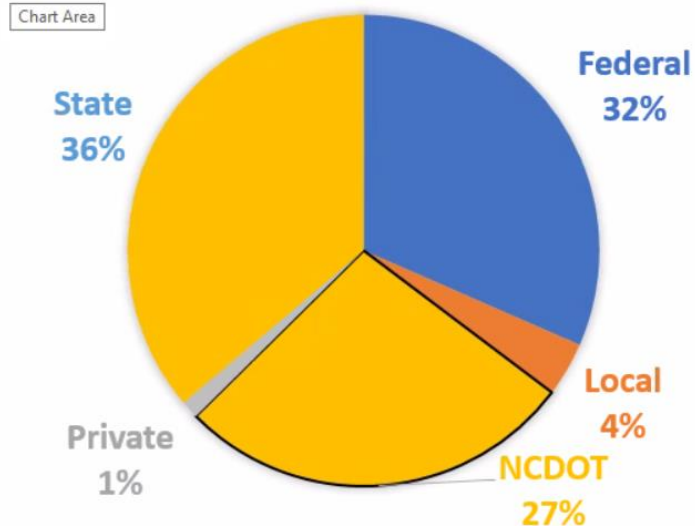
## Screening Layers Top 5 Contributors

Organization	Count
NC Department of Environmental Quality (DEQ)	30
NC Center for Geographic Information and Analysis (CGIA)	21
US Geological Survey (USGS)	18
NCDOT, GIS Unit	14
US Army Corps of Engineers (USACE)	10

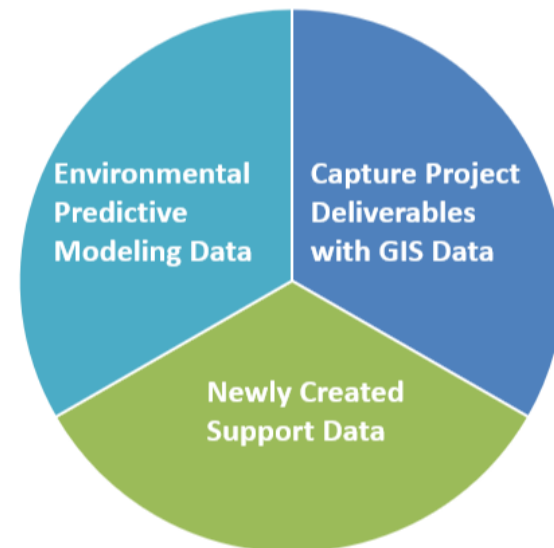


# Data Breakdown

DATA SOURCES



130 New Layers are being created





# Application Technology

- N-Tier Architecture
- ASP.NET
- Razor Pages, Bootstrap, JQuery
- Esri JavaScript 4.11
- Portal for ArcGIS/SQL Server/SDE
- Python Geoprocessing
  - Deployed as Rest Endpoints
  - Print
  - Data download within study area
    - (GDB, Shapefile, DGN)



# Search Tool

## **What the tool does for you:**

- Review and download data from multiple sources at once
- Establish consistency on data sources being used across project teams for the same deliverables and decisions



