

July 2023 openHistorian Grafana Training for Entergy  
Agenda – Draft 3

DAY 1 – GRAFANA & OPENHISTORIAN

Attendees will learn about the openHistorian database tables that Grafana gets its data from, how to add custom data, and administrative management of Grafana, followed by a course in Grafana Plugin basics. Attendees (with appropriate access) will be able to:

- Identify the tables from which Grafana pulls data.
- Add custom metadata to be visualized in Grafana.
- Manage Grafana users and understand the available roles and their permissions.
- Restart Grafana within openHistorian.
- Find, download, and deploy new Plugins.

1. SQL Database (2 hrs)

*Overview of openHistorian database schema, how Grafana accesses and uses the data, and how to add additional metadata sources to Grafana.*

1.1. Important Tables for Grafana and metadata requirements

1.1.1. PointTag column/field

1.2. Adding Custom Data

1.2.1. ConfigurationEntity table

2. Admin Items (30 mins)

*User/security managements and how and when to reinitialize Grafana within openHistorian.*

2.1. Managing Users and their Roles and Permissions

2.1.1. openHistorian and Grafana Roles and their Permissions

2.1.2. Adding, editing, and removing Users

2.2. Reinitializing Grafana within openHistorian

3. Plugins (1.5 hrs)

*What plugins can do and how to find, download, and install a new one.*

3.1. Definition of a plugin

3.2. How to find new plugins

3.3. How to download and deploy

## DAY 2 – GRAFANA DASHBOARDS

Attendees will learn the Grafana Dashboard basics and Filter Expressions. Attendees will be able to:

- Implement best practices when creating a new Dashboard.
- Create, populate, import, and export a Dashboard.
- Construct effective Filter Expressions to tailor the data being shown.

### 1. Dashboards (2.5 hrs)

*Planning, creating, and populating Grafana Dashboards.*

#### 1.1. Dashboards

##### 1.1.1. Before Creation – Best Practices

###### 1.1.1.1. Planning new dashboards

###### 1.1.1.2. Control Room Human Factors (HMI) Design and Colors

##### 1.1.2. Panels

###### 1.1.2.1. Library Panels

##### 1.1.3. Variables

##### 1.1.4. URL Variables (for Screen Linking)

##### 1.1.5. Importing and Exporting Dashboards using JSON Models

### 2. Filter Expressions (1.5 hrs)

*How to filter inputs and outputs for streams, subscribers, and adapters, including the semantics of expressions and examples.*

#### 2.1. Syntax

##### 2.1.1. Required keywords – FILTER & WHERE

##### 2.1.2. Optional keywords – TOP & ORDER BY

### DAY 3 – OH GRAFANA FUNCTIONS AND ANNOTATIONS

Attendees will learn about openHistorian-specific functions to make their visualizations more powerful. Attendees will be able to:

- Perform functions/transformations on series and groups.
- Annotate visualizations and manage annotations.

#### 1. Grafana Functions for openHistorian (2.5 hrs)

*Performing functions/transformations on data, to include use and syntax of Series and Group Operations, the list of available functions, overview and examples of commonly used functions, and a high-level overview of more complex functions.*

- 1.1. Series Functions
- 1.2. Group Operations
- 1.3. Available Functions
- 1.4. Commonly used Functions
- 1.5. Complex Functions

#### 2. Annotations (1.5 hrs)

*How to use the Grafana-native tool to annotate time series data, including how to filter currently visible annotations.*

- 2.1. Adding, editing, and deleting an annotation
- 2.2. Annotation Query

#### DAY 4 – NATIVE GRAFANA TOOLS & REVIEW WITH GEOMAP

Attendees will learn how to use the Grafana-Managed Alerts tool, followed by a review of the training material featuring the Geomap plugin. Attendees will be able to:

- Set and manage Grafana Managed alerts.
- Set up and configure the Geomap Plugin/Panel.

##### 1. Grafana-Managed Alerts (2 hrs)

*Overview of Grafana's native alerts, how to set thresholds, and retrieving triggered alerts.*

- 1.1. Adding, editing, and deleting alerts.
- 1.2. Single/Classic condition vs. Multi-Dimensional Rule
- 1.3. No data and error handling

##### 2. Review with Geomap (2 hrs)

*Review the material covered using Grafana's native Geomap Panel as an example, including configuration for the Plugin.*

- 2.1. Set up/Config Geomap Plugin data using JSON
- 2.2. Create Dashboard and add Geomap Panel
- 2.3. Filter Expression
- 2.4. Function/Transformation
- 2.5. Annotate

##### 3. Additional Optional Items (time-allowing)

*Additional questions or review.*