

# Subject Matter Experts and VV&A

## RPG Special Topic

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### Table of Contents

<b>Introduction</b>	1
<b>What is an SME?</b>	1
<b>SME Use in Non-VV&amp;A Roles</b>	1
Domain Expertise	2
Simulation Development	2
<b>SME Use in VV&amp;A Activities</b>	2
Verification	2
Validation	3
Accreditation	4
<b>SME Selection</b>	4
Selection Considerations	5
Desirable SME Attributes	5
SME Nomination Forms	7
Locating Suitable SMEs	7
<b>SME Management</b>	8
Orientation	9
Guidelines	10
Reporting	10
Scheduling	11
<b>Common Problems and Concerns</b>	11
Perspective	12
Performance	12
Perception	12
Resources	13
Special Considerations	13
<b>References</b>	14
RPG References in this Document	15

*This document corresponds to the web version of the VV&A RPG Special Topic of the same name and date. It has been modified to make it suitable for printing.*

## Introduction

Subject matter experts (SMEs) are widely used in simulation development, evaluation, and application. SMEs can be part of the simulation development team, come from outside that team, or both. Confusion sometimes arises from the multiple SME roles in simulation development and use. This article provides a basic definition for simulation-related SMEs, discusses use of SMEs in verification, validation, and accreditation (VV&A) activities, provides suggestions about how to select and use SMEs for VV&A activities, and discusses costs associated with SME usage in simulation VV&A.

## What is an SME?

The basic definition below accommodates both the person who possesses specialized knowledge (such as a technical specialist or military operator) and the person with special positional qualifications (such as a program office representative for weapons represented in the simulation).

**Subject matter expert (SME):** An individual who, by virtue of position, education, training, or experience, is expected to have greater-than-normal expertise or insight relative to a particular technical or operational discipline, system, or process, and who has been selected or appointed to participate in development, verification, validation, accreditation or use of a model or simulation.

This definition is compatible with “expert” in legal parlance: “a technical expert is an individual who, by virtue of his or her specialized knowledge and experience, can explain, through competent testimony, a technical matter that lies outside the understanding of the average lay person . . . An expert may base his opinion on facts and documents not in evidence, as long as those facts and documents are reasonably relied upon by experts in his field.” [Friedman & Kremen, 1997]

## SME Use in Non-VV&A Roles

SMEs can be used in many ways in a simulation’s life cycle. Some of these ways are related to VV&A, others are not. Three important simulation uses of SMEs not directly related to VV&A are

- domain expertise SMEs
- simulation development SMEs
- simulation application SMEs

Sometimes the same person serves as an SME in one of these ways and as a VV&A SME on the same simulation. Thus, it is important to understand these non-V&V SME roles so that when they are discussed they are not confused with SME VV&A activities.

### ***Domain Expertise***

When simulation development begins (and sometimes before it begins), domain expertise SMEs are needed to create an authoritative description of the simulation context in the [conceptual model](#). Once simulation objectives have been established and stated in a set of [requirements](#) for the simulation, development of the simulation conceptual model may begin, although sometimes conceptual model development will occur in parallel with development of M&S requirements. Normally, the first step in conceptual model development for the simulation is to collect authoritative information about the intended application domain that forms the simulation context. However, development of the conceptual model and collection of authoritative information about the application domain have enough “chicken-egg” intertwining characteristics that either can come first.

### ***Simulation Development***

SMEs having computer hardware or software expertise are essential to successful simulation development. They enable a simulation development to use appropriate software development tools and techniques, to make good decisions about computer hardware and operating systems, to select an appropriate architecture, to choose appropriate software language(s), to produce appropriate documentation efficiently, to employ appropriate simulation and software development paradigms, etc.

## **SME Use in VV&A Activities**

SMEs are used in many ways in VV&A activities. The SME roles in VV&A listed here merely illustrate some of them. The suggestions that follow about SME selection and SME management and use pertain generally to any kind of SME VV&A use.

