OMG-OCSMP-MBA400 Q&As

OMG-Certified Systems Modeling Professional - Model Builder – Advanced

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QUESTION 1

Choose the correct answer

What is the purpose of the Domain Metamodel in UPDM?

A. It defines the implementation metamodel.

B. It defines the stakeholder requirements for the metamodel.

C. It defines the mapping of UML to SysML and SOAML concepts

D. It defines the melamodel concepts and relationships without any implementation

Correct Answer: D

The purpose of the Domain Metamodel in UPDM is to define the metamodel concepts and relationships without any implementation. The Domain Metamodel captures the core concepts of DoDAF and MODAF in terms of entities, attributes, associations, and constraints. It does not specify how these concepts are implemented in UML, SysML, or any other language or tool. The Domain Metamodel serves as a requirements model for UPDM and provides traceability links between the domain concepts and the profile elements.

QUESTION 2

Choose the correct answer

The lead systems engineer on a project has identified a set of Key Performance Parameters (KPPs) that need to be evaluated both on a periodic basis during development, and during acceptance for everydesign change. Many of these KPPs are expressed In complex, interrelated differential equations The analysis team has identified appropriate numerical techniques for solving these equations and expressed them in a popular analysis tool.

The lead system modeler and methodologist must ensure that the architecture and design captured in the SysML system model are continuously and accurately reflected In the KPP calculations.

Which strategy is likely to be most successful in accomplishing this?

A. Task the analysis learn with recasting each of the KPP equations as constraint blocks and parametric models directly in SysML and linking the resulting parameters to value properties of current system model elements Keeping all information in the same model is the only way to guarantee the consistency the lead engineer has asked for

B. List the parameters used to evaluate the KPPs in a spreadsheet file. Use the SysML modeling tool\\'s inherent capability to link appropriate value properties to cells in this spreadsheet Task the analysis team with modifying their analysis routines to accept parameters as an input vector from this spreadsheet. Ensure that the spreadsheet is updated from the system model prior to each update of the KPP calculations

C. Work with the analysis team to partition the KPP evaluation model into manageable, reusable subroutines Develop constraint blocks within the SysML model to represent these subroutines, exposing their parameters. Use these new constraint blocks to build a parametric model that ties the KPP evaluation directly to system model element value properties. Leverage available bridging software to link this parametric model to the evaluation subroutines executing in the external analysis tool, and re-evaluate the KPPs on an as-needed basis

D. Use activity and/or state models to accurately model the flow of data to numerically solve the KPP evaluation equations Ensure that the analysis team validates these behavior models Bind each relevant value property within the

system model to an activity parameter or state variable such that the KPP evaluation model accurately reflects how the KPPs are derived. Next, use code generation capability inherent in the SysML tool to generate and compile the KPP evaluation routines Recompile and run these routines as needed to update KPP estimates

Correct Answer: B

QUESTION 3

Choose the correct answer

How is the concept of coupling used to assess model quality?

A. High coupling leads to good model quality provided all blocks in a structural model exhibit the same average degree of coupling

B. High coupling leads to poof model quality because it decreases reuse potential and prevents independent modification of system elements

C. Low coupling leads to poor model quality because all parts of a system must be properly coupled in order to measure the completeness of the model

D. Coupling has no bearing on model quality because no metrics exist for measuring the level of coupling of SysML models

Correct Answer: B

Coupling is a measure of how much a system element depends on other system elements. High coupling means that a change in one element affects many other elements, which makes the system harder to understand, maintain and reuse. Low coupling means that the system elements are more independent and modular, which improves the model quality. References: OMG-Certified Systems Modeling Professional - Model Builder ?Advanced (OCUP2-ADV) Examination Guide Version 1.0, Section 4.1.2.2

QUESTION 4

Choose the coned answer

What is the best way to ensure that a shared model has consistently-represented elements and diagrams?

