Illinois State Police - NG911 Workforce Development Plan

July 2024



Executive Summary

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The Office of the Statewide 9-1-1 Administrator, as part of the Department of the Illinois State Police, is responsible for developing, implementing, and overseeing a uniform statewide 9-1-1 system in line with Next Generation 9-1-1 (NG9-1-1) guidelines.

Part 1325 - NG9-1-1 Data Requirements/GIS Standards as defined in the Department's Administrative Rules applies all Local Data Stewards and Data Maintainers.

Vision Statement

Change how GIS data is used and managed for the NG9-1-1 initiative in the State of Illinois.

Primary GIS roles associated with the Statewide NG911 initiative:

- **911 Administrator** Oversees the general GIS projects with each City, County or Intergovernmental Cooperative.
- Local Data Steward The Local Data Steward is the person responsible for assuring maintenance is performed on the GIS data for the agency. The Local Data Steward is on staff with the City, County, or Intergovernmental Cooperative responsible for the GIS data for the 911 authority.
- **Data Maintainer** The Data Maintainer is the primary person responsible for performing maintenance of the GIS data for their agency.

Esri Training Pass

The following role-based learning plans are comprised of instructor-led and self-paced training resources available through Esri. All self-paced resources are either free or included with your Esri software subscription. Instructor-led training options provide a deeper dive with certified instructors trained in adult learning principles. These course options do come with an additional investment, which can be procured through a prepaid vehicle called the Esri Training Pass.

Purchasing Instructor-led Training

Either per class by Purchase Order or by Training Pass. The Esri Training Pass is a convenient, onestop method to purchase and manage GIS training–purchase the number of training days you need, then access training when you need it. For example: one training day = one person in one day of an instructor-led class.

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All 9-1-1 Authorities must:

A) Prepare and continuously maintain the following GIS layers to support NG9-1-1 geospatial routing:

1) Road Centerlines - Represents the estimated centerline of a real-world roadway.

2) Site/Structure Address Points – Represents the location of a site or structure, or the location of access to a site or structure. Together, with Road Centerlines, they pinpoint where responders need to go.

3) PSAP Boundaries - Outlines the geographic service area of a PSAP that has primary responsibilities for an emergency request and, in the NG9-1-1 environment, defines which PSAP will answer the emergency call.

4) Law Enforcement Emergency Service Boundary - Defines the geographic area for law enforcement providers and determines which law enforcement provider responds.

5) Fire Emergency Service Boundary - Defines the geographic area for fire providers and determines which fire provider responds.

6) EMS Emergency Service Boundary - Defines the geographic area for EMS providers and determines which EMS provider responds.

7) Provisioning Boundary - defines the 9-1-1 Authority's area of GIS data provisioning responsibility. Boundary information must be agreed to by all adjoining provisioning providers and cannot contain unintentional gaps or overlaps.

B) Rectify map borders, compare the ALI Database to GIS data to improve map accuracy and geospatial routing and coordinate with neighboring jurisdictions to resolve discrepancies to maintain continuity.

C) Validate and synchronize data ensuring a match rate of 98% between the ALI database and the GIS data and work toward addressing the remaining 2% long term by reviewing, validating, and resolving unmatched records where applicable; and

D) Adopt the Illinois NG9-1-1 GIS Data Model which requires including Postal Community and Zip Code fields.

E) Submit NG9-1-1 Data to the State's Hub and Next Generation Core Service provider.

F) Ensure that the 9-1-1 System Manager completes the IL State Police NG9-1-1Learning Plan as defined for the role.

G) Designate a Local Data Steward that is responsible for ensuring that GIS data is maintained for the 9-1-1 Authority. The Local Data Steward must complete the IL State Police NG9-1-1 – Learning Plan as defined for the role.

 The Local Data Steward must be a staff person for the City, County or 9-1-1 Authority responsible for the 9-1-1 Authority's GIS data, even if a vendor manages the actual data maintenance.
PSAPs may also designate a secondary Local Data Steward.

H) Designate at least one Data Maintainer, who performs the actual maintenance of the GIS data for the 9-1-1 Authority. Each Data Maintainer is responsible for submitting regular updates to the GIS Hub.