### ***Verification***

Persons with special understanding of software verification are essential for complex software systems. Sometimes these SMEs are part of the simulation development team, and sometimes they are part of an independent verification and validation (IV&V) effort. They participate in various design reviews and code walkthroughs. They may perform requirements tracing to track requirements through the conceptual model and simulation design to the implementation. They may perform, observe, or review simulation tests (at all levels).

## **Validation**

In addition to the specific kinds of validation SMEs identified below, validation SMEs can play an important part in VV&A planning for a simulation to ensure that

- V&V endeavors are tailored to provide the highest level of confidence in the simulation allowed by available VV&A resources
- adequate V&V endeavors are planned to support desired accreditation for the simulation

The validation of [data](#), scenarios, and human behavior representations ([HBR](#)) involved in a simulation as fit for the intended use is an important part of successful simulation employment. Sometimes the special insight of an SME from outside the simulation development team is required to prevent use of data from incompatible sources, inappropriate combinations of simulation assets, etc. See the special topic on [Validation](#) for additional information on SME involvement throughout the validation process.

## **Requirements Validation**

[Requirements](#) are established by the User. Although the User can state what the simulation needs to be able to do, often the User is not expert in requirements engineering and may not produce a comprehensive, consistent, and cogent set of requirements that provide all the information needed to ensure that the simulation will satisfy its objectives. Requirements validation SMEs help to ensure that the requirements are adequately defined, appropriately formatted, and fully represent User interests and desires.

## **Conceptual Validation**

Conceptual validation is assessment or evaluation of the simulation's [conceptual model](#) (or part of it). Conceptual validation consists of conceptual validation reviews performed on all or part of the conceptual model (one or more simulation elements, the simulation context, the simulation concept, or a combination). The full conceptual validation for a simulation consists of the accumulation of these reviews coupled with a conceptual validation review of the simulation concept. A conceptual validation review performed on a simulation element determines the fitness of the representation of that item in the simulation. A conceptual validation review of the simulation concept assesses the overall capability of the simulation. Conceptual validation reviews of simulation elements and the simulation concept are the only basis for judgment about simulation capabilities for any condition other than those specifically tested. This makes conceptual validation extremely important in simulation assessment, since only a small part of simulation capabilities can be tested for any large simulation. A conceptual validation review may even be performed on the simulation context to ensure that the

constraints and boundary conditions imposed upon the simulation concept are appropriate. SMEs are always involved in conceptual validation reviews.

## **Results Validation**

Results validation consists of comparisons of simulation results with accepted standards--whether from test data, other simulation results, or real-world observations--during simulation testing (and use). SMEs are important in identifying appropriate information to use as "standards" for comparison with simulation results and for evaluating the simulation results. Their knowledge provides insight about where the "standards" may not be as reliable as one would like and helps identify areas where simulation results must be as expected if confidence is to be placed in simulation results. Roache [1998] provides an excellent discussion of concerns about experimental (test) data, its limitations and uncertainties, its generation, and its relationship to simulation V&V. Sometimes inadequate attention is given to potential problems with the quality (correctness and comprehensiveness) of information to which simulation results are compared.

## **Accreditation**

The User typically is given an accreditation report by the Accreditation Agent. The Accreditation Agent may have employed additional SMEs in the conduct of the accreditation assessment or the preparation of this report. Such accreditation SMEs may have special knowledge about objectives of the application and can help shape the accreditation report so that it will be most useful to the User. Likewise, in some cases, the User will have SMEs review the accreditation report to ensure that it has addressed all areas of concern.

