** In this test, we are adding new elements to the EMF model during its evolution. The change operation is performed on the main branch, **Documentation:** while a similar change is made by creating a new branch. Here is the scenario: 1. Main Branch: A new family member named Melania is added to the Trump family. What is being tested? 2. New Branch: A new family member named Ivana is added to the Trump family. Expected behavior? Expected: This results in two separate development lines for the model, each with its own modifications to the Trump family: - The main branch now includes element fm2 as a new family member of the Trump family. Initial - The new branch has element fm3 as the newly added family member of the Trump family. Version **Current Branch** Schematic? Version **Version** "TestCase": [{ "id" : 1, "name": "AddNewElement", "line": "main"}] /** by considering versioning aspect of the system. */ **TEST CASE NAME/ID:** fr: FamilyRegister fm1: FamilyMember father 2 **Initial Version** name = "Donald" f1: Family name = "Trump" **BWV** "changeOperation": [{ "operation": "ADD", "context": "element", **Operations** "identifier": "fm2" }] /** element fm2 is added to diagram. */ **FWV** fm1: FamilyMember fr: FamilyRegister **Current Version** name = "Donald" f1: Family fm2: FamilyMember name = "Trump" mother name = "Melania' /** Initial Version + Operations → Current Version performing change operations on initial version produce current version. */ 5 **Expected Result** $^{\prime**}$ DifferenceOf(Initial Version, Current Version) ightarrow Operations comparing initial version with current version produces change operations. */

fr: FamilyRegister fm1: FamilyMember TEST CASE NAME/ID: "TestCase": [{ "id" : 1.1, "name": "AddNewElementBranch", "line": name = "Donald" "branch"}] I /** by considering branching aspect of the system.*/ f1: Family fm3: FamilyMember 6 **Branch Version** name = "Trump" mother name = "Ivana' "changeOperation": [{ "operation": "ADD", "context": "element", "identifier": "fm3" }] /** element fm3 is added to diagram. */ **Operations** /** CreateBranch(Initial version) + Operations → Branch Version I the system is able to create a new branch from the main. Users are able to make changes on branch version. */ ______ **Expected Result** /** DifferenceOf(Initial version, Branch Version) \rightarrow Operations comparing initial version with branch version produces branch change operations. */

** In this test, we are deleting an elements during evolution. The change operation is performed on the main branch, while a similar change **Documentation:** is made by creating a new branch. Here is the scenario: 1. Main Branch: A family member named Marla is deleted from the Trump family. What is being tested? 2. New Branch: A family member named Marla is deleted from the Trump family. Expected behavior? Expected: This results in two separate development lines for the model, each with its own modifications to the Trump family: - The main branch now includes element fm1 as only existing family member of the Trump family. Initial - The new branch has element fm1 as the only family member of the Trump family. Version **Current Branch** Schematic? Version **Version** "TestCase": [{ "id" : 2, "name": "DeleteElement", "line": "main"}] /** by considering versioning aspect of the system. */ **TEST CASE NAME/ID:** fm1: FamilyMember fr: FamilyRegister father 2 **Initial Version** name = "Donald" f1: Family fm2: FamilyMember name = "Trump" mother name = "Marla' **BWV** "changeOperation": [{ "operation": "DELETE", "context": "element", 3 i "identifier": "fm2" }] **Operations** /** element fm2 is added to diagram. */ **FWV** fr: FamilyRegister fm1: FamilyMember name = "Donald" **Current Version** f1: Family name = "Trump" /** Initial Version + Operations → Current Version performing change operations on initial version produce current version. */ 5 **Expected Result** * DifferenceOf(Initial Version, Current Version) ightarrow Operations comparing initial version with current version produces change operations. */ fr: FamilyRegister fm1: FamilyMember TEST CASE NAME/ID: TestCase": [{ "id" : 2.1, "name": "DeleteElementBranch", "line": name = "Donald" "branch"}] I /** by considering branching aspect of the system.*/ f1: Family 6 **Branch Version** name = "Trump" "changeOperation": [{ "operation": "DELETE", "context": "element", "identifier": "fm2" }]