1) The Data Maintainer must coordinate updates with real-world changes at least quarterly via the State Hub. GIS data may be updated more frequently as changes occur at the discretion of the 9-1-1 Authority especially in geographic areas with rapid development to ensure 9-1-1 calls in newly developed areas are directed to the correct PSAP.

2) The Data maintainer must complete the IL State Police NG9-1-1 - Learning Plan as defined for the role.

3) The Local Data Steward may also serve as the Data Maintainer so long as the person fulfilling the role completes both IL State Police NG9-1-1 - Learning Plans as defined for the roles.

911 ADMINISTRATOR

The 911 administrator oversees the general GIS projects within each City, County, or Intergovernmental Cooperative. The 911 Administrator will not be responsible for any hands-on development within the Esri platform, but a good knowledge base of GIS and the toolset is recommended. **Recommended Training for the 911 Administrator:**

Using ArcGIS for Public Safety Workflows

Instructor-led: 2-day course

• This course introduces ArcGIS Pro and GIS concepts that complement public safety workflows. Course workflows and exercises use realistic public safety scenarios.

Self-paced training: GIS Basics

- **<u>GIS Basics</u>** (Esri Academy Web Course)
 - Course introduces fundamental components and capabilities of GIS.
- Introduction to Spatial Data (Esri Academy Web Course)
 - Learn about the foundational concepts of spatial data, i.e. data that includes location.
- <u>ArcGIS Online Basics</u> (Esri Academy Web Course)
- ArcGIS Pro Basics (Esri Academy Web Course)
 - This course introduces basic ArcGIS Pro functionality.
 - Comprehensive ArcGIS Pro learning plan available by request.

Self-paced training: ArcGIS Hub

- Using ArcGIS Hub for the PSAP (Esri Blog)
 - Short blog article and video providing an overview of ArcGIS Hub for the PSAP.
- ArcGIS Hub: An Introduction (Esri Video)
 - Introductory overview of ArcGIS Hub.
- **<u>GIS 101: NG911</u>** (YouTube Video)
 - National States Geographic Information Council (NSGIC) short video illustrating the GIS impact on the NG911 initiative.

Additional resources:

• <u>Emergency Communications Website</u> - GIS helps 911 systems and Public Safety Answering Point (PSAP) personnel identify dispatchable addresses more quickly during unfolding events. The ArcGIS platform accurately displays available resources and provides first responders and call centers with more reliable routes, reducing emergency response times and saving lives.

LOCAL DATA STEWARD

The Local Data Steward is the person responsible for assuring maintenance is performed on the GIS data for the agency. The Local Data Steward is a staff person for the City, County or Intergovernmental Cooperative responsible for the GIS data for the 9-1-1 Authority.

We have several training resources available for the data steward to leverage during the NG911 project. For this role, an understanding of GIS is recommended.

Recommended Training for the Local Data Steward:

Using ArcGIS for Public Safety Workflows

Instructor-led: 2-day course

• This course introduces ArcGIS Pro and GIS concepts that complement public safety workflows. Course workflows and exercises use realistic public safety scenarios.

Self-paced training: GIS and Data Basics

- **<u>GIS Basics</u>** (Esri Academy Web Course)
 - Course introduces fundamental components and capabilities of GIS.
- ArcGIS Pro Basics (Esri Academy Web Course)
 - This course introduces basic ArcGIS Pro functionality.
 - Extensive ArcGIS Pro learning plan available by request.
- Introduction to Spatial Data (Esri Academy Web Course)
 - Learn about the foundational concepts of spatial data, i.e. data that includes location.
- <u>Getting Started with Data Management</u> (Esri Academy Web Course)
 - Learn to identify key GIS data characteristics and identify ways the data is stored and accessed.
- Querying Data Using ArcGIS Pro (Esri Academy Web Course)
 - Learn the building blocks of a query expression and how to select features that meet one or more attribute criteria.

