

DoDAF Distilled™ with SysML Workshop



Accelerate your DoDAF project with this intense, interactive workshop that emphasizes pragmatic modeling principles and techniques. This workshop features SysML as the architecture description language for DoDAF and offers optional tool training.

Considering our Information Age's insatiable appetite for software, it shouldn't be surprising that there is **keen interest in applying architectural frameworks to improve the quality and productivity of software-intensive enterprise systems**. Indeed, the development of enterprise architectural frameworks has been one of the most active areas for R&D investments during the last decade. In the commercial sector, development of enterprise architectural frameworks has yielded Microsoft's .NET and the Java Community Process's J2EE. In the aerospace-defense sector, it has produced the DoD Architectural Framework (DoDAF) for specifying systems-of-systems.

The **Department of Defense approved DoDAF v. 1.0 for official use in February 2004**. All DoD architectures developed or approved subsequent to December 1, 2003 must comply with this enterprise architecture framework. **This interactive modeling workshop explains the basic principles and best practices for modeling systems with DoDAF and SysML**. SysML (Systems Modeling Language) is a dialect of the Unified Modeling Language (UML) that is customized for systems engineering applications, and is used as an architecture description language for DoDAF. The hands-on workshop shows you how to construct a well-formed system model with SysML and organize it using DoDAF compliant product views.

THE PIVOTPOINT TRAINING ADVANTAGE

- **Authored and taught by experts.** All workshops are authored by PivotPoint's founder, Cris Kobryn, an internationally recognized expert in visual modeling languages and model-driven development technologies. (Cris chaired the international standardization teams for UML 1.1, UML 2.0 and SysML 1.0.) In addition, all PivotPoint instructors have 10+ years experience working with Model-Driven Development technologies.
- **Small, intense and interactive.** We limit workshop sizes, usually to a maximum of 12 participants. This ensures that participants get the individual attention that they need to learn quickly. Also, our workshops are intense and highly interactive with frequent work sessions, so you will learn from other participants as well as your instructor.
- **Proven principles and best practices.** Our workshops emphasize proven modeling principles and best practices that will work with all modeling tools that comply with the relevant standards. If you have already chosen a modeling tool, we can integrate optional tool training in your workshop. If you have not yet selected a modeling tool, we can help you select one that best meets your project and team needs.
- **Emphasis on pragmatic problem solving.** Our workshops emphasize the use of modeling technologies to solve tough, practical problems such as those you encounter on your day job. The bigger and more difficult the problem you choose for practice sessions, the more interesting the workshop will be for the participants and the instructor.
- **Flexible choice of venue.** Our workshops are available onsite at Client training facilities, which allow us to customize workshops to meet Client project or team needs, or at PivotPoint training facilities.

WHAT WILL YOU LEARN?

- What is DoDAF and why do we model architectures with frameworks?
- DoDAF's essential and supporting products for specifying architectures
- How SysML can be used as Architecture Description Language for DoDAF
- How DoDAF + SysML can specify large, complex systems
- How DoDAF + SysML can specify artifacts for the full system lifecycle: requirements through testing
- How to reduce the complexity of mapping SysML diagrams to DoDAF views
- Practical guidelines for specifying correct, clear, concise and consistent DoDAF specifications
- How to select DoDAF tools and methods [optional]
- How to architect a DoDAF compliant system using a selected DoDAF/SysML tool [optional]
- How to learn more about DoDAF modeling

WHO SHOULD PARTICIPATE?

System engineers, system architects, project managers, and others who want to learn how to improve how they specify system models and architectures will benefit from this workshop.

PREREQUISITES

Systems engineering experience in building large, complex systems. No prior knowledge of SysML or DoDAF is required for this workshop.

