

Lesson 4: Responding to Common Requests

Lesson Overview

In Lesson 3, you learned how to get set up for your work as a GIS specialist. This lesson presents information about the GIS products you will be asked to produce and provides an overview of the workflow process you will follow as you produce these products. It also provides an overview of the quality assurance/ quality control process used to ensure the production of high quality GIS products.

This lesson should take approximately 15 minutes to complete.

Learning Objectives

By the end of this lesson, you will be able to:

- Identify the GIS products commonly produced during an incident
- Recognize the GIS product workflow process
- Recognize the quality assurance/quality control process used to ensure the quality of GIS products

Tying It Back to the Job

This lesson aligns with the following PTB Behaviors/Activities:

- Manage geospatial data
- Generate geospatial products
- Comply with established policy and protocols
- Provide geospatial coordination and customer service

Key GIS Products During a Disaster

As you learned in Lesson 3, the products produced during a disaster will vary based on the type of disaster, the stage of the disaster, and the functional area that you are assigned to. There are, however, a number of common GIS products you may be asked to produce. These include:

- Incident-specific maps
- Reference maps
- Quantitative/qualitative thematic maps
- Interactive map products

Incident-specific maps

Incident-specific mapping involves the development and production of maps that reflect real-time information that is related to the incident. This could be evacuation data or locations of

responding elements and resources. This real-time information is often integrated with referential demographic or geographic information to make a product that is more operationally useful.

For example, satellite imagery derived for damage assessment data might be combined with road overlays to identify potentially problematic lines of ground transportation that could be of extreme interest to decision makers when planning field activities. Some of the more common incident-specific maps include:

- Declaration Status Maps show the counties or municipalities designated by a disaster declaration.
- Incident Area Maps are used to indicate the levels of damage, hazard specific information, and the incident area for given jurisdictional areas. This can be used for the ICS 201 form or Incident Action Plan map.
- Resource Tracking Maps are used to show the location of emergency response teams and commodities, facilities, Mobile Disaster Recovery Centers (MDRC) etc. and their current status, whether deployed, available for deployment or on rotation.
- Facility Maps – Facilities such as the location and identification of staging areas can be an important map, particularly in large scale events where large quantities of materials and supplies are being brought into the disaster areas.

Reference maps

Reference Mapping involves the production of maps graphically reflecting referential statistics or information. These could include jurisdictional boundaries, congressional districts, population demographic breakdowns, locations of residential, commercial, industrial, and governmental facilities, income and economic information, infrastructure, etc. Community Relations often requests the development of a visual demographic profile of a particular area by combining different types of information such as age and number of people living in different types of housing stock, or income and rental properties.

Some of the more common reference maps include:

- Political jurisdiction maps
- Geographic and demographic maps
- Census products
- Common critical facilities

Quantitative and qualitative thematic maps

Thematic maps are designed to communicate more abstract quantitative or qualitative observations of entities or areas within and surrounding the subject.

Individual Assistance grant applicant density grid analysis is one of the most common thematic maps. To make the results more meaningful, the applicant damaged address points may be weighted based on their grant funding amounts. This dollars-per-square-mile approach quickly identifies neighborhoods receiving the most FEMA assistance. This generalization of data is also a technique for displaying information protected under the Privacy Act of 1974 (described further in Lesson 6) without identifying individuals.

Interactive map products

Interactive maps like web mapping systems and GIS viewer clients allow users to interact directly with GIS data. Some interactive map options are available to anyone, while others require a login. Other options require data and other manipulation by the GIS Unit to be used.

FEMA has developed several web mapping viewers that allow users to view and manipulate data. These viewers display FEMA's geospatial data, as well as other agencies' data, to allow for the analysis and demonstration of operationally relevant information to be shared among multiple operation centers and teams. Other similar applications exist at the State and local level to support their emergency management efforts.

Interactive maps facilitate collaborative planning, assist in achieving shared situational awareness, and facilitate management decision-making.

Responding to Project Requests

While you have no doubt produced GIS products before, you may not be familiar with the FEMA GIS production process. At a high level, the FEMA GIS workflow process includes the following phases:

- Planning & Direction
- Project Assignment
- Exploration
- Production
- Dissemination

You will learn more about each phase throughout this lesson.

PHASE 1: Planning & Direction

The GIS production process starts with the receipt of a GIS request by the GIUL (for a large incident), or the GIMG (for a smaller incident). The request may be submitted either in hardcopy format or through a web-based system.

Once received, the GIUL/GIMG uses his/her expertise to:

- Determine the feasibility of the project request
- Verify the project request against existing products
- Determine restrictions/security issues related to the project request

The GIUL/GIMG then prioritizes the project request, identifies the best person to complete the request, and assigns the request to a GIS Specialist for completion.

Determine the feasibility of the project request

Not all product requests may be feasible given resource capacity, existing projects, and the timeline. The GIUL/GIMG has to weigh the feasibility of the project request and decide whether it should be taken up.

Verify the project request against existing products

The GIUL/GIMG has to determine whether the project request overlaps with an existing request. If so, it would save resources to modify or copy an existing product than to spend time creating a new product.