Additional resources:

- <u>Emergency Communications Website</u> GIS helps 911 systems and Public Safety Answering Point (PSAP) personnel identify dispatchable addresses more quickly during unfolding events. The ArcGIS platform accurately displays available resources and provides first responders and call centers with more reliable routes, reducing emergency response times and saving lives.
- **NENA Standards and Documents** NENA, an <u>ANSI-accredited Standards Developer</u>, produces several classes of documents that are published by NENA as an information source for the industry.

DATA MAINTAINER (EXPERIENCED USERS)

The Data Maintainer is the primary person who will be performing the actual maintenance of the GIS data for the agency.

We have several resources available for the data maintainer to leverage during the NG911 project. The training will consist of instructor led training followed by supplemental web courses on various topics. **Recommended training for the Experienced Data Maintainer:**

Migrating from ArcMap to ArcGIS Pro

Instructor-led: 2-day public course

• Learn ArcGIS Pro terminology and concepts and how to efficiently complete a variety of tasks related to mapping, editing, analyzing, and sharing geospatial data and resources.

Creating and Editing Data with ArcGIS Pro

Instructor-led: 2-day public course

• You will get ample hands-on practice with a variety of ArcGIS Pro tools that streamline the editing process and decrease the potential for errors when updating your GIS database.

Managing Geospatial Data in ArcGIS

Instructor-led: 2-day public course

• This course takes you on an in-depth exploration of the geodatabase, the native data storage format for ArcGIS software. Best practices to create a geodatabase to centrally store and efficiently manage your organization's authoritative geospatial data are covered. We recommend this course for setting up and working with geodatabase and map topology rules, attribute rules, subtypes, domains, and contingent values.

Self-paced training: ArcGIS Online

- ArcGIS Online Basics
- <u>Creating and Sharing GIS Content Using ArcGIS Online</u>
- Self-paced training: ArcGIS Pro Coordinate Systems and Mapping
 - Introduction to Coordinate Systems
 - Basics of Geographic Coordinate Systems
 - Displaying Coordinate Data on a Map
 - Map Layer Basics
 - <u>Sharing Maps and Layers with ArcGIS Pro</u>

Self-paced training: ArcGIS Pro - Address Locators and Geocoding

- Location-Enabling Data
- Mapping Addresses and Places
- ArcGIS Pro: Geocoding Best Practices (Esri Video)
- Geocode Addresses Using Your Own Locator in ArcGIS Pro (Esri Video)
- <u>Geocoding with ArcGIS Pro</u> (ArcGIS Pro Documentation)
 - o <u>Geocoding Tutorials</u> (ArcGIS Pro Documentation)
 - o <u>Create Locator Tutorials</u> (ArcGIS Pro Documentation)

Self-paced training: ArcGIS Pro - Data Management

- Getting Started with Data Management
- Editing Basics in ArcGIS Pro
- Maintaining Spatial Data Integrity Using ArcGIS Pro
- Maintaining Attribute Data Integrity Using ArcGIS Pro
- Introduction to Data Engineering
- Self-paced training: ArcGIS Pro 3D Visualization
 - Introduction to 3D Data
 - Introduction to 3D Visualization

DATA MAINTAINER (NEW USERS)

The Data Maintainer is the primary person who will be performing the actual maintenance of the GIS data for the agency.

We have several resources available for the data maintainer to leverage during the NG911 project. The training will consist of instructor led training followed by supplemental web courses on various topics. **Recommended training for the New Data Maintainer:**

ArcGIS Pro: Essential Workflows

Instructor-led: 3-day public course

• Learn ArcGIS Pro terminology and concepts and how to efficiently complete a variety of tasks related to mapping, editing, analyzing, and sharing geospatial data and resources.

Creating and Editing Data with ArcGIS Pro

Instructor-led: 2-day public course

• You will get ample hands-on practice with a variety of ArcGIS Pro tools that streamline the editing process and decrease the potential for errors when updating your GIS database.

Managing Geospatial Data in ArcGIS

Instructor-led: 2-day public course

• This course takes you on an in-depth exploration of the geodatabase, the native data storage format for ArcGIS software. Best practices to create a geodatabase to centrally store and efficiently manage your organization's authoritative geospatial data are covered. We recommend this course for setting up and working with geodatabase and map topology rules, attribute rules, subtypes, domains, and contingent values.