WORKSHOP AUTHOR & PRIMARY INSTRUCTOR



Cris Kobryn is the CEO and Founder of PivotPoint Technology Corporation, a company that specializes in Model-Driven Engineering Solutions™ for tough business and engineering problems. He is an internationally recognized expert in visual modeling and model-driven development, and has successfully applied these technologies to diverse industries ranging from aerospace-defense and telecom to financial services and manufacturing. Cris has global experience leading high-performance software development teams, and has architected custom applications and commercial products. He formerly held senior technical positions at Telelogic, EDS, MCI Systemhouse, Inference Corporation, and SAIC.

Cris chaired large international teams of vendors and users to specify the Unified Modeling Language (UML) 1.1 and 2.0 standards for software engineering, and the Systems Modeling Language (SysML) for systems engineering. In recognition of Cris's contributions to the UML the Object Management Group (OMG) presented him with its Distinguished Service Award, and in acknowledgement of his contributions to the SysML the International Council on Systems Engineering (INCOSE) presented him with its Outstanding Service Award. Cris is a contributing editor for *Software and Systems Modeling* journal, and a member of IEEE, INCOSE, ACM, and AAAI.

WORKSHOP SYLLABUS

The workshop syllabus, in a menu form that can be customized to meet your needs, is described at the end of this handout. NOTE: This workshop description and syllabus are subject to revision. Check www.PTCorp.com/training.htm for updates.

WORKSHOP SIZE

The number of workshop participants is restricted to maximize interactions with the instructor, especially during modeling lab sessions. Most workshops are restricted to 12 or fewer participants. Exceptions must be approved by the instructor.

COST, AVAILABILITY, AND FURTHER INFORMATION

This workshop is available at client sites, PivotPoint instructional facilities, or by web conferencing. Costs depend upon your choice of venue, duration, and the number of participants. For further information regarding the contents, availability, and cost of the workshop please email us at workshops@PTCorp.com or call +1-760-728-9747.

WORKSHOP MENU

All workshops include both structured presentations and interactive work sessions to reinforce learning. In addition, workshops can be customized for different project and team requirements.

- **3 day workshop** includes: *DoDAF – Basic, SysML – Intermediate, and DoDAF – Intermediate.*
- **4 day workshop** includes: *DoDAF – Basic, SysML – Intermediate, DoDAF – Intermediate, and DoDAF – Basic Modeling Tool or DoDAF – Project Practicum.*
- **5 day workshop** includes: *DoDAF – Basic, SysML – Intermediate, DoDAF – Intermediate, and DoDAF – Basic Modeling Tool or DoDAF – Project Practicum.*

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| <p style="text-align: center;">DoDAF – BASIC (SYSML) [Module# FD101-S]</p> <p>Introduction</p> <ul style="list-style-type: none"> • Basic concepts • Principles and best practices <p>DoDAF Quick Tour</p> <ul style="list-style-type: none"> • Framework overview • View and product walkthrough <p>SysML Quick Tour <i>[If SysML crash course or refresher required]</i></p> <p>Diagram Techniques</p> <ul style="list-style-type: none"> • Use Case diagrams • Block Definition diagrams • Activity diagrams <p>Selected Operational View Products</p> <ul style="list-style-type: none"> • OV-1 High Level Operational Concept Graphic (Use Case diagram) • OV-2 Operational Node Connectivity Description (Block Definition diagram) • OV-4 Organizational Relationships Chart (Block Definition diagram) • OV-5 Operational Activity Model (Activity diagram) • OV-7 Logical Data Model (Block Definition diagram) | <p style="text-align: center;">Goals</p> <ul style="list-style-type: none"> • Understand the advantages of an architecture framework approach • Learn how to define DoDAF Operational Views using SysML as an architecture description language • Understand how to specify a correct, complete, concise, and consistent DoDAF compliant system model |
| <p style="text-align: center;">SYSML – INTERMEDIATE [Module# LS102]</p> <p><i>Prerequisite: DoDAF – Basic or equivalent.</i></p> <p>Topics</p> <ul style="list-style-type: none"> • Architecture description languages, patterns, and frameworks • Interface-Based Design and Service-Oriented Architectures (SOA) • Verification & Validation (V&V) techniques <p>Diagram Techniques</p> <ul style="list-style-type: none"> • Internal Block diagrams • Sequence diagrams • State Machine diagrams • Parametric diagrams • Package diagrams • Allocation tables <p>Selected Operational View Products</p> <ul style="list-style-type: none"> • OV-2 Operational Node Connectivity Description (Internal Block diagram) • OV-6b Operational State Transition Description (State Machine diagram) • OV-6c Operational Event Trace Description (Sequence diagram) | <p style="text-align: center;">Goals</p> <ul style="list-style-type: none"> • Understand how to use SysML as an Architecture Description Language • Learn how to make your models more scaleable • Understand how to improve the integrity and quality of your models • Understand how to verify and validate your models |

