

Ontology-based Expert System for a Generic Drug Production of Pharmaceutical Dosage Forms

Test Plan

By

Mr. Narongrit Saisuwan 542115017

Mr. Panupak Wichaidit 542115047

Department of Software Engineering
College of Arts, Media and Technology
Chiang Mai University

Project Advisor

.....

Dr. ChartchaiDoungsa-ard

Document History

Document Name	Version	Status	Date	Viewable	Reviewer	Responsible
Documents						
OEGP-Test Plan_ v.1.0.docx	1.0 • UTC-01 – UTC 06	Draft	October 16, 2014	NS, PW, CD	NS, PW	NS, PW
OEGP –Test Plan _v.0.2.docx	0.2 • UTC-07-UTC-66	Draft	July 5, 2014	NS, PW, CD	NS, PW	NS, PW
OEGP –Test Plan _v.1.0.docx	1.0 • UTC-07-UTC-66	Release	July 6, 2014	NS, PW, CD	NS, PW	NS, PW
OEGP –Test Plan _v.1.1.docx	1.1 • Remove the substance property use case	Draft	October 16, 2014	NS, PW, CD	NS, PW	NS, PW

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	2 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Table of Contents

Document History	2
Chapter 1 Unit Test.....	4
1.1 Unit Test Case for Client Side (UTC-CI)	4
1.1.1 SubstanceCtrl Class	4
1.1.2 ExcipientCtrl Class	11
1.1.3 FormulationCtrl Class	25
1.1.4 ReformulationCtrl Class	38
1.1.5 ReformulationCtrl Class	41
1.2 Unit Test Case for Server Side (UTC-SV)	49
1.2.1 SubstanceServiceImpl Class	49
1.2.2 ExcipientServiceimpl Class	58
1.2.3 FormulationServiceimpl Class	70
1.2.4 ReformulationHistoryServiceimpl Class	84
1.2.5 InferenceEngineDirector Class	104

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	3 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Chapter | 1 Unit Test

1.1 Unit Test Case for Client Side (UTC-CI)

1.1.1 SubstanceCtrl Class

1.1.1.1 Unit Test Case for Client Side 01 (UTC-CI -01)

addNewSubstance(substance : Substance): Substance

Substance object value= (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

Object Name	Substance object
substance3	("3","substancename2","watersolubility2",{ "stability1","stability2"},3.4,4.6, "solidstate2","hygroscopicity2","particlesize2","alcoholSolubility2", "flowability2",4,"saltfrom2",5.34,"iconicity2")
substance4	("4","substancename3","watersolubility3",{ "stability3","stability4"},6.32,7.67, "solidstate3","hygroscopicity3","particlesize3","alcoholSolubility3", "flowability3",4,"saltfrom3",5.90,"iconicity3")

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	4 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Substance object	Substance object
1	Test add substance object which is correct the formal of substance object.	(null,"substancename","watersolubility",{ "stability1","stability2"},3.4,4.6,"solidstate","hygroscopicity","particlesize","alcohoso lubility2", "flowability2",4,"saltfrom2",5.34,"iconicity2"}	(not null,"substancename2","watersolubility2",{ "stability1","stability2"}, 3.4,4.6, "solidstate2","hygroscopicity2","particlesize2","alcohoso lubility2", "flowability2",4,"saltfrom2",5.34,"iconicity2"}
2	Test add substance object which is correct the formal of substance object.	(null,"substancename1","watersolubility1",{ "stability3","stability4"},6.32,7.67,"solidstate1","hygroscopicity1","particlesize1","alcoh osolubility1", "flowability1",4.34,"saltfrom1",5.90,"iconicity1"}	(not null,"substancename1","watersolubility1",{ "stability3","stability4"},6 .32,7.67, "solidstate1","hygroscopicity1","particlesize1","alcohoso lubility1", "flowability1",4.34,"saltfrom1",5.90,"iconicity1"}
3	Test add substance object which is contained in the database already.	("3","substancename2","watersolubility2",{ "stability1","stability2"},3.45,4.32,"solidstate2","hygroscopicity2","particlesize2","alcoh osolubility2", "flowability2",4.3,"saltfrom2",5.45,"iconicity2"}	null
4	Test add substance object which is contained in the database already.	("4","substancename3","watersolubility3",{ "stability3","stability4"},6.56,7.32,"solidstate3","hygroscopicity3","particlesize3","alcoh osolubility3", "flowability3",4.56,"saltfrom3",5,"iconicity3"}	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	5 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.1.2 Unit Test Case for Client Side 02 (UTC-CI -02)

updateSubstance(substance : Substance): Substance

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

Test data

Object Name	Substance object
substance1	("3","substancename","watersolubility",{ "stability1","stability2"},3.12,4.21,"solidstate","hygroscopicity","particlesize","alcoholsolubility","flowability",4.34,"saltfrom",5.22,"iconicity")
substance2	("4","substancename1","watersolubility1",{ "stability3","stability4"},5.09,7.23,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",5.34,"saltfrom1",8.67,"iconicity1")