Self-paced training: ArcGIS Online

- ArcGIS Online Basics
- <u>Creating and Sharing GIS Content Using ArcGIS Online</u>
- Self-paced training: ArcGIS Pro Coordinate Systems and Mapping
 - Introduction to Coordinate Systems
 - Basics of Geographic Coordinate Systems
 - Displaying Coordinate Data on a Map
 - Map Layer Basics
 - <u>Sharing Maps and Layers with ArcGIS Pro</u>

Self-paced training: ArcGIS Pro - Address Locators and Geocoding

- Location-Enabling Data
- Mapping Addresses and Places
- ArcGIS Pro: Geocoding Best Practices (Esri Video)
- <u>Geocode Addresses Using Your Own Locator in ArcGIS Pro</u> (Esri Video)
- <u>Geocoding with ArcGIS Pro</u> (ArcGIS Pro Documentation)
 - o <u>Geocoding Tutorials</u> (ArcGIS Pro Documentation)
 - o <u>Create Locator Tutorials</u> (ArcGIS Pro Documentation)

Self-paced training: ArcGIS Pro - Data Management

- Getting Started with Data Management
- Editing Basics in ArcGIS Pro
- Maintaining Spatial Data Integrity Using ArcGIS Pro
- Maintaining Attribute Data Integrity Using ArcGIS Pro
- Introduction to Data Engineering
- Self-paced training: ArcGIS Pro 3D Visualization
 - Introduction to 3D Data
 - Introduction to 3D Visualization

Self-paced training: ArcGIS Online topics covered.

- ArcGIS Online Basics (Esri Academy Web Course)
 - Understanding ArcGIS Online components.
 - What is ArcGIS Online?
 - ArcGIS Online sign-in options.
 - What is an ArcGIS Online organization?
 - Exploring ArcGIS Online content.
 - ArcGIS Online content types.
 - Operational layers and basemap layers.
 - Types of web layers.
 - Identifying layer functions.
 - Explore an item page.
 - Using web maps.
 - Sources of layers.
 - Levels of sharing.
 - Choosing an appropriate sharing level.
 - o Identifying ArcGIS Online capabilities for organizations.
 - ArcGIS Online capabilities.
 - Explore a 3D scene.
 - Using groups.

<u>Creating and Sharing GIS Content Using ArcGIS Online</u> (Esri Academy Web Course)

- What is ArcGIS Online?
 - ArcGIS Online capabilities.
 - ArcGIS Online roles.
- o Content.
 - What is a web layer.
 - Hosted web layers.
- o Creating a web map.
 - What is a web map?
- Sharing ArcGIS Online items.
 - Sharing options.
 - Sharing your items.

Self-paced training: ArcGIS Pro - Coordinate Systems and Mapping topics covered.

- Introduction to Coordinate Systems (Esri Academy Web Course)
 - Why maps need coordinate systems.
 - Coordinate systems in maps.
 - The shape of the earth.
 - Modeling the shape of the earth in GIS.
 - Geographic and projected coordinate systems.
 - Introduction to geographic coordinate systems.
 - Geographic coordinate systems.
 - Components of a geographic coordinate system.
 - Using the correct geographic coordinate system.
 - Introduction to projected coordinate systems.
 - Projected coordinate systems.
 - Projection types.
 - Map distortion.
 - Projections and map distortion.

Self-paced training: ArcGIS Pro - Coordinate Systems and Mapping topics cont.