## **SME Selection**

The responsibility for identifying and selecting SMEs varies with how the V&V and accreditation efforts are managed. Typically, the SMEs participating in V&V activities are identified and selected by the V&V Agent; likewise, SMEs participating in the accreditation assessment are identified and selected by the Accreditation Agent. Such SME selections may be subject to explicit approval by the User, M&S Program Manager (PM), or Developer (e.g., those with expertise in the problem domain may need User approval; those with expertise in simulation design or implementation may need Developer approval). In other circumstances (e.g., when budget constraints and scheduling considerations limit SME participation), the actual selection of SMEs may be performed by the User, M&S PM, or Developer. For additional information on implementing SME selection, see the sections on [SME nomination forms](#) and [locating SMEs](#).

## **Selection Considerations**

Two primary considerations must be addressed in selecting SMEs for simulation VV&A activities. The first question is, “Why?” What is the SME’s function? A partial listing of potential SME VV&A roles in simulation development was presented above. These roles imply some of the kinds of functions that SMEs might perform. SMEs can be used to provide timely, relevant, and credible information about the subject area of interest, especially, as noted by Stratton (1998), about the following:

- extent to which a theory has been or can be tested
- potential rate of error of a technique
- whether a theory or technique is generally accepted as valid and relevant
- uses of a theory or technique in other communities

The “Why?” question should be addressed explicitly before proceeding to the second question, “Who?” Can the SMEs needed be found within the simulation development team, must at least some of the SMEs be drawn from outside the team? In most simulation developments, members of the simulation development team can satisfy many SME functions. However, in most simulation developments, at least some SME functions can only be satisfied by those outside the simulation development team. Wisdom is needed for decisions about which functions can be addressed by simulation development personnel and which functions should be addressed by SMEs outside the simulation development team. At times, lack of resources or administrative (contracting) structures limit use of SMEs outside the simulation development team.

### ***Desirable SME Attributes***

SMEs involved in simulation VV&A activities require several attributes to be effective. (Note that this discussion uses the plural “SMEs” for situations that involve only one or more than one SME. In many situations, a single SME is adequate to accomplish the required function.)

### **Independence**

SMEs must have adequate independence for honest and probing assessments. Great importance is attached to IV&V, in both software development [Lewis, 1992] and simulation [Williams, 1991]. The extent of independence required for a review team will vary with circumstances, but this factor should be addressed explicitly in planning simulation VV&A activities. Both real independence and the appearance of independence of team members are important. The first can impact simulation correctness, the second simulation credibility. It may be difficult to arrange convenient funding of “independent” members of the validation review team, i. e., people who do not belong to the M&S PM, Developer, or User organizations, unless those responsible for the simulation’s development have created convenient mechanisms for such funding.

## **Recognized Competence**

Competence is required for simulation correctness. Recognition of that competence can enhance simulation credibility. Competence requires that the total collection of SMEs on a V&V review team possess the knowledge and expertise required to perform the specified function for which SMEs are needed. The review team typically needs a variety of expertise. Members of the simulation development team may possess some of this expertise, and some may be found only outside the team. Experience with simulations similar to the one being reviewed and with simulations of subjects similar to that represented by the simulation is also important for the review team. That background enables the review team to know where to expect problems. The team should be able to select a collection of V&V techniques and tools that will be capable of detecting both the most common kinds of simulation faults and the faults that have the greatest potential impact for damage to validity of the simulation's results.

## **Trust of the Participants**

The M&S PM, User, Developer, V&V Agent, and Accreditation Agent need to trust and feel comfortable with the SMEs [Stratton, 1998]. It helps if at least some of them know the individuals who will serve as SMEs, not just their organizations [Wackerman, 1996]. Without confidence that an SME has no hidden agenda detrimental to the simulation development, the Developer is unlikely to "bare his soul" about the simulation's warts. Without knowing all of the potential problems of the simulation that the Developer knows, the SME cannot do a thorough assessment.

## **Good Judgment**

SMEs must exhibit good judgment so that they can determine when the topic (requirements, simulation context, conceptual model, simulation results, etc.) has been sufficiently examined because exhaustive examination of a topic is not possible.