A. Implementation of standard libraries

B. modeling conventions and standards

C. packages that map one-for-one to components

D. domain stereotypes maintained in a configuration control system

Correct Answer: B

The best way to ensure that a shared model has consistently-represented elements and diagrams is to use modeling conventions and standards. Modeling conventions and standards are rules and guidelines that define how the model elements and diagrams should be named, defined, structured, formatted and documented. Modeling conventions and standards can help improve the clarity, consistency and quality of the model and facilitate the communication and collaboration among the modelers and stakeholders. Implementation of standard libraries is a good way to ensure that a

shared model has reusable and interoperable elements and diagrams, but it may not ensure their consistent representation. Packages that map one-for-one to components is a good way to ensure that a shared model has modular and traceableelements and diagrams, but it may not ensure their consistent representation. Domain stereotypes maintained in a configuration control system is a good way to ensure that a shared model has customized and controlled elements and diagrams, but it may not ensure their consistent representation. References: OMG-Certified Systems Modeling Professional - Model Builder ?Advanced (OCUP2-ADV) Examination Guide Version 1.0, Section 4.1

QUESTION 5

Choose the correct answer.

A modeling team supervisor wishes to force modelers to use particular metamodeling features

What must the supervisor do?

A. place the profile in the current namespace with the model

B. apply the profile to the model

C. Apply the profile to the model with the {strict} keyword applied

D. Apply the profile to the model with the {required} keyword applied

E.?mport?the profile to the model with the {strict} keyword applied

F.?mport?the profile to the model with the {required} keyword applied

Correct Answer: C

To force modelers to use particular metamodeling features, the supervisor must Apply the profile to the model with the {strict} keyword applied. This keyword indicates that only elements with stereotypes defined in the profile can be created as instances of the extended metaclasses. For example, if a profile defines a stereotype as an extension of Class, then only classes with this stereotype can be created as instances of Class when the profile is applied with the {strict} keyword. References: https://www.omg.org/ocsmp/ocsmp-adv-exam.htm
https://www.ibm.com/docs/SSB2MU_8.2.0/com.ibm.rhp.sysml.doc/topics/rhp_c_ dm_sysml_profile_features.html

QUESTION 6

Choose the correct answer

How does SysML support systems engineering methodologies?

A. The generalization mechanism enables fitting of SysML to a methodology

B. The stereotype and profile mechanisms enable lilting of SysML to a methodology.

C. SysML can only support a systems engineering methodology if it is used at the starting point of the project

D. SysML does not support system engineering methodologies, as it is a language

Correct Answer: B

SysML is a general-purpose modeling language for systems engineering that can support various systems engineering methodologies. The stereotype and profile mechanisms are features of SysML that enable customizing and extending the language for a specific domain or purpose. By using stereotypes and profiles, SysML can be adapted to fit different methodologies and conventions without changing the core language semantics

QUESTION 7

Choose the correct answer.

A control unit aboard a ship sends commands to a remote-controlled submarine. which in turn sends messages to the ship after completing each major stage of its overall mission. For each distinct stage, the ship orders the submarine to perform a different set of operations. Completing any given stage takes a widely variable amount of time

Why it is appropriate to use the MARTE profile to model this system with SysML?

A. The control unit is an embedded system, which the MARTE profile makes it possible to model in SysML

B. The stage transitions of the mission equate to a logical dock, a temporal construct that MARTE brings to SysML

C. The stage transitions of the mission equate to a chronometric clock a temporal construct that MARTE brings to SysML

D. The control unit must order the submarine\\'s operations in real time, which the MARTE profile makes it possible to model in SysML.

Correct Answer: D

It is appropriate to use the MARTE profile to model this system with SysML because the control unit must order the submarine\\'s operations in real time, which the MARTE profile makes it possible to model in SysML. MARTE is a UML profile that provides concepts and annotations for modeling and analyzing real-time and embedded systems. It supports modeling time-related properties and constraints, such as deadlines, periods, durations, clocks, etc., as well as resource-related properties and constraints, such as memory, CPU, power, etc. By using MARTE, one can capture the real-time requirements and behavior of the system and perform schedulability and performance analysis.

QUESTION 8

Choose the correct answer

A large company uses SysML to design energy systems, and plans to use a specialized proprietary analysis tool (X) for evaluating and comparing the cost, performance, and reliability of energy system alternatives The engineers at the

company want to automatically create analysis models in X from design models in SysML.

The achieve this, they will use the following process:

(1)

Specify the appropriate module in X10 be used for each block m the SysML design model.

(2)

Write scripts that use these mappings to automatically create analysis models in X Which approach is most flexible when enabling this automation?