- Basics of Geographic Coordinate Systems (Esri Academy Web Course)
 - The shape of the earth.
 - The earth's shape is an ellipsoid.
 - The earth's shape is a spheroid.
 - Why are different spheroids needed?
 - When should you use a sphere?
 - Establishing location.
 - Creating the graticule.
 - Locating features from north to south.
 - Locating features from east to west.
 - Describing a location.
 - Understanding decimal degrees.
- Displaying Coordinate Data on a Map (Esri Academy Web Course)
 - Converting coordinate data to show location.
 - Basics of x,y data
 - Table requirements for x,y data.
- Map Layer Basics (Esri Academy Web Course)
 - o Introducing map layers.
 - Basemap and operational layers.
 - Map layer properties.
 - Explore layer properties.
 - Grouping layers.
 - o Layer display.
 - Map layer symbology.
 - Establishing visual hierarchy.
 - Explore scale ranges.
 - Definition queries.
- Sharing Maps and Layers with ArcGIS Pro (Esri Academy Web Course)
 - Sharing content using ArcGIS Pro
 - Requirements for sharing map content.
 - Roles and sharing permissions.
 - Deciding how the content will be used.
 - What types of content can be shared?
 - Determine optimal parameters for sharing content.
 - Sharing map content for analysis
 - Considerations for sharing packages.
 - Analyzing map content for errors.
 - Attachments.
 - Sharing map content for generating apps.
 - Authoring web maps.
 - Sharing web maps and web layers.
 - Web layer configuration.
 - Monitor job status.
 - Sharing map content for creating a map series.
 - Sharing project packages.
 - Sharing files.

Self-paced training: ArcGIS Pro - Address Locators and Geocoding Topics Covered

- Location-Enabling Data (Esri Academy Web Course)
 - Questions that can be answered by locating features on a map.
 - Placing features on a map.
 - What is geocoding?
 - What questions can be answered with geocoding?
 - Methods for locating features on a map.
 - Different ways to locate features.
 - Comparing methods.
- Mapping Addresses and Places (Esri Academy Web Course)
 - Using a locator to find an address.
 - Breaking down addresses.
 - Geocoding.
 - Locators.
 - Using a locator to find a place by its name.
 - Place-name locators.
 - Identifying place-names.
 - Composite locators.
- ArcGIS Pro: Geocoding Best Practices (Esri Video)
- <u>Geocode Addresses Using Your Own Locator in ArcGIS Pro</u> (Esri Video)
- <u>Geocoding with ArcGIS Pro</u> (ArcGIS Pro Documentation)
 - o **<u>Geocoding Tutorials</u>** (ArcGIS Pro Documentation)
 - o <u>Create Locator Tutorials</u> (ArcGIS Pro Documentation)

Self-paced training: ArcGIS Pro - Data Management Topics Covered

- Getting Started with Data Management (Esri Academy Web Course)
 - Identifying key characteristics of GIS data
 - How is GIS data structured?
 - Identifying the differences between raster and vector data.
 - How do coordinate systems affect feature locations on a map?
 - Understanding how metadata describes GIS data.
 - Understanding common geospatial editing tasks.
 - Maintaining data integrity.
 - Accessing and storing GIS Data
 - Using ArcGIS Online in a GIS project.
 - Using non-GIS data in a GIS.
- Editing Basics in ArcGIS Pro (Esri Academy Web Course)
 - Creating features and attributes.
 - Editing templates.
 - Snapping.

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- Workflow: Creating features.
- Modifying existing features and attributes.
- Maintaining Spatial Data Integrity Using ArcGIS Pro (Esri Academy Web Course)
 - Creating group templates for spatial integrity.
 - Purpose of group templates.
 - Group templates and spatial integrity.
 - Process for creating a group template.
 - Modifying features using map topology.
 - Map topology.
 - Explore how features translate to topological elements.
 - Role of cluster tolerance.
 - How map topology facilitates spatial integrity.
 - Creating a geodatabase topology for spatial integrity.
 - Geodatabase topology's using in spatial integrity.
 - Effect of spatial data integrity on geodatabase topology.
 - Identify topology rules.
- Maintaining Attribute Data Integrity Using ArcGIS Pro (Esri Academy Web Course)
 - Subtypes for attribute validation.
 - Using subtypes for attribute validation.
 - How a relationship class uses subtypes.
 - Contingent values for attribute validation.
 - Explore the purpose of domains.
 - Domain types.
 - Contingent values and attribute validation.
 - Creating attribute rules.
 - Explore types of attribute rules.
 - How do attribute rules facilitate attribute integrity?
 - Choosing an attribute rule.

Self-paced training: ArcGIS Pro - Data Management cont.