## **Perspective**

SMEs must have the right objective. The purpose of a review team is to determine capabilities and limitations so that the simulation can be used appropriately and so that appropriate confidence can be placed in simulation results. That constructive objective must always dominate a review team's efforts. The table below summarizes the characteristics of a review team.

<b>Review Team Member Characteristics</b>
<ul style="list-style-type: none"> <li>• understanding of the subject (or parts of it) represented by the simulation</li> </ul>
<ul style="list-style-type: none"> <li>• familiarity with the simulation (usually drawn from the simulation development team)</li> </ul>
<ul style="list-style-type: none"> <li>• appropriate simulation technical expertise (in the software, hardware, etc. expected to be used in the simulation)</li> </ul>
<ul style="list-style-type: none"> <li>• background in similar simulations</li> </ul>
<ul style="list-style-type: none"> <li>• vested interests in the simulation (this community usually includes the M&amp;S PM, User, and those related to potentially competitive simulations)</li> </ul>

If a review team includes representatives from all of these groups - or at least reflects their interest - the review is likely to be more thorough and thereby have more credibility for the simulation's applications.

### ***SME Nomination Forms***

Nomination forms are useful in SME selection and management. These forms usually contain the information indicated in the table below.

<b>Typical Nomination Form Information</b>	
<b>Contact Information</b>	SME name, organization and position, address, phone/FAX numbers, email, etc.
<b>SME Qualifications</b>	Education, experience, positions, etc. relating to potential areas of SME use
<b>SME Simulation Knowledge</b>	Knowledge of the simulation in question and of simulation in general
<b>SME Availability</b>	Availability for use in reviews, advice, etc.
<b>Additional Information</b>	Other pertinent information

The nomination form may also have sections for recording contact with the SME, decisions about SME suitability, use of the SME, etc. Documentation about SME qualifications (whether positional, such as a representative of a vested interest like the program office developing a system represented by the simulation, or technical) can minimize criticism of SME reviews. Such documentation can also help the Developer, User, and M&S PM develop a "stable" of SME candidates that can be called upon at different points in the simulation's life cycle.

### ***Locating Suitable SMEs***

Locating appropriate SMEs depends in part upon the SME function. The best place to start locating an SME that is to represent a vested interest, such as a program office

responsible for a system represented in a simulation, is the program manager for that system. This approach will normally identify an SME whom the program manager believes has appropriate technical competence and understanding of the program to play an important role in assessing the system's representation in the simulation. However, two important issues often arise with such SMEs. One concerns their availability to participate in reviews of the simulation at the time desired, and the other concerns who pays for their participation in the reviews. Likewise, as a general rule, the primary place to start to locate SMEs to represent a vested interest is the office or organization with primary responsibility for that vested interest.

Locating suitable SMEs with expertise in a particular subject is usually done by

- contacting those with whom the User, M&S PM, Developer, V&V Agent, or Accreditation Agent are familiar
- seeking recommendations from knowledgeable sources (such as the National Academy of Sciences, professional associations, DMSO, experts in the field, etc.)
- advertising the need for specific skills in trade journals, professional periodicals, or academic institutions

Regardless of how one identifies a prospective SME, use of the kind of nomination form for SME candidates described above is likely to prove very helpful.

## **SME Management**

Efficient management of SMEs requires some kind of assignment and report tracking system. The sophistication needed for such a tracking system depends upon how many SMEs are involved, the size and importance of the simulation being assessed, and the importance of its application. (The more important the application, the more important comprehensive, formal tracking of SME assignments and reviews.) M&S requirements and acceptability criteria specify which simulation representations and capabilities require validation assessments. Therefore, the tracking system should make it easy to determine what capabilities have been reviewed and to promptly identify the reports related to the reviews and the conclusions of assessments. The tracking system should also allow monitoring of SME assignments; it should quickly show if some SMEs are not being used, if some are being used extensively, which assessments involve multiple SMEs, etc. Any modern database or spreadsheet package could be used for such a tracking system. However, whenever possible, the tracking system should be incorporated into the larger management process employed for the simulation. SME VV&A activities should be addressed in the same way that other elements of the simulation development and use are addressed (for scheduling, status, document control, etc.).