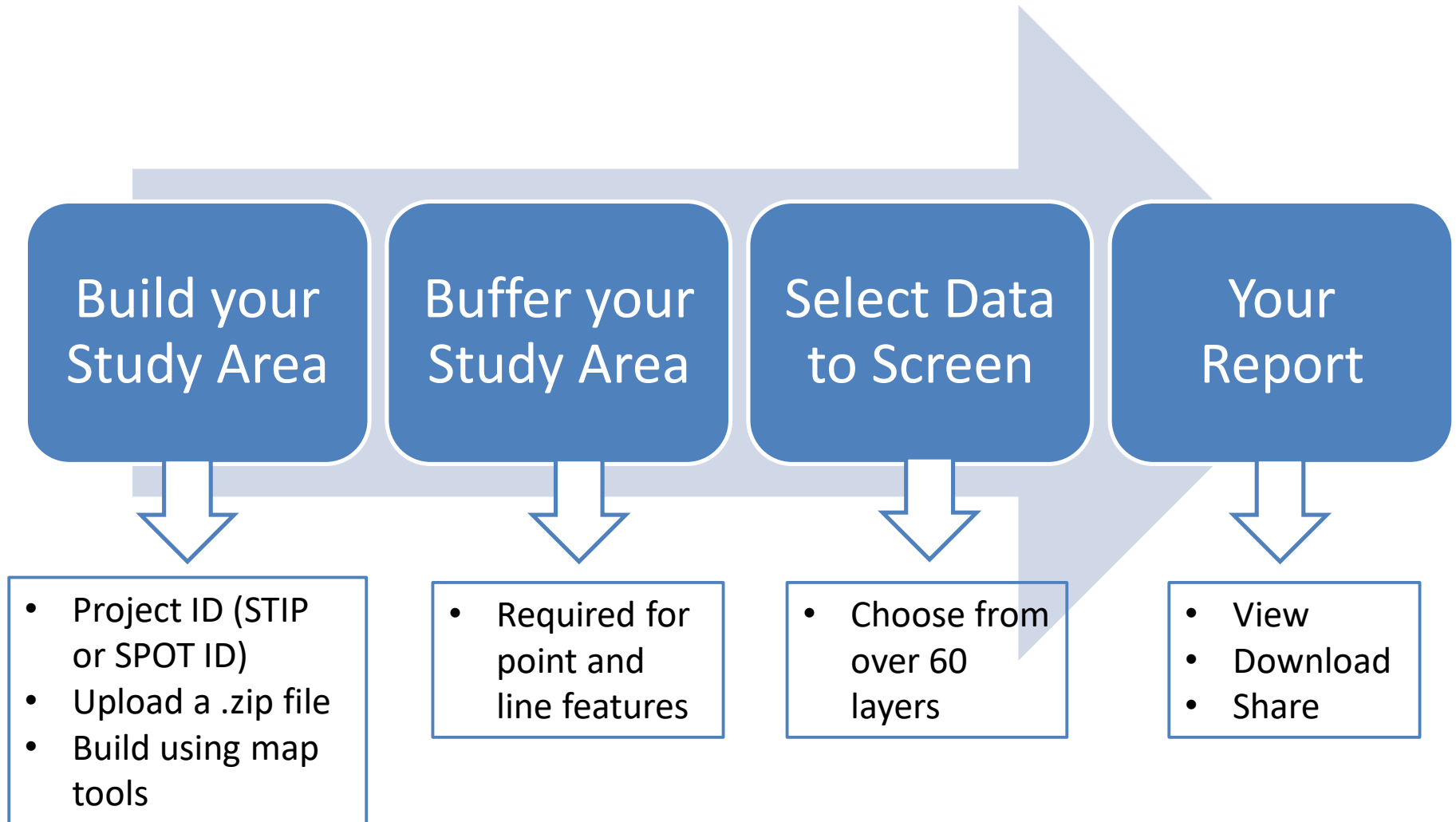
# Screening Tool

## **What the tool does for you:**

- Provides high-level summary report on key GIS layers/features in your study area
- Downloads of GIS datasets with features in your study area