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	6 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Substance object	Substance object
1	Test update substance object which is correct the formal of substance object and contained in the database.	("3","substance","watersolubility",{stability1,"stability2"},3.34,4.56,"solidstate","hygroscopicity","particlesize","alcoholsolubility2","flowability",4.67,"saltfrom",5.12,"iconicity")	("3","substance","watersolubility",{stability1,"stability2"},3.34,4.56,"solidstate","hygroscopicity","particlesize","alcoholsolubility2","flowability",4.67,"saltfrom",5.12,"iconicity")
2	Test update substance object which is correct the formal of substance object and contained in the database.	("4","substance1","watersolubility3",{stability3,"stability4"},5.32,7.56,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",5.89,"saltfrom1",8.32,"iconicity3")	("4","substance1","watersolubility3",{stability3,"stability4"},5.32,7.56,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",5.89,"saltfrom1",8.32,"iconicity3")
3	Test update substance object which is not contained in the database.	("1","substance4","watersolubility4",{stability1,"stability2"},3,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",4,"saltfrom4",5,"iconicity4")	null
4	Test update substance object which is not contained in the database.	("2","substance5","watersolubility5",{stability1,"stability2"},3,4,"solidstate5","hygroscopicity5","particlesize5","alcoholsolubility5","flowability5",5,"saltfrom5",5,"iconicity5")	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	7 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.1.3 Unit Test Case for Client Side 03 (UTC-CI -03)

deleteSubstance(substance : Substance): Substance

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

Test data

Object Name	Substance object
substance1	("3","substancename","watersolubility",{ "stability1","stability2"},3.43,4.67,"solidstate","hygroscopicity","particlesize","alcoholSolubility","flowability",4.78,"saltform",5.10,"iconicity")
substance2	("4","substancename1","watersolubility1",{ "stability3","stability4"},5.55,7.54,"solidstate1","hygroscopicity1","particlesize1","alcoholSolubility1","flowability1",5.90,"saltform1",8.45,"iconicity1")

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	8 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Substance object	Substance object
1	Test delete substance object which is contained in database.	("3","substancename","watersolubility",{ "stability1","stability2"},3.43,4.67,"solidstate","hygroscopicity","particlesize","alcoholsolubility","flowability",4.78,"saltfrom",5.10,"iconicity")	("3","substancename","watersolubility",{ "stability1","stability2"},3.43,4.67,"solidstate","hygroscopicity","particlesize","alcoholsolubility","flowability",4.78,"saltfrom",5.10,"iconicity")
2	Test delete substance object which is contained in database.	("4","substancename1","watersolubility1",{ "stability3","stability4"},5.55,7.54,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",5.90,"saltfrom1",8.45,"iconicity1")	("4","substancename1","watersolubility1",{ "stability3","stability4"},5.55,7.54,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",5.90,"saltfrom1",8.45,"iconicity1")
3	Test delete substance object which is not contained in database.	("1","substancename2","watersolubility2",{ "stability1","stability2"},3.45,4.45,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",4.78,"saltfrom2",5.86,"iconicity2")	null
4	Test delete substance object which is not contained.	("2","substancename3","watersolubility3",{ "stability1","stability2"},3.34,4.56,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",4.56,"saltfrom2",5.56,"iconicity3")	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	9 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.1.4 Unit Test Case for Client Side 04 (UTC-CI -04)

getSubstanceList : Substance[]

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

Test data

Object Name	Substance object
substance1	("3","substance","watersolubility",{ "stability1","stability2"},3.56,4.34,"solidstate","hygroscopicity","particlesize","alcoholSolubility","flowability",4.45,"saltform",5.56,"iconicity")
substance2	("4","substance1","watersolubility1",{ "stability3","stability4"},5.56,7.78,"solidstate1","hygroscopicity1","particlesize1","alcoholSolubility1","flowability1",5.56,"saltform1",8.78,"iconicity1")

Test Plan

case	Description	Expect result
		List of substance object
1	Test get all substance list	{ substance1,substance2}

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	10 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.2 ExcipientCtrl Class

1.1.2.1 Unit Test Case for Client Side 05 (UTC-CI -05)

addNewExcipient(excipient : Excipient): Excipient

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	11 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substancename1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcohosolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substancename2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcohosolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substancename3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcohosolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substancename4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcohosolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	