Determine restrictions/security issues related to the project request

The GIUL/GIMG needs to be aware of all project request constraints so that he/she can decide whom to assign as the GISP for the project, ensure security considerations are not breached, and can produce a product that meets all the necessary requirements.

PHASE 2: Project Assignment

So now you've received an assignment. What should you do next?

When you receive a project request from your manager, make sure you gather the necessary information. Your manager may also ask you to talk directly to the customer in order to gather additional information. You should ensure that, at the minimum, you:

- Clearly understand the assignment
- Know when the assignment needs to be completed

Certain high-priority projects will need to be completed immediately. Make sure you understand, and are able to meet, required deadlines. Managing customer expectations along with establishing time and resource requirements for production is a key step in defining a project's scope and effectively supporting the mission.

PHASE 3: Exploration – Data Collection

The next phase in the production process is exploration. This phase includes both data collection and initial data analysis.

You should begin collecting data as soon after receiving the project request as possible. Talk to your manager about existing resources and find out where to go to gather additional data. Your manager may redirect you to another section within FEMA, or ask you to interface directly with the customer.

You may find that data is already available from internal or external sources or that, in some cases it is not available and needs to be developed. In all cases, it is important to work with the customer to ensure that the data used is as accurate and current as possible.

PHASE 3: Exploration – Initial Data Analysis

During the initial data review, you will examine the data to determine the method to satisfy the customer's request.

When analyzing data, you should:

- Write down what you think the product should show
- Describe what you are mapping (the data)
- Describe what the data tells you (the distribution)
- Note any special considerations such as outliers, high or low values, or missing values

PHASE 4: Production—Building the Product

The fourth phase, Production, involves building the product, conducting further analysis of the data, and conducting a review of the final product. This phase within the product development process is key to adding value to the visualization of geospatially-enabled data.

As you begin the production of a product, you should always consider the following:

- Symbology requirements
- Product layout standards
- Fulfillment of all requirements within the project request

Symbology

The standard symbology that should be used for all ICS-compliant documents and reporting structures is the FEMA standard ICS symbol-set as described in the FEMA Incident Action

Planning Guide. This is especially true for Incident Maps that are included within Incident Action Plans (IAP), and other ICS-200-series forms.

(See FEMA Geospatial Incident Management and Support Guide.)

Standards

Your geospatial manager will provide direction about the standards you will be expected to meet. This may include standards for data use, disclaimers to include on maps, and general layout guidance. Your supervisor should also provide direction about Regional processes for organizing data, products and graphics. These Regional standards are often contained in Standard Operating Procedures (SOPs).

Phase 4: Production – Value-Added Analysis

Most analytic products should contain a brief synopsis that communicates the results, meaning and significance. This can be as simple as a few sentences, but should strive to eliminate any questions the customer might have about the overall story that the product was intended to convey. This will ensure a more efficient response. Usually, it is your manager's responsibility to include this synopsis, but sometimes it can also fall on your shoulders.

For products sent via email, this description can be the first few lines in the body of the message. For products posted to another dissemination platform, this can be included in a "Description" field about the product.

Phase 4: Production –Quality Assurance/Quality Control

Before you deliver a finished product to a customer, you should always have a member of your team review your work. While this does not have to be a formal quality assurance/quality control process, it is a critical part of the production process, since a fresh set of eyes can often find errors that may have been inadvertently overlooked during the production process.

Depending on the size of your team or the priority of the product, your reviewer may either be your supervisor or another GIS Specialist.

Quality assurance/Quality control

The goal of quality assurance/quality control is to improve development and test processes so that defects do not arise when the product is being developed. The goal of quality control (QC) is to identify defects after a product is developed, but before it is released.

Phase 4: Production –Provide Specific Feedback

In addition to making sure that all established standards and guidelines have been met, the quality assurance/quality control reviewer may also provide specific feedback about the product. This might include feedback as to whether the product:

- Conveys a clear story/the story you want to tell.
- Is based on current data and authoritative datasets.
- Includes data source references.
- Is visually appealing.

Remember that the products you produce should do more than just document information. Your ability to analyze and communicate data will enable other members of the team to more quickly and effectively support the disaster effort.

PHASE 5: Dissemination

The final phase in the production process is dissemination. As a GIS Specialist, you may or may not be responsible for the actual distribution of the products. If you are not, it is your responsibility to alert your supervisor once the product is completed so that they can then distribute the product to the customer.

GIU products can be provided in digital and/or hardcopy formats.

Digital

Products may be saved and disseminated in various digital formats, including PDF or common graphical formats (e.g. jpeg, gif, Tiff, png, etc.), and as tabular reports and summaries of data.

There are multiple ways to share information in these formats, including:

- Email
- Shared Drives
- File Transfer Protocols (FTPs)
- Information Sharing Platforms

Hardcopy

Physical products such as maps can also be provided in hardcopy format. After notification of completion of a production request, hardcopy products are often sent to the customer to close the loop on the request process.

Depending on the product requirements, hardcopy products may need to be put into one of the following formats before dissemination:

- Large format
- Map books

Lesson Summary

This lesson presented the following topics:

- Identify the GIS products that need to be produced during a disaster effort
- Recognize the GIS product workflow process
- Recognize the GIS quality assurance/quality control process

The next lesson explains how to work within the Unit.