NOACA’s DART:
Web GIS Tools for Transportation Planning

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NOACA DART: Data Analysis and Reporting Tool

- NOACA: Northeast Ohio Areawide Coordinating Agency
- Genesis of the DART Project
- DART: a planning and analysis tool for transportation
- DART Workflow
  - Select/Create Analysis Area
  - Choose Analysis Data
  - Run Analysis
  - Generate Reports and Output Data
ABOUT NOACA

• NOACA is the federally designated metropolitan planning organization (MPO) for Northeast Ohio
• Conducts multimodal transportation and air quality-related transportation planning for Cuyahoga, Geauga, Lake, Lorain and Medina counties
• Functions as the “areawide” water quality planning agency for the region

“NOACA will STRENGTHEN regional cohesion, PRESERVE existing infrastructure, and BUILD a sustainable multimodal transportation system to SUPPORT economic development and ENHANCE quality of life in Northeast Ohio”
ABOUT NOACA

• Governed by 45 elected and appointed officials
• Staff of 45 employees, including planners, engineers, administrative & support staff
• Works with many planning partners including, Federal Highway & Transit Administrations, ODOT, Ohio EPA, county engineers, transit agencies & local governments

“NOACA will STRENGTHEN regional cohesion, PRESERVE existing infrastructure, and BUILD a sustainable multimodal transportation system to SUPPORT economic development and ENHANCE quality of life in Northeast Ohio”
• While the steel and manufacturing still exist to some extent, the region has undergone an incredible revival
• New economic powerhouses include health care and academics
• The region is currently boasting more than $17 billion in capital developments
• The population of Downtown Cleveland is growing rapidly: 50% between 2000 and 2010
• Lake Erie remains one of Northeast Ohio’s greatest assets
Genesis of DART Project

DART

• NOACA has been working with ESRI based GIS products for over 20 years
• Relying heavily on these products and regional data as part of the planning and decision making process
• In 2010 NOACA created its first online GIS site using the Flexviewer Developer
• NOACA redeveloped its “GIS Portal” online map application in 2015 as technology shifted towards JavaScript using Web App Builder for ArcGIS
• NOACA’s “GIS Portal” site is a way for stakeholders to explore and interact with specific NOACA datasets they could not find anywhere else
• Limited in its analysis capabilities
Genesis of DART Project

DART

- In 2016 NOACA allocated funding to the creation of a “Big Data” engine to bring all regional data and planning together into one application.
- After the initial conception of the “Big Data” engine the project’s scope was too vast for the available budget.
- The DART concept was adopted offering a redefined scope, focusing more on localized data analysis and data mining instead of encapsulating the broader “Big Data” concept.

DART Mission:

- As a Metropolitan Planning Organization, NOACA is a valuable source of Geographic Information for the counties, communities, businesses and individuals from within the area it serves. In order to make this data easier to find, consume and analyze NOACA is creating a Data Analysis & Reporting Tool (DART). This tool will aggregate data and support the ability for users to query, analyze and output data. The tool will support decision makers with data summaries on transportation, land use, socio-economic and population demographics within a specific geography.
Project Milestones

- System Analysis
- GIS Data Inventory and Gap Analysis
- Database Design
- Data Procurement
- Interface Design
- Applications Development
- Testing
- Revisions
- More Revisions
- And More Revisions
- Public Launch
DART: Technology

• ArcGIS Enterprise
  - Portal
  - ArcGIS Server
• Esri JavaScript API 3.20
• Bootstrap and jQuery
• ASP.NET and C#
• MS SQL Server & SQL Spatial
• Custom API
DART: Technology

- Accessed via NOACA Portal or independently
- Map data published via NOACA ArcGIS Server
- Leverage Esri JS API for mapping interface
- Custom API for data access
  - Dart analysis can be integrated into other applications
  - Abstracts database from the web interface
Data

- Design robust database model
- Implement Data standards
- Configurable Database
- SQL Spatial GIS queries and analysis
- Block group level demographics database
DART Workflow

1. Select/Create Analysis Area
2. Choose Analysis Data
3. Run Analysis Reports
4. Generate Output Data
1. Select/Create Analysis Area

Create Analysis Area

Quick Search
Enter a place or location to search for:
Place name or address

Select Analysis Area on Map

Draw Analysis Area

Advanced Search

Next
1. Select/Create Analysis Area

Create Analysis Area

Quick Search

Select Analysis Area on Map

Select one of the map layers below, then click a boundary or point feature on the map for your analysis area.

- Municipalities
- Zip Codes
- Congressional Districts
- Senate Districts (OH)
- House Districts (OH)
- Cleveland Wards
- Cleveland Neighborhoods

Feature selected: Brooklyn Heights

Clear

Draw Analysis Area

Advanced Search

Next
1. Select/Create Analysis Area

Create Analysis Area

Quick Search

Select Analysis Area on Map

Draw Analysis Area

Create your own area for analysis in one of three ways:
- Select a point with a buffer distance
- Draw a line with a buffer width
- Draw an area on the map

Buffer point by: 2000 Feet ▼ Max 5 miles

Advanced Search
1. Select/Create Analysis Area

Advanced Search

Optional use these advanced tools to define a custom search area by uploading a shapefile or searching for feature using a SQL attribute search. Click here for details on using these tools.

Upload Custom Shapefile

Select or drag & drop zipped shapefile

Drag zip file here

Browse for zip file...

Note:
- Zip file must contain at least 3 files, all with same name except for extension: .shp, .shx and .dbf files.
- Coordinates must be in latitude/longitude (WGS84), or contain a projection (.prj) file.
- Limit of 1 MB on uploaded zip file.
- Zip file must not require any password.
- Only the first 20 features will be read from the shapefile.
- Upload begins immediately after selecting/dropping file!

Search by Attribute

Next
2. Choose Analysis Data

Select Data to Analyze

- Expand All
- Select All Data
- Next

### Regional Cohesion
- Urban Core Communities
- Long Range Transportation Plans
- Transportation Improvement Plan (TIP) Projects
- Past Transportation Projects
- Transportation for Livable Communities Initiative (TLCI) Projects
- Capital Improvement Plans (CIP)
- Technical Assistance Projects

### Preserve Existing Infrastructure
- Bridge Inventory
- Pavement Condition Rating (PCR)
- Transportation Model Volumes
- Transportation Model Capacity
- Functional Class

### Build a Sustainable Multimodal Transportation System
- Biking and Walking
- Transit
- Freight Summary
- Intermodal Connectors
3. Run Analysis Reports
3. Run Analysis Reports

Data analyzed by study area – charts – map layers – links
3. Run Analysis Reports

**Employment data**
3. Run Analysis Reports

Dynamic demographic mapping
3. Run Analysis Reports

Land use – summary/chart/map
4. Generate Output Data

Support Economic Development
Your Analysis Area:
User-drawn polyline (.5 miles buffer)
2.30 Sq Miles (5.94 Sq Km, 1,469 Acres)
11,208 People

- Employment

- Socioeconomic Summary

Download Report
Export as: PDF
Topics: Excel (CSV), Shapefile
Include:
- Tables
- Charts
- Map

Click to download your report
4. Generate Output Data

NOACA DART Analysis Report
Support Economic Development

User-drawn polyline (.5 miles buffer)
Area: 2.30 Sq Miles (5.94 Sq Km, 1,469 Acres)

Employment
Employers

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4. Generate Output Data

### CSV Data

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Other DART Features

- Layer controls
- Legend
- Identify
- Basemaps
Demo
Supporting Text