Effective use of SMEs requires appropriate orientation for them; careful attention to evaluation criteria, review processes, and report procedures; and diligence to keep SME use focused on what it is being used for.

## **Orientation**

SME orientation is essential for effective use of SMEs in simulation VV&A. SME orientation has four fundamental parts:

**General information.** This section describes the simulation's purpose and provides information about its history or pedigree, who is developing it, who is expected to use it and how, how it is being developed (software and hardware considerations, development paradigm, and the like), the development timeline, etc. This kind of information helps the SME gain general understanding of the simulation.

**Perspective.** In this section the SME is exposed to pertinent M&S requirements and acceptability criteria in order to gain an understanding of the specific standards of representational fidelity and functional capabilities against which the simulation is to be assessed. A common mistake SMEs make is to apply an inappropriate standard in review of a simulation. For example, a human-in-control simulation-based wargame normally does not need the same representational fidelity that may be required of a high-fidelity system simulation supporting hardware-in-the-loop capabilities.

**Review process.** This section describes, in terms of both form and content, what kinds of information will be available to the SME (as shown in the table below), how the review is to be performed, and whether the SMEs will be able to interact with others (e.g., Developer, User) or rely on review documents.

<b>Review Information</b>
<ul style="list-style-type: none"><li>• Full set of M&amp;S requirements</li><li>• Acceptability criteria</li><li>• A complete description of the simulation conceptual model (or of the pertinent part)</li><li>• Simulation design documentation</li><li>• Simulation code</li><li>• Operational version of the simulation</li><li>• Test results for the simulation</li><li>• Information sources for simulation algorithms and data</li><li>• Results from related simulations</li><li>• Results from past applications of the simulation</li><li>• Discussion with development personnel and simulation users</li></ul>

**Special topics.** This section identifies special and unusual aspects associated with the simulation or its application that may require unique knowledge. For example, if the simulation conceptual model is described significantly using the simulation design format (e.g., unified modeling language (UML) notation and constructs, or a formal methods paradigms like Z++), the SMEs may need to be instructed in the basics of that format to increase the likelihood that they will correctly understand the materials that they review. Conclusions based on misunderstandings are not helpful, and every effort should be made to ensure that they do not occur.

SME activity can be accomplished as a group activity or on an individual basis; by providing each participant with an orientation document or by a more elaborate method. The method chosen should depend on a number of different factors, such as time, availability, location of SMEs, level of SME expertise, and the needs of the specific application.

## **Guidelines**

The goal of each verification or validation review is to provide enough evidence for a sound conclusion about the fitness of the simulation (or the part reviewed) for the purpose(s) specified. The review guidelines must therefore emphasize logical sufficiency (i.e., the review will produce adequate information to support a sound conclusion). The critical issues must be identified and the data/information required to settle them must be specified. It is helpful if the review guidelines can separate data and information from interpretation so that disputes (if they should arise) about “facts” can be separated from the “significance” attached to interpretation of the facts.

It is good practice to have all SMEs employ the same or comparable guidelines in reviews for a particular simulation. This facilitates comparison of reviews by different SMEs for the same thing in the simulation as well as making it easier to assimilate reviews of different parts of the simulation into a coherent whole.

Review guidelines should emphasize the importance of thorough documentation of all reviews.