# How to Build a Screening





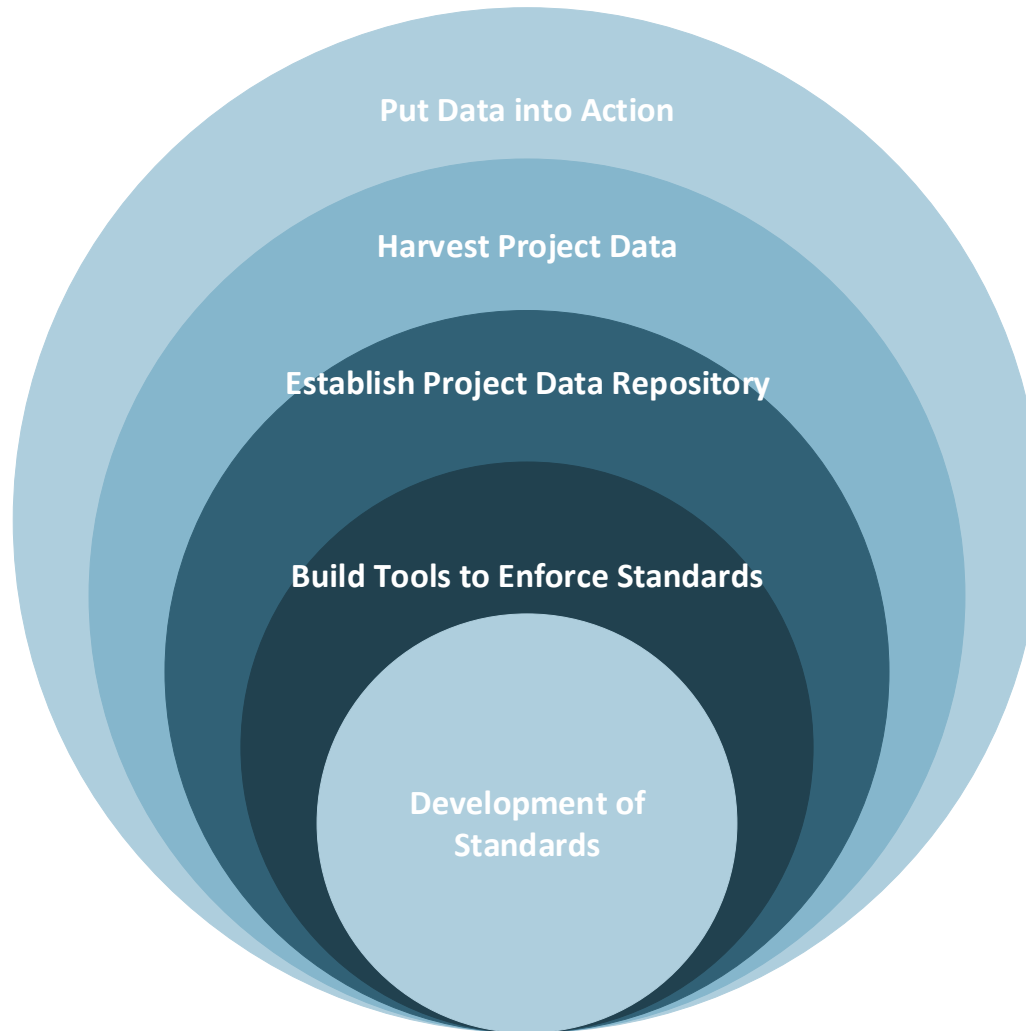
# Workbench

## What the tool does for you:

- One place to upload data
- Provides for a controlled standard delivery method
- Uploaded data is instantly visible on the Workbench Map
- Track project progress
- Run reports

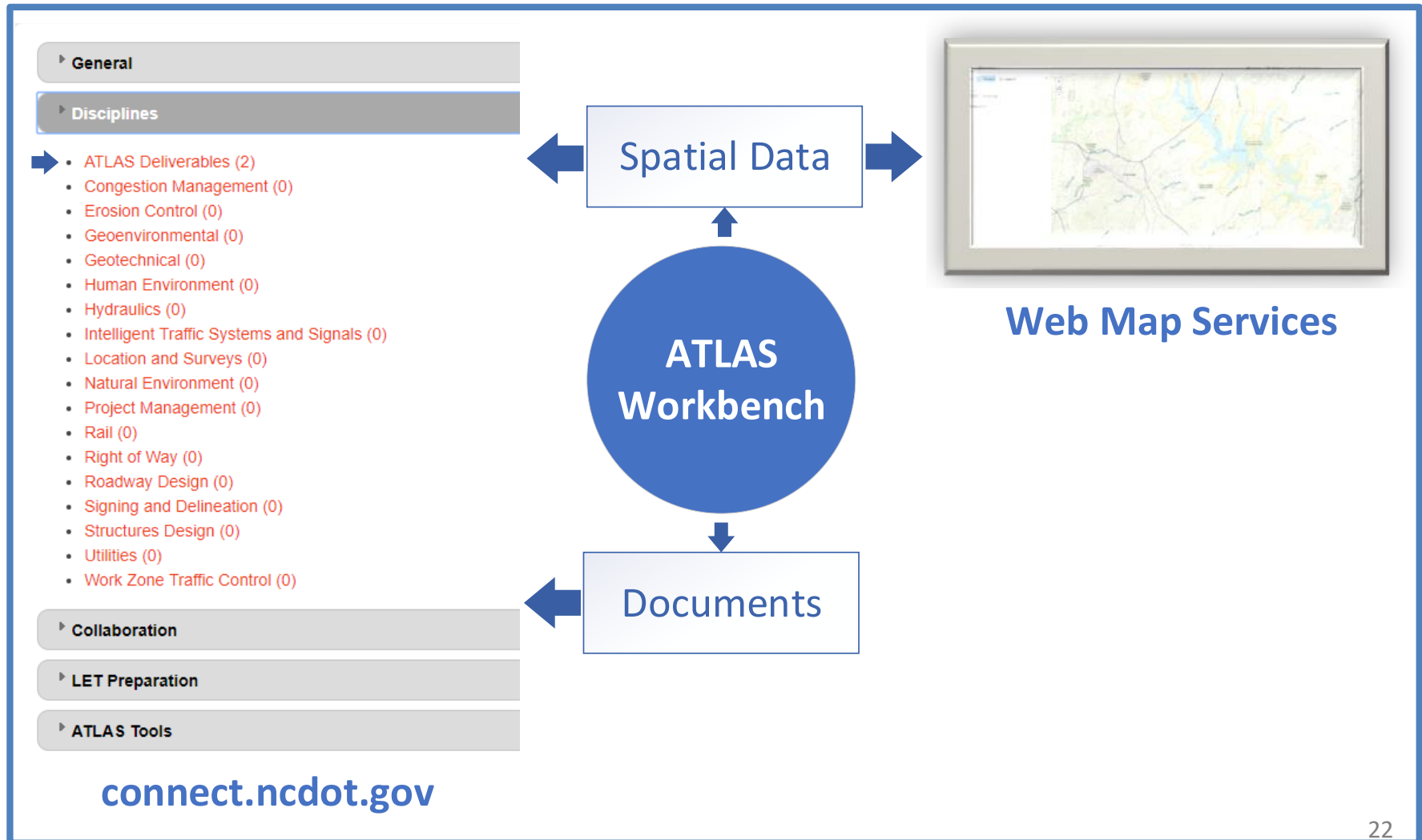


# Workbench – Snowball Effect





# Workbench – Data Flow





# Applications – Demo



# The Future of ATLAS

- ATLAS 1.0 and 1.1 address immediate needs in Project Development
- ATLAS 2.X increases support for Business Units contributing to Project Development and begins to tie together enterprise systems such as SAP and Agile Assets
- ATLAS 3.X broadens scope to assist enterprise integration across the agency



# Questions?

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