Operations

Expected Result

/** element fm2 is deleted from the diagram. */

able to make changes on branch version. */

operations. */

i /** CreateBranch(Initial version) + Operations → Branch Version

I the system is able to create a new branch from the main. Users are

/** DifferenceOf(Initial version, Branch Version) → Operations

I comparing initial version with branch version produces branch change

** In this test, we are adding new value to a property of an element during evolution. The change operation is performed on the main **Documentation:** branch, while a similar change is made by creating a new branch. Here is the scenario: 1. Main Branch: "Malenia" is added to the name property of element fm2 in the Trump family. What is being tested? 2. New Branch: "Ivana" is added to the name property of element fm2 in the Trump family. Expected behavior? Expected: This results in two separate development lines for the model, each with its own modifications to the Trump family: - The main branch now includes element fm2 with property name (value = Malenia) in the Trump family. Initial - The new branch has element fm2 with property name (value = Ivana) in the Trump family. Version **Current Branch** Schematic? Version **Version** "TestCase": [{ "id" : 3, "name": "AddProperty", "line": "main"}] /** by considering versioning aspect of the system. */ **TEST CASE NAME/ID:** fm1 : FamilyMember fr: FamilyRegister 2 **Initial Version** name = "Donald" f1: Family fm2: FamilyMember name = "Trump" name = NULL **BWV** "changeOperation": [{ "operation": "ADD", "context": "property", 3 **Operations** i "identifier": "fm2", "propertyName": "name" }] !/** property name is added in the element fm2. *, **FWV** fr: FamilyRegister fm1 : FamilyMember father name = "Donald" **Current Version** f1: Family fm2 : FamilyMember name = "Trump" mother name = "Melania" /** Initial Version + Operations → Current Version performing change operations on initial version produce current **Expected Result** 5 /** DifferenceOf(Initial Version, Current Version) → Operations comparing initial version with current version produces change operations. */ fm1: FamilyMember fr: FamilyRegister father TEST CASE NAME/ID: TestCase": [{ "id" : 3.1, "name": "AddPropertyBranch", "line": "branch"}] name = "Donald" I /** by considering branching aspect of the system.*/

f1: Family fm2: FamilyMember **Branch Version** 6 name = "Trump" mother name = "Ivana" "changeOperation": [{ "operation": "ADD", "context": "property", "identifier": "fm2", "propertyName": "name" }] /** property name is added in the element fm2. */ **Operations** /** CreateBranch(Initial version) + Operations → Branch Version I the system is able to create a new branch from the main. Users are able to make changes on branch version. */ ______ **Expected Result** /** DifferenceOf(Initial version, Branch Version) \rightarrow Operations comparing initial version with branch version produces branch change operations. */

** In this test, we are deleting the value of a property of an element during evolution. The change operation is performed on the main **Documentation:** branch, while a similar change is made by creating a new branch. Here is the scenario: 1. Main Branch: "Marla" is deleted from the name property of element fm2 in the Trump family. What is being tested? 2. New Branch: "Marla" is deleted from the name property of element fm2 in the Trump family. Expected behavior? Expected: This results in two separate development lines for the model, each with its own modifications to the Trump family: - The main branch now includes element fm2 with property name (value = NULL) in the Trump family. Initial - The new branch has element fm2 with property name (value = NULL) in the Trump family. Version **Current Branch** Schematic? Version **Version** "TestCase": [{ "id" : 4, "name": "DeleteProperty", "line": "main"}] /** by considering versioning aspect of the system. */ **TEST CASE NAME/ID:** fm1 : FamilyMember fr: FamilyRegister 2 **Initial Version** name = "Donald" f1: Family fm2: FamilyMember name = "Trump" name = "Marla" **BWV** "changeOperation": [{ "operation": "DELETE", "context": "property", 3 **Operations** i "identifier": "fm2", "propertyName": "name" }] /** a property of element fm2 is deleted. */ **FWV** fm1: FamilyMember fr: FamilyRegister father name = "Donald" **Current Version** f1: Family fm2 : FamilyMember name = "Trump" mother name = NULL /** Initial Version + Operations → Current Version performing change operations on initial version produce current **Expected Result** 5 /** DifferenceOf(Initial Version, Current Version) → Operations comparing initial version with current version produces change operations. */

/** by considering branching aspect of the system.*/

"changeOperation": [{ "operation": "DELETE", "context": "property", "identifier": "fm2", "propertyName": "name" }]

6

/** a property of element fm2 is deleted from the diagram. */

/** CreateBranch(Initial version) + Operations → Branch Version
the system is able to create a new branch from the main. Users are
able to make changes on branch version. */

/** DifferenceOf(Initial version, Branch Version) → Operations

comparing initial version with branch version produces branch change operations. */

TEST CASE NAME/ID:

Branch Version

Operations

Expected Result

fr : FamilyRegister father fm1 : FamilyMember name = "Donald"

f1 : Family fm2 : FamilyMember

name = "Trump" mother name = NULL

8

** In this test, we are adding an element and the value of a property of an element during evolution. The change operation is performed on **Documentation:** the main branch, while a similar change is made by creating a new branch. Here is the scenario: 1. Main Branch: "Donald" is added to the name property of element fm1 in the Trump family. A new family member is added to this family. What is being tested? 2. New Branch: "Donald" is added to the name property of element fm1 in the Trump family. A new family member is added to this family. Expected behavior? Expected: This results in two separate development lines for the model, each with its own modifications to the Trump family: - The main branch now includes elements fm1 and fm2 in the Trump family. Initial - The new branch has elements fm1 and fm3 in the Trump family Version **Current Branch** Schematic? Version **Version** "TestCase": [{ "id" : 5, "name": "AddEl AddPro", "line": "main" }] /** by considering versioning aspect of the system. */ **TEST CASE NAME/ID:** fm1 : FamilyMember fr: FamilyRegister **Initial Version** name = NULL f1: Family name = "Trump" **BWV** "changeOperation": [{ "operation": "ADD", "context": "element", "identifier": "fm2" }, { "operation": "ADD", "context": "property", 3 **Operations** "identifier": "fm1", "propertyName": "name" }] /** a property of element fm2 is deleted. */ **FWV** fm1: FamilyMember fr: FamilyRegister father name = "Donald" **Current Version** f1: Family fm2: FamilyMember name = "Trump" mother name = NULL /** Initial Version + Operations → Current Version performing change operations on initial version produce current 5 **Expected Result** /** DifferenceOf(Initial Version, Current Version) → Operations comparing initial version with current version produces change operations. */ fm1: FamilyMember fr: FamilyRegister father TEST CASE NAME/ID: ! "TestCase": [{ "id" : 5.1, "name": "AddEl AddProBranch", "line": "branch"}] name = "Donald" I /** by considering branching aspect of the system.*/ f1: Family 6 **Branch Version** fm3: FamilyMember name = "Trump" mother name = NULL "changeOperation": [{ "operation": "ADD", "context": "element", "identifier": "fm3" }, { "operation": "ADD", "context": "property", "identifier": "fm1", "propertyName": "name" }] /** a property of element fm2 is deleted from the diagram. */ **Operations** /** CreateBranch(Initial version) + Operations → Branch Version I the system is able to create a new branch from the main. Users are able to make changes on branch version. */ ______ **Expected Result** /** DifferenceOf(Initial version, Branch Version) \rightarrow Operations comparing initial version with branch version produces branch change

operations. */

** In this test, we are adding an element and deleting the value of a property of an element during evolution. The change operation is **Documentation:** performed on the main branch, while a similar change is made by creating a new branch. Here is the scenario: 1. Main Branch: "Donald Trump" is deleted from the name property of element fm1 and new family member is added to this family. What is being tested? 2. New Branch: "Donald Trump" is deleted from the name property of element fm1 and new family member is added to this family. Expected behavior? Expected: This results in two separate development lines for the model, each with its own modifications to the Trump family: - The main branch now includes elements fm1 and fm2 in the Trump family. Initial - The new branch has elements fm1 and fm3 in the Trump family. Version **Current Branch** Schematic? Version **Version** "TestCase": [{ "id" : 6, "name": "AddEl DelPro", "line": "main" }] /** by considering versioning aspect of the system. */ **TEST CASE NAME/ID:** fm1 : FamilyMember fr: FamilyRegister **Initial Version** name = "Donald Trump" f1: Family name = "Trump" **BWV** "changeOperation": [{ "operation": "ADD", "context": "element", "identifier": "fm2" }, { "operation": "DELETE", "context": "property", 3 **Operations** "identifier": "fm1", "propertyName": "name" }] /** the property of l element fm1 is deleted and element fm2 is added. */ **FWV** fm1: FamilyMember fr: FamilyRegister father name = NULL **Current Version** f1: Family fm2: FamilyMember name = "Trump" mother name = "Melania" /** Initial Version + Operations → Current Version performing change operations on initial version produce current 5 **Expected Result** /** DifferenceOf(Initial Version, Current Version) → Operations comparing initial version with current version produces change operations. */ fm1: FamilyMember fr: FamilyRegister father TEST CASE NAME/ID: TestCase": [{ "id" : 6.1, "name": "AddEl DelProBranch", "line": "branch"}] name = NULL /** by considering branching aspect of the system.*/ f1: Family 6 **Branch Version** fm3: FamilyMember name = "Trump" mother "changeOperation": [{ "operation": "ADD", "context": "element", name = "Ivana" "identifier": "fm3" }, { "operation": "DELETE", "context": "property", "identifier": "fm1", "propertyName": "name" }] /** the property of element fm1 is deleted and element fm3 is added. */ **Operations** /** CreateBranch(Initial version) + Operations → Branch Version I the system is able to create a new branch from the main. Users are able to make changes on branch version. */ ______ **Expected Result**