A.

define a package that contains a note for each type of module in X. and anchor notes to the blocks in the design model

B.

define a profile that contains a stereotype for each type of module m X. and assign the stereotype to the blocks in lite design model

C.

define a profile that contains a tag for each type of X in the tool, and assign the stereotype to the blocks in the design model

D.

define a profile that contains a stereotype with a tag that can store the name of the module in X. apply the stereotype to the blocks in the design model, and populate the tag

E.

define a package that contains a block for each type of module m X (e g module_1 block) and create a dependency relationship from the module block to the blocks in the design model

Correct Answer: D

A profile is a mechanism for customizing SysML for a specific domain or purpose. A stereotype is a way of extending or modifying the semantics of a SysML element. A tag is an attribute of a stereotype that can store additional information. By defining a profile that contains a stereotype with a tag that can store the name of the module in X, the engineers can easily map the blocks in the design model to the corresponding modules in X, and use scripts to automate the creation of analysis models. This approach is more flexible than using notes, dependencies, or predefined tags, because it allows for more control and consistency over the mapping proces

QUESTION 9

Choose the correct answer

Modehca solvers can produce large volumes of time-based results (such as time-based power usage), but requirements are often based on scalar values such as "maximum peak power" and \\'average power usage".

Which of the following is generally the most effective way to verify such requirements?

A. Import the Modelica time-based power usage results into SysML Then use SysML parametncs to calculate these scalar values, and compare them to the requirements

B. ave the Modelica solver also compute these scalar values from its time-based power usage results Then import the resulting scalar values into SysML. and compare them to the requirements.

C. Use the SysML4Modelica profile to transform the Modelica time-based power usage results into these scalar values Then import the resulting scalar values into SysML, and compare them to the requirements.

D. Modelica models can only produce time-based results and thus cannot support scalar results like these, which must either be calculated using a different tool or measured on physical prototypes Then enter the resulting scalar values into SysML, and compare them to the requirements

Correct Answer: B

The most effective way to verify such requirements is to have the Modelica solver also compute these scalar values from its time-based power usage results. Then import the resulting scalar values into SysML, and compare them to the requirements. This way, the verification can be done at the same level of abstraction as the requirements, and avoid unnecessary transformations or calculations in SysML. Modelica solvers can provide various functions and operators to compute scalar values from time-based results, such as max, min, mean, integral, etc.

QUESTION 10

Choose the correct answer

What happens to the elements of a model when a profile is applied to the model?

A. The stereotypes defined in the profile are applied to the model\\'s metamodel elements

B. The stereotypes defined in the profile are available to be applied to any element in the model.

C. The stereotypes defined in the profile may be applied to elements sharing compatible metaclasses

D. The stereotypes defined in the profile ate automatically applied lo the elements sharing compatible metaclasses

Correct Answer: C

A profile is a mechanism for extending the UML or SysML metamodel with domain-specific concepts. A profile defines stereotypes, which are extensions of existing metaclasses. A metaclass is a modeling construct that defines the properties and behavior of a set of model elements. For example, the metaclass Class defines the properties and behavior of all classes in a model. When a profile is applied to a model, the stereotypes defined in the profile may beapplied to elements sharing compatible metaclasses. For example, if a profile defines a stereotype as an extension of the metaclass Class, then the stereotype may be applied to any class in the model. References: https://www.omg.org/ocsmp/ocsmp-adv-exam.htm https://www.omg.org/spec/UML/About-UML/https://www.omg.org/spec/SysML/About-SysML/

QUESTION 11

Choose the correct answer

Which statement is true about a method?

A. A method Is generic and can be used out-of-the-box

B. A method is not necessary to build an effective SysML model.

C. A method must be adapted to company or project specific needs

D. A method must be adapted to the specific features of the modeling language

Correct Answer: C

A method is a technique or procedure for performing a specific task. A method is not generic and cannot be used out-of-the-box, because it depends on the context and purpose of the task. A method is not unnecessary to build an effective SysML model, because it provides guidance and structure for the modeling process. A method does not depend on the specific features of the modeling language, because it can be applied to different languages with appropriate

adjustments. Therefore, a method must be adapted to company or project specific needs, because it should reflect the goals, requirements, constraints, and preferences of the stakeholders involved in the project

QUESTION 12

Choose the correct answer

What is the most significant deficiency impeding widespread use of SysML (without MARTE) in the real-time and embedded domain?

A. a quantifiable notion of time and resources

B. the terminology that is shared with the RT7E domain

C. a means to distinguish embedded from non-embedded systems

D. a means to quantify interactions between a system and its physical environment

Correct Answer: A

The most significant deficiency impeding widespread use of SysML (without MARTE) in the real-time and embedded domain is a quantifiable notion of time and resources. SysML does not provide a standard way to model time-related properties or constraints, such as deadlines, periods, durations, clocks, etc., nor does it provide a standard way to model resource-related properties or constraints, such as memory, CPU, power, etc. These aspects are essential for real-time and embedded systems design and analysis. MARTE addresses this deficiency by providing concepts and annotations for modeling time and resources in a precise and quantitative way. References: https://www.omg.org/ocsmp/ocsmp-adv-exam.htm https://www.omg.org/spec/MARTE/1.2/About-MARTE/

QUESTION 13

Choose the correct answer Where may tagged values be defined?

A. only as attributes of classifiers

B. only as attributes of stereotypes

C. on any model element in a profile

D. on any model element

Correct Answer: B

Tagged values can be defined only as attributes of stereotypes. A tagged value is an extension of a model element with additional information that is not part of its standard properties. A tagged value is defined by an attribute of a stereotype that is applied to the model element. The attribute specifies the name and type of the tagged value.

QUESTION 14

Choose the correct answer

What distinguishes a software development methodology from a systems development methodology?

A. All current systems development methodologies are extensions of previous software development methodologies.

B. Software development methodologies employ formal architecting techniques, while systems development methodologies tend not to.

C. Systems development methodologies tend to focus on holistic issues, while software development methodologies tend to focus on high quality code.

D. For software intensive systems, there is effectively no difference between system development methodologies and software development methodologies

E. There is no difference Any methodology good for software development should be good for systems development.

Correct Answer: C

The main difference between software development methodologies and systems development methodologies is that software development methodologies tend to focus on high quality code, such as functionality, reliability, performance and maintainability, while systems developmentmethodologies tend to focus on holistic issues, such as stakeholder needs, system boundaries, interfaces, trade-offs and lifecycle management. Software development methodologies are usually applied to software- intensive systems or subsystems, while systems development methodologies are usually applied to complex systems that involve multiple disciplines and domains. It is not true that all current systems development methodologies are extensions of previous software development methodologies, as some systems development methodologies have different origins and foundations. It is not true that software development methodologies employ formal architecting techniques, while systems development methodologies tend not to, as both types of methodologies can use different levels of formality and rigor in their architecting approaches. It is not true that for software intensive systems, there is effectively no difference between system development methodologies and software development methodologies, as software intensive systems still require a broader and deeper perspective than software development methodologies can provide. It is not true that there is no difference between any methodology good for software development and any methodology good for systems development, as different types of systems may require different types of methodologies that suit their characteristics and challenges. References: OMG-Certified Systems Modeling Professional - Model Builder ?Advanced (OCUP2-ADV) Examination Guide Version 1.0, Section 4.5

QUESTION 15

Choose the correct answer

A small project has chosen a widely-used SysML-based development method, and plans to tailor the method over the life of the project.

What Is(are) the most important consideration(s) for selecting a tool to support the project? \

Choose the option that gives the project the most flexibility

A. ability to interface with other tools that support the method

B. built-in support for the method, including documentation and context-specific help

C. built-m support for the method, mechanisms for user-defined extensions to the tool

D. built-in support for the method: vendor commitment to provide tool tailoring for the project

Correct Answer: C

This is the most important consideration for selecting a tool to support the project because it gives the project the most flexibility. A built-in support for the method means that the tool has features and functions that are aligned with the

SysMLbased development method chosen by the project. This can include documentation, context- specific help, templates, wizards, etc. A built-in support for the method can help the project to follow the method more easily and consistently. A mechanism for user-defined extensions to the tool means that the tool allows users to customize or modify the tool according to their needs and preferences. This can include adding new features, changing existing features, creating new views or reports, etc. A mechanism for user-defined extensions to the tool can help the project to tailor the method over the life of the project and adapt to changing requirements or situations.