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| <p style="text-align: center;">DoDAF – INTERMEDIATE (SysML) [Module# FD102-S]</p> <p><i>Prerequisites: DoDAF – Basic and SysML – Intermediate or equivalent.</i></p> <p>Topics</p> <ul style="list-style-type: none"> Refining Operational View products into System View products Modeling Service Oriented Architectures/Network-Centric Architectures UML Profile for DoDAF/MODAF (UPDM) <p>Selected System View Products</p> <ul style="list-style-type: none"> SV-1 Systems Interface Description (Block Definition/Internal Block diagram) SV-2 Communication Description (Block Definition/Internal Block diagram) SV-4 Systems Functionality Description (Activity diagram) SV-10b Systems State Transition Description (State Machine diagram) SV-10c Systems Event Trace Description (Sequence diagram) SV-11 Physical Schema (Block Definition diagram) | <p style="text-align: center;">Goals</p> <ul style="list-style-type: none"> Learn how to Operational View products can be refined into System View products Understand how to specify Service Oriented Architecture (Network Centric Warfare architectures) using DoDAF View products Learn how to specify a DoDAF compliant architecture using the UML Profile for DoDAF/MODAF |
| <p style="text-align: center;">DoDAF – BASIC MODELING TOOL (SysML) [Module# FD111-S]</p> <p><i>Prerequisites: DoDAF – Intermediate (SysML) or equivalent.</i></p> <p><i>[See www.ptcorp.com/training.htm for SysML modeling tools currently supported. Client can select or we will recommend one.]</i></p> <p>Selected Modeling Tool Tour</p> <ul style="list-style-type: none"> Working with projects and diagrams Generating documentation Roundtrip engineering Importing/exporting models Working with profiles (optional) Working with patterns (optional) <p>DoDAF View Product Techniques</p> <ul style="list-style-type: none"> Products supported by diagram techniques: OV-1, OV-2, OV-4, OV-4, OV-6, OV-7, SV-1, SV-4, SV-10, SV-11 Products supported by report or table generators: AV-2, OV-3, SV-3, SV-5, SV-6, SV-7 | <p style="text-align: center;">Goals</p> <ul style="list-style-type: none"> Gain familiarity with the user interface and basic features of your selected DoDAF modeling tool Learn how to model most common DoDAF View products using your selected DoDAF modeling tool Understand the strengths and weaknesses of a selected DoDAF modeling tool Assess DoDAF and SysML standards compliance for your selected DoDAF modeling tool |

DoDAF – PROJECT PRACTICUM (SYSML)

[Module# FD112-S]

Prerequisites: DoDAF – Intermediate or equivalent.

[This practicum provides an opportunity to apply modeling principles and best practices to solve a practical problem in a creative and supervised workshop environment. Participants can identify a problem in advance, or Instructor will work with participants to identify a practical problem.]

Topics

- Specifying Operational View (OV) products
- Specifying System View (SV) products

Modeling Techniques

- Intermediate UML2 modeling techniques [see Module# LS102]
- Intermediate DoDAF modeling techniques [see Module# FD102-S]

Putting It All Together

- Architecture model peer review
- Next steps

Goals

- Identify the DoDAF principles and best practices that are most important to your team and your project
- Apply advanced DoDAF modeling techniques to a practical problem that you choose