/** DifferenceOf(Initial version, Branch Version) → Operations

I comparing initial version with branch version produces branch change

operations. */

** In this test, we are adding the value of a property of an element and deleting an element during evolution. The change operation is **Documentation:** performed on the main branch, while a similar change is made by creating a new branch. Here is the scenario: 1. Main Branch: Element fm2 is deleted and "Donald" is added to name property of element fm1 is added in the Trump family. What is being tested? 2. New Branch: Element fm2 is deleted and "Donald" is added to name property of element fm1 is added in the Trump family. Expected behavior? Expected: This results in two separate development lines for the model, each with its own modifications to the Trump family: - The main branch now includes elements fm1 in the Trump family. Initial - The new branch has elements fm1 in the Trump family. Version **Current Branch** Schematic? Version **Version** "TestCase": [{ "id" : 7, "name": "DelEl AddPro", "line": "main" }] /** by considering versioning aspect of the system. */ **TEST CASE NAME/ID:** fm1 : FamilyMember fr: FamilyRegister **Initial Version** name = NULL f1: Family fm2 : FamilyMember name = "Trump" name = "Marla" **BWV** "changeOperation": [{ "operation": "DELETE", "context": "element", "identifier": "fm2" }, { "operation": "ADD", "context": "property", 3 **Operations** "identifier": "fm1", "propertyName": "name" }] /** an element fm2 is deleted and the value of the name property of fm1 is added. */ **FWV** fm1: FamilyMember fr: FamilyRegister father name = "Donald" **Current Version** f1: Family name = "Trump" /** Initial Version + Operations → Current Version performing change operations on initial version produce current 5 **Expected Result** /** DifferenceOf(Initial Version, Current Version) → Operations comparing initial version with current version produces change operations. */ fm1: FamilyMember fr: FamilyRegister father TEST CASE NAME/ID: ! "TestCase": [{ "id" : 7.1, "name": "DelEl AddProBranch", "line": "branch"}] name = "Donald" I /** by considering branching aspect of the system.*/ f1: Family 6 **Branch Version** name = "Trump" "changeOperation": [{ "operation": "DELETE", "context": "element", "identifier": "fm2" }, { "operation": "ADD", "context": "property", "identifier": "fm1", "propertyName": "name" }] /** an element fm2 is deleted and the value of the name property of fm1 is added. */ **Operations** /** CreateBranch(Initial version) + Operations → Branch Version I the system is able to create a new branch from the main. Users are able to make changes on branch version. */ _______ **Expected Result** /** DifferenceOf(Initial version, Branch Version) \rightarrow Operations comparing initial version with branch version produces branch change operations. */

** In this test, we are deleting the value of a property of an element and an existing element during evolution. The change operation is **Documentation:** performed on the main branch, while a similar change is made by creating a new branch. Here is the scenario: 1. Main Branch: Element fm2 and the value of the property "Donald Trump" are deleted in the Trump family. What is being tested? 2. New Branch: Element fm2 and the value of the property "Donald Trump" are deleted in the Trump family. Expected behavior? Expected: This results in two separate development lines for the model, each with its own modifications to the Trump family: - The main branch now includes elements fm1 in the Trump family. Initial - The new branch has elements fm1 in the Trump family. Version **Current Branch** Schematic? Version **Version** "TestCase": [{ "id" : 8, "name": "DelEl DelPro", "line": "main" }] /** by considering versioning aspect of the system. */ **TEST CASE NAME/ID:** fm1 : FamilyMember fr: FamilyRegister **Initial Version** name = "Donald Trump" f1: Family fm2 : FamilyMember name = "Trump" name = "Marla" **BWV** "changeOperation": [{ "operation": "DELETE", "context": "element", "identifier": "fm2" }, { "operation": "DELETE", "context": "property", 3 **Operations** "identifier": "fm1", "propertyName": "name" }] /** an element fm2 is deleted and the value of the name property of fm1 is added. */ **FWV** fm1: FamilyMember fr: FamilyRegister father name = NULL **Current Version** f1: Family name = "Trump" /** Initial Version + Operations → Current Version performing change operations on initial version produce current 5 **Expected Result** /** DifferenceOf(Initial Version, Current Version) → Operations comparing initial version with current version produces change operations. */ fm1: FamilyMember fr: FamilyRegister father TEST CASE NAME/ID: ! "TestCase": [{ "id" : 8.1, "name": "DelEl DelProBranch", "line": "branch"}] name = NULL I /** by considering branching aspect of the system.*/ f1: Family 6 **Branch Version** name = "Trump" "changeOperation": [{ "operation": "DELETE", "context": "element", "identifier": "fm2" }, { "operation": "DELETE", "context": "property", "identifier": "fm1", "propertyName": "name" }] /** an element fm2 is deleted and the value of the name property of fm1 is added. */ **Operations** /** CreateBranch(Initial version) + Operations → Branch Version I the system is able to create a new branch from the main. Users are able to make changes on branch version. */ ______ **Expected Result** /** DifferenceOf(Initial version, Branch Version) \rightarrow Operations comparing initial version with branch version produces branch change operations. */