## **Reporting**

Report of a review should contain the following basic information:

<b>Reporting Information</b>
What is being reviewed – by name, version, date, etc. of the simulation element when such exist – and the purpose of the review (conceptual validation, requirements tracing to preliminary design, unit or integration test, etc.)
Who participates (name, contact information, etc.)
What information is used: documents, interaction with

simulation development team members by name and date, etc.
Scope and criteria for representational assessment and other evaluation employed in the review
Assumptions, algorithms, functional capabilities, tests, etc. explicitly related to the purpose of the review, addressed in appropriate detail to allow full understanding of bases for conclusions drawn by the review team
Conclusion and synopsis of the review findings, clearly separating fact from interpretation, and explaining the significance of the findings
Recommendations to improve simulation correctness or credibility, or the conceptual validation review process

Where possible, it is helpful to include an indication of the Developer's attitude toward conclusions and recommendations presented in the review, with clear statements of the Developer's rationale when there is disagreement with conclusions or recommendations of the review. Of special importance is an indication of whether such disagreements are related to the "facts" about the simulation or to interpretation regarding the significance of the facts.

## ***Scheduling***

Many practical considerations affect review scheduling, such as

- availability of information from the Developer (e. g., conceptual validation reviews cannot be performed until the Developer has completed description of the conceptual model for the simulation)
- availability of information to be used as the performance standard in results validation reviews
- availability of SMEs and other personnel

As a general rule, reviews should be scheduled at the earliest time that required information and personnel can support them efficiently.

## **Common Problems and Concerns**

Several common problems are often encountered with SMEs. These problems can be grouped as perspective problems, performance problems, and perception problems. Each kind of problem is discussed in turn.

## ***Perspective***

Some SMEs have difficulty in assessing a simulation relative to its intended application. The SME may want to evaluate the simulation in some other context. For example, an SME may inappropriately fault the simulation for using approximations instead of more detailed and more accurate algorithms, even though the approximations provide adequate accuracy for intended and expected simulation applications. Appropriate orientation for the SME can minimize this kind of problem, but it may also be necessary to take corrective action in managing SMEs should it become apparent that this problem has arisen. Typically a reminder to the SME is all that's required. Sometimes the review report should be revised so that it does not reflect an inappropriate perspective.

Sometimes SMEs have a particular agenda that they will pursue during their involvement in a V&V review. The agenda may be overt, or it may be hidden. Every SME who represents a vested interest can be assumed to have an agenda of looking out for that interest during the review process. The potential problems arising from such agendas should be addressed in two ways. First, every SME assessment should strive to make the factual and logical bases of the assessment explicit and clear. This forces any "hidden" agenda to have a solid factual and logical foundation. Second, it is helpful to have a variety of perspectives (agendas) represented within the SME team so that no particular agenda can be pursued without challenge from the assessment of those with a contrary or different agenda.

## ***Performance***

Sometimes an SME will have trouble complying with the review and reporting schedule because of other demands on the SME. This problem can be avoided, or at least minimized, with realistic estimates of how long it should take an SME to perform a review and report on it, coupled with reasonable schedules based upon SME availability, required information availability, etc.

Sometimes SMEs will not follow specified review and reporting procedures. Typically this kind of problem can be resolved by a reminder to the SME about the procedure and, where it makes sense, modification of the procedure at the SME's suggestion.

Sometimes an SME will have difficulty understanding the simulation and may make an assessment based upon misconceptions. Allowing the Developer an opportunity to respond to a preliminary version of the SME report provides an opportunity to correct such misconceptions prior to their becoming public and helps to ensure that the assessment is more complete than it might be otherwise.

## ***Perception***

Simulation Developers, Users of legacy simulations, and others with vested interest in a simulation's acceptance often cast a jaundiced eye on SMEs from outside their sphere

and may have suspicions about SME competence, objectivity, etc. They will sometimes criticize an SME for not using appropriate perspective in the assessment, for not understanding the simulation correctly, for having a hidden agenda, etc. These kinds of problems can be ameliorated by using an SME nomination form that explicitly documents an SME's qualifications; using a specified review and reporting process that emphasizes the facts and logic upon which an assessment is based; allowing the Developer, User, etc. to respond to preliminary SME reports; and providing a mechanism for such responses to become part of the final assessments (should the SME and the responder not come to a common view).