- Introduction to Data Engineering (Esri Academy Web Course)
 - Evaluating data quality using data engineering.
 - Data engineering workflow.
 - Evaluating your data.
 - Discover statistics for data quality.
 - Using charts for data engineering.
 - Visualizing data with charts.
 - Chart types.
 - Examine chart modifications.
 - Preparing data for use through data engineering.
 - Categories of data preparation methods.
 - Explore data preparation methods.
 - Choosing the appropriate data preparation method.

Self-paced training: ArcGIS Pro - 3D Visualization and Analytics

- Introduction to 3D Data (Esri Academy Web Course)
 - o 3D data basics.
 - Z-values.
 - Vertical coordinate systems.
 - Surfaces.
 - Functional surfaces.
 - What are functional surfaces?
 - Rasters.
 - TINs.
 - Distinguishing TINs and rasters.
 - o 3D features.
 - Vector features in 3D.
 - Meshes.
 - Multipatch features.
 - Point clouds.
 - 3D data types.
 - Introduction to 3D Visualization (Esri Academy Web Course)
 - Benefits of visualizing data in 3D.
 - Using 3D data visualizations in a GIS.
 - Visualizing data in different ways.
 - Effects of modifying height variables.
 - Elevation types for a layer.
 - Determining elevation types.
 - Cartographic offset and vertical exaggeration.
 - Visualizing data using extrusion.
 - Types of extrusion.
 - Extrusion methods.
 - Applying visual effects to 3D scenes.
 - 3D symbology.
 - Visual enhancements using different scene view modes.

TYPES OF ESRI TRAINING RESOURCES

Overview

Because ArcGIS users have diverse educational backgrounds and workplace responsibilities, the courses below provide distinct entry points into the ArcGIS platform while also supporting a progressive approach to learning key workflows. Each course teaches knowledge and skills that will enable the staff member to move forward with ArcGIS. Please note that these written guides can become out-of-date quickly. Always check <u>https://www.esri.com/training/</u> for the latest in training resources.

Instructor-led courses are typically 2-3 days in length, with a few exceptions. They may be conducted at an Esri training facility, through a live online classroom, or held privately at a customer site. Private classes may also be followed up by a day of coaching to address the organization's specific learning requirements. ** See note regarding reschedules and cancellations at the bottom of this page.

To prepare for attending an Instructor-led online event, please go to <u>Online Classroom</u> and then click on the Attending Online tab.

Free e-learning options

With your ArcGIS licenses current under maintenance, you have <u>unlimited access</u> to hundreds of self-paced e-learning resources. To access the e-learning, you must be given access; access can be given:

- 1. If the user has an ArcGIS Online named user login, the ArcGIS Online administrator can enable Esri access in the Manage Member options.
- 2. From your organizations My Esri site, you can invite users to access e-learning with an email.
- 3. Users can request access when they click on an e-learning resource that is locked: ^{A Requires Maintenance}. Once given access the padlock will be unlocked.

Options for self-paced e-Learning through web courses and training seminars are included in this document. All Esri customers with a qualifying product that is current on maintenance have unlimited access to these resources.

Web courses include:

- Hands-on practice with ArcGIS (local access to ArcGIS software is often required)
- Demonstrations and interactive activities
- Conceptual material
- Course exams to assess learning
- Certificate of Completion

Training seminars are pre-recorded presentations that include software demonstrations on various solutions. Seminars are offered live on a regular basis. You can go to <u>Update My Esri Subscriptions</u> to receive email notification on upcoming events.

Massive Open Online Courses (MOOCs) are free online classes that offer a convenient, effective, and fun way to keep up with the fast-paced developments in the ArcGIS platform. During the length of the course – typically 6 weeks – the course materials are available 24/7 and require only a couple of hours of study per week. A certificate is available upon completion.

**** Esri cancellation policy for instructor-led courses**: Please provide written notification to Esri's Customer Service department at <u>service@esri.com</u> of any student transfer, cancellation, or substitution requests 3 business days (holidays excluded) before the scheduled start date of the class. Please see <u>Esri Terms & Conditions</u> for more information.