# IEEE Recommended Practice for Verification, Validation, and Accreditation of a Federation—An Overlay to the High Level Architecture Federation Development and Execution Process

Sponsor
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**Abstract:** This recommended practice defines the processes and procedures that should be followed to implement Verification, Validation, and Accreditation (VV&A) for federations being developed using the High Level Architecture (HLA) Federation Development and Execution Process (FEDEP). This recommended practice is not intended to replace existing VV&A policies, procedures and guidance, but rather is intended to focus on the unique aspects of VV&A of federations. It is a higher-level framework into which such practices can be integrated and tailored for specific uses. The VV&A Overlay provides implementation-level guidance to VV&A practitioners.

**Keywords:** federate, federation, Federation Development and Execution Process, FEDEP, High Level Architecture, HLA, Verification, Validation, and Accreditation, VV&A

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## Introduction

This introduction is not part of IEEE Std 1516.4-2007, IEEE Recommended Practice for Verification, Validation, and Accreditation of a Federation—An Overlay to the High Level Architecture Federation Development and Execution Process.

The High Level Architecture (HLA) facilitates interoperability among simulations and promotes reuse of simulations and their components. The HLA is composed of three major components and has an accompanying Federation Development and Execution Process (FEDEP) model:

— *HLA Framework and Rules:* A set of rules that describe the general principles defining the HLA. (IEEE Std 1516™-2000)

— *HLA Federate Interface Specification:* A description of the interface between simulations (federates) and the HLA runtime infrastructure. (IEEE Std 1516.1™-2000)

— *HLA Object Model Template Specification:* A specification for documenting HLA object models. (IEEE Std 1516.2™-2000)

— *HLA Federation Development and Execution Process:* A description of the process for constructing and executing HLA federations. (IEEE Std 1516.3™-2003)

The HLA FEDEP (IEEE Std 1516.3-2003) is a recommended practice that describes a generalized process for building and executing HLA federations. It does not replace the existing management and development methodologies of HLA user organizations, but rather provides a high-level framework into which other systems engineering practices can be easily integrated. The FEDEP defines a methodology that can and should be tailored to meet the needs of user applications.

This recommended practice provides guidelines for verifying, validating, and accrediting a federation. Its purpose is to provide a more detailed view of the VV&A processes implied by the FEDEP.

This recommended practice defines the processes and procedures that should be followed to implement VV&A for federations being developed using the FEDEP. It is not intended to replace existing VV&A policies, procedures, and guidance, but rather is intended to focus on the unique aspects of VV&A of federations.

This recommended practice provides implementation-level guidance to VV&A practitioners by interpreting and customizing the more generalized FEDEP activity descriptions. It focuses upon the VV&A processes that apply to federations and not the VV&A processes associated with individual federates, but does incorporate the use of the information produced by those processes. Furthermore, the recommended practice does not describe the individual verification or validation techniques that could be employed to execute the VV&A processes for federations.

This recommended practice has been designed to apply across a wide range of functional applications. Currently, these processes represent the best practices available to the VV&A community. Just like the FEDEP, this recommended practice is not intended to be prescriptive for all FEDEP users. Rather, it is a tailorable process and is offered as guidance to all participants in FEDEP activities. Users and developers of other synthetic simulation environments that are not based on HLA can also benefit from the guidance provided in this recommended practice, as the VV&A activities can be tailored as necessary to support nearly any type of distributed simulation application.

## Notice to users

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## 1. Overview

### 1.1 Scope

This recommended practice defines the processes and procedures that should be followed to implement Verification, Validation, and Accreditation[1] (VV&A) for federations being developed using the High Level Architecture (HLA) Federation Development and Execution Process (FEDEP). This recommended practice is not intended to replace existing VV&A policies, procedures, and guidance, but rather is intended to focus on the unique aspects of the VV&A of federations. It provides a higher-level framework into which such practices can be integrated and tailored for specific uses. The VV&A Overlay provides implementation-level guidance to VV&A practitioners; however, it does not describe the individual techniques that might be employed to execute the VV&A processes for federations.

This VV&A Overlay focuses upon the VV&A processes that apply to federations and not the VV&A processes associated with individual simulations (federates), but does consider using the information produced by those processes.

Users, developers, and VV&A personnel working with simulations and simulation compositions not based upon the HLA and the FEDEP can also benefit from the guidance in this document since the activities that this overlay describes can be tailored to support any type of distributed simulation application.

### 1.2 Purpose

The VV&A Overlay has been designed to apply across a wide range of functional applications. The purpose of this overlay is to provide a more detailed view of the VV&A processes implied by the FEDEP. Currently, these processes represent the best practices available to the VV&A community. The VV&A Overlay is a tailorable process and is offered as guidance to all participants in FEDEP activities.

[1] Note that outside of the United States there may not be a formal accreditation process and the terms “acceptance” or “accepted for use” may be used; in this document the term acceptance is the decision to use a model, simulation, or federation of models and simulations for a specific purpose and the term accreditation is the official certification that a model, simulation, or federation of models and simulations is acceptable for use for a specific purpose. For the purposes of this document the terms are equivalent.