Another potential perception problem arises when an SME has a special relationship to the User. That SME's assessment may carry additional weight because of the trust that is invested in the SME [Veit, 1996]. This kind of situation should be recognized, when it exists, and every effort made to ensure that the SME's assessment is factual and logically sound. This situation can also be exploited legitimately by adroit selection of who briefs validation assessments.

## ***Resources***

Resources for SME use in VV&A are only part of VV&A resources for a simulation. Required VV&A resources depend upon the size and complexity of the simulation being reviewed, the quality and correctness of its pertinent documentation, and the level of validation required. Sometimes the VV&A budget for a simulation will be charged for all SME use in VV&A activities, sometimes not. In some cases, the cost of using SMEs from the simulation development team will be considered just part of normal simulation development, and not charged to VV&A. Sometimes an organization with a vested interest in some aspect of a simulation (such as a program office's concern for the representation of its weapon system) will cover the costs of its SMEs in the simulation's V&V activities.

## ***Special Considerations***

Three kinds of simulations raise special considerations, which are discussed briefly in this section:

- distributed simulation
- legacy simulations
- new simulations (or major modification to existing simulations)

Ideas in the earlier sections apply to all three groups.

### **Distributed Simulation**

Validation reviews related to a distributed simulation have some unique challenges. Most of the work to date on distributed simulation has focused upon interoperability

standards so that technical capabilities exist for distributed simulation to function. The harder issues of how to discuss and how to measure or assess compatibility of the individual simulations (federates) in a distributed simulation (federation) have yet to be resolved. Validation reviews are concerned primarily with such compatibility and with the appropriateness of a collection of simulations in a particular distributed simulation environment for addressing an application. At this time, rigorous methods do not exist for addressing these issues. It thus becomes very important for the SMEs who participate in validation reviews to have appropriate experience so that at least past problems associated with such an application and with the individual simulations and their distributed simulation environment can be considered. See the core document on V&V Agent for Federations for additional information.

### **Legacy Simulations**

Documentation of the conceptual model for many legacy simulations may be limited or nonexistent. Documentation of previous assessments of the simulation may be equally spotty. This requires either substantial effort to re-engineer (develop) such information or validation endeavors that treat the simulation as a black box. There are significant logical limitations on both the level and the scope of validation assessments that take the black box approach. In addition, a legacy simulation's reputation may color any validation assessment, since a negative finding might call into question decisions and actions taken on the basis of previous results. Even a positive finding about the simulation may not impart the desired level of credibility to its results if parts of the community retain negative impressions about prior usage of this simulation. This makes it important for the potential User of the simulation to have a clear understanding of the legacy simulation's reputation prior to initiation of validation reviews so that the validation reviews can be designed with these concerns in mind and conducted by people who have a reasonable possibility of accomplishing their function. See the core document on V&V Agent for Legacy Simulations for additional information.

### **New Simulations**

Validation reviews have the greatest potential with a new simulation or with a major modification to a legacy simulation. However, to be most effective and efficient, it is important that validation reviews be performed at appropriate times and in appropriate ways. Guidance suggested in this paper should help. . See the core document on V&V Agent for New Simulations for additional information.

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- select menu: *RPG Core Documents*, select item: "V&V Agent for Federations"
- select menu: *RPG Core Documents*, select item: "V&V Agent for Legacy Simulations"
- select menu: *RPG Core Documents*, select item: "V&V Agent for New Simulations"
- select menu: *RPG Special Topics*, select item: "Conceptual Model Development and Validation"
- select menu: *RPG Special Topics*, select item: "Data V&V for New Simulations"
- select menu: *RPG Special Topics*, select item: "Human Behavior Representation Validation"
- select menu: *RPG Special Topics*, select item: "Requirements"
- select menu: *RPG Special Topics*, select item: "Validation"

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