



MAENAD

Grant Agreement 260057



Model-based Analysis & Engineering of Novel Architectures for Dependable Electric Vehicles

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Revision chart and history log

Version	Date	Reason
1.0	2011-06-30	First release Reflecting Maenad Month 9
1.0.1	2011-08-30	Intermediate Version Reflecting Maenad Month 12
2.0	2012-06-30	Second release Reflecting Maenad Month 21
2.1	2012-08-31	Change list added.

1	Summary
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D4.1.1 is the EAST-ADL specification which covers the elements of the language. Language elements are shown in class diagrams according to purpose. They are also documented with a description and semantics and any attributes, associations and constraints.

This version of D4.1.1 is annotated EAST-ADL M2.1.10.20120630, i.e. the MAENAD proposal for version 2.1.10. See EAST-ADL-Specification_M2.1.10.20120630.pdf for the actual specification.

2 Versions

The EAST-ADL specification from the previous ATESS2 project had the version number 2.1.8 and was released 2010-06-30, the specification has evolved during the MAENAD project as follows:

Date	Domain Model version	Note
2011-01-30	(M2.1.1) M2.1.9	
2011-06-30	M2.1.9.1	M9, should really be called 2.1.9.20110630
2011-08-30	M2.1.9.20110830	
2012-03-30	M2.1.10	Consolidation of descriptions
2012-06-15	M2.1.10.20120629	M21, no structural changes.

3 Changes in M2.1.9.1

M2.1.9.1	ATESST2_2.1.RC5	Change	Metaclass
TraceableSpecification (from Elements)	EAPackageableElement (from Elements)	Changed generalization	FunctionClientServerInterface (from FunctionModeling) «atpType»
wire : HardwareConnector [*]	No additional associations	Changed dependency to association	LogicalBus (from HardwareModeling) «atpStructuredElement»
	Dependencies	dito	
	wire : HardwareConnector [*]	dito	
	«instanceRef»	dito	
decisionModel : VehicleLevelBinding [*]	decisionModel : VehicleLevelConfigurationDecisionModel [*]	Changed name of associated class	Variability (from Variability)
VehicleLevelBinding (from Variability)	VehicleLevelConfigurationDecisionModel (from Variability)	Changed class name	VehicleLevelBinding (from Variability)
	relationship : RequirementsRelationship [*] {composite}	Removed association	RequirementsModel (from Requirements)
TraceableSpecification (from Elements)	EAPackageableElement (from Elements)	Changed generalization	Item (from Dependability)
max : Float [0..1]	max : Float [1]	Changed attribute multiplicity	EAFloat (from Datatypes)
min : Float [0..1]	min : Float [1]	Changed attribute multiplicity	EAFloat (from Datatypes)
max : int [0..1]	max : int [1]	Changed attribute multiplicity	EInteger (from Datatypes)
min : int [0..1]	min : int [1]	Changed attribute multiplicity	EInteger (from Datatypes)
	UserAttributeableElement (from UserAttributes)	Removed generalization	EAElement (from Elements) {abstract}

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M2.1.9.1	ATESST2_2.1.RC5	Change	Metaclass
The realizedBy elements shall be on a lower abstraction level than the realized relements.	No additional constraints	Added constraint	Realization (from Elements)
The realizedBy or realized elements shall be structural or behavioural		Added constraint	Realization (from Elements)
UserAttributeableElement (from UserAttributes)	UserAttributeableElement (from UserAttributes) {abstract}	Class made concrete	UserAttributeableElement (from UserAttributes)
attributedElement : Identifiable [1]		Removed association	UserAttributeableElement (from UserAttributes)

4 Changes in M2.1.9.20110830			
M2.1.9.20110830	M2.1.9.1	Change	Metaclass
EAElement (from Elements)	None	Added generalization	AllocateableElement (from FunctionModeling) {abstract}
EAElement (from Elements)	None	Added generalization	AllocationTarget (from HardwareModeling) {abstract}
	HardwarePinDirectionKind (from HardwareModeling) «enumeration»	Removed class	HardwarePinDirectionKind (from HardwareModeling) «enumeration»
	Generalizations	dito	
	None	dito	
	Enumeration Literals	dito	
	in	dito	
	inout	dito	
	out	dito	
	Associations	dito	
	No additional associations	dito	
	Constraints	dito	
	No additional constraints	dito	
nonVolatileMemory : Integer [1]	nonVolatileMemory : int [1]	Changed integer type	Node (from HardwareModeling)
volatileMemory : Integer [0..1]	volatileMemory : int [0..1]	Changed integer type	Node (from HardwareModeling)
FormulaExpression (from FormulaLanguage)	FormulaExpression (from Elements)	Changed generalization	SelectionCriterion (from Variability)

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M2.1.9.20110830	M2.1.9.1	Change	Metaclass
EAElement (from Elements)	None	Added generalization	RedefinableElement (from UseCases) {abstract}
cseCodeFactor : Integer = 1 [1]	cseCodeFactor : int = 1 [1]	Changed integer type	TimeDuration (from Timing)
max : Integer [0..1]	max : int [0..1]	Changed integer type	EInteger (from Datatypes)
min : Integer [0..1]	min : int [0..1]	Changed integer type	EInteger (from Datatypes)
significantDigits : Integer [0..1]	significantDigits : int [0..1]	Changed integer type	RangeableValueType (from Datatypes)
	FormulaExpression (from Elements) {abstract} «atpMixedString»	Removed class	FormulaExpression (from Elements) {abstract} «atpMixedString»
	Generalizations	dito	
	Identifiable (from Identifiable)	dito	
	Attributes	dito	
	No additional attributes	dito	
	Associations	dito	
	No additional associations	dito	
	Constraints	dito	
	No additional constraints	dito	
The realizedBy or realized elements shall be structural or behavioral	The realizedBy or realized elements shall be structural or behavioural	Textual change	Realization (from Elements)
ArchitecturalDescription (from Needs)	ArchitecturalDescription (from Needs) {abstract}	Class made concrete	ArchitecturalDescription (from Needs)
ArchitecturalModel (from Needs)	ArchitecturalModel (from Needs) {abstract}	Class made concrete	ArchitecturalModel (from Needs)

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M2.1.9.20110830	M2.1.9.1	Change	Metaclass
Architecture (from Needs)	Architecture (from Needs) {abstract}	Class made concrete	Architecture (from Needs)
EAElement (from Elements)	None	Added generalization	Concept (from Needs) {abstract}
Mission (from Needs) priority : Integer [1]	Mission (from Needs) {abstract} priority : int [1]	Class made concrete Changed integer type	Mission (from Needs) StakeholderNeed (from Needs)
VehicleSystem (from Needs)	VehicleSystem (from Needs) {abstract}	Class made concrete	VehicleSystem (from Needs)

5 Changes in M2.1.10

This release also included consolidated and updated documentation all over the language specification.

M2.1.10	M2.1.9.20110830	Change	Metaclass
technicalFeatureModel : FeatureModel [*] {composite}	technicalFeatureModel : FeatureModel [0..*] {composite}	Editorial change of multiplicity	VehicleLevel (from SystemModeling) «atpStructureElement»
	EAEElement (from Elements)	Removed generalization	Feature (from FeatureModeling) «atpStructureElement»
childNode : FeatureTreeNode [*] {composite}	childNode : FeatureTreeNode [0..*] {composite}	Editorial change of multiplicity	Feature (from FeatureModeling) «atpStructureElement»
No additional attributes	complianceLevel : String [1]	Removed attribute	FeatureModel (from FeatureModeling) «atpStructureElement»
rootFeature : Feature [*] {composite}	rootFeature : Feature [0..*] {composite}	Editorial change of multiplicity	FeatureModel (from FeatureModeling) «atpStructureElement»
featureLink : FeatureLink [*] {composite}	featureLink : FeatureLink [0..*] {composite}	Editorial change of multiplicity	FeatureModel (from FeatureModeling) «atpStructureElement»
featureConstraint : FeatureConstraint [*] {composite}	featureConstraint : FeatureConstraint [0..*] {composite}	Editorial change of multiplicity	FeatureModel (from FeatureModeling) «atpStructureElement»
	[2] A LocalDeviceManager may only interface either Sensors or Actuators.	Removed constraint	LocalDeviceManager (from FunctionModeling)
[2] A LocalDeviceManager shall interface BSWFunctions and DesignFunctions.	[3] A LocalDeviceManager shall interface BSWFunctions and DesignFunctions.	Changed index of constraint	LocalDeviceManager (from FunctionModeling)

M2.1.10	M2.1.9.20110830	Change	Metaclass
	EAElement (from Elements)	Removed generalization	HardwareComponentPrototype (from HardwareModeling) «atpPrototype»
No additional attributes	resistance : Float [0..1]	Removed attribute	HardwareConnector (from HardwareModeling) «atpStructureElement»
	EAElement (from Elements)	Removed generalization	LogicalBus (from HardwareModeling) «atpStructuredElement»
SCILAB		Added enumeration literal	FunctionBehaviorKind (from Behavior) «enumeration»
variationGroup : VariationGroup [*] {composite}	variationGroup : VariationGroup [0..*] {composite}	Editorial change of multiplicity	ConfigurableContainer (from Variability)
criterion : String [0..1]	criterion : String [1]	Changed multiplicity of attribute	ConfigurationDecision (from Variability)
[1] Attribute "criterion" or association "selectionCriterion" (or both) must be defined.	No additional constraints	Added constraint	ConfigurationDecision (from Variability)
childEntry : ConfigurationDecisionModelEntry [*] {composite}	childEntry : ConfigurationDecisionModelEntry [0..*] {composite}	Editorial change of multiplicity	ConfigurationDecisionFolder (from Variability)
rootEntry : ConfigurationDecisionModelEntry [*] {composite}	rootEntry : ConfigurationDecisionModelEntry [0..*] {composite}	Editorial change of multiplicity	ConfigurationDecisionModel (from Variability) {abstract}
sourceVehicleFeatureModel : FeatureModel [*] {ordered}	sourceVehicleFeatureModel : FeatureModel [0..*] {ordered}	Editorial change of multiplicity	VehicleLevelBinding (from Variability)
targetFeatureModel : FeatureModel [*] {ordered}	targetFeatureModel : FeatureModel [0..*] {ordered}	Editorial change of multiplicity	VehicleLevelBinding (from Variability)
concreteVVCas : VVCas [*]	concreteVVCas : VVCas [0..*]	Editorial change of multiplicity	VVCas (from VerificationValidation)

M2.1.10	M2.1.9.20110830	Change	Metaclass
concreteVVProcedure : VVProcedure [*]	concreteVVProcedure : VVProcedure [0..*]	Editorial change of multiplicity	VVProcedure (from VerificationValidation)
element : Identifiable [*]	element : Identifiable [0..*]	Editorial change of multiplicity	VVTarget (from VerificationValidation)
rootRequirementContainer : RequirementsContainer [*] {ordered} {composite}	rootRequirementContainer : RequirementsContainer [0..*] {ordered} {composite}	Editorial change of multiplicity	RIFArea (from Interchange) {abstract}
[1] The direction of the nominal port must be 'out'.	[1] The direction of the nominal port must be out.	Editorial change	FailureOutPort (from ErrorModel)
[1] The direction of the nominal port must be 'in'.	[1] The direction of the nominal port must be in.	Editorial change	FaultInPort (from ErrorModel)
goalDecompositionStrategy : Warrant [*]	goalDecompositionStrategy : Warrant [0..*]	Editorial change of multiplicity	Claim (from SafetyCase)
supportedArgument : Warrant [*]	supportedArgument : Warrant [0..*]	Editorial change of multiplicity	Claim (from SafetyCase)
safetyRequirement : TraceableSpecification [*]	safetyRequirement : TraceableSpecification [0..*]	Editorial change of multiplicity	Claim (from SafetyCase)
safetyEvidence : Identifiable [*]	safetyEvidence : Identifiable [0..*]	Editorial change of multiplicity	Ground (from SafetyCase)
safetyCase : SafetyCase [*] {composite}	safetyCase : SafetyCase [0..*] {composite}	Editorial change of multiplicity	SafetyCase (from SafetyCase)
evidence : Ground [*]	evidence : Ground [0..*]	Editorial change of multiplicity	Warrant (from SafetyCase)
decomposedGoal : Claim [*]	decomposedGoal : Claim [0..*]	Editorial change of multiplicity	Warrant (from SafetyCase)
	description : String [0..1]	Removed attribute	ValueType (from Datatypes) {abstract}
semantics : String [1]		Added attribute	ValueType (from Datatypes) {abstract}
EAEElement (from Elements)	Identifiable (from Identifiable)	Changed generalization	EAPackage (from Elements)

M2.1.10	M2.1.9.20110830	Change	Metaclass
subPackage : EAPackage [*] {composite}	subPackage : EAPackage [0..*] {composite}	Editorial change of multiplicity	EAPackage (from Elements)
topLevelPackage : EAPackage [*] {composite}	topLevelPackage : EAPackage [0..*] {composite}	Editorial change of multiplicity	EAXML (from Elements)
uaType : UserAttributeElementType [*]	uaType : UserAttributeElementType [0..*]	Editorial change of multiplicity	UserAttributeableElement (from UserAttributes)
	description : String [0..1]	Removed attribute	UserAttributeDefinition (from UserAttributes)
	key : String [1]	Removed attribute	UserAttributeDefinition (from UserAttributes)
	key : String [1]	Removed attribute	UserAttributeValue (from UserAttributes)
semantics : String [0..1]		Added attribute	UserAttributeValue (from UserAttributes)
definition : UserAttributeDefinition [0..1]	No additional associations	Added association	UserAttributeValue (from UserAttributes)
isConceptFor : SystemModel [*]	isConceptFor : SystemModel [0..*]	Editorial change of multiplicity	ArchitecturalModel (from Needs)
problemStatement : ProblemStatement [*]	problemStatement : ProblemStatement [0..*]	Editorial change of multiplicity	BusinessOpportunity (from Needs)
productPositioning : ProductPositioning [*]	productPositioning : ProductPositioning [0..*]	Editorial change of multiplicity	BusinessOpportunity (from Needs)
constrainedMode : Mode [*]	constrainedMode : Mode [0..*]	Editorial change of multiplicity	BehaviorConstraint (from BehaviorConstraints) {abstract}
constrainedFunctionBehavior : FunctionBehavior [*]	constrainedFunctionBehavior : FunctionBehavior [0..*]	Editorial change of multiplicity	BehaviorConstraint (from BehaviorConstraints) {abstract}
constrainedFunctionTrigger : FunctionTrigger [*]	constrainedFunctionTrigger : FunctionTrigger [0..*]	Editorial change of multiplicity	BehaviorConstraint (from BehaviorConstraints) {abstract}

6 Changes in M2.1.10.20120629

Layout adapted and introductory texts explaining the document clarified. No structural changes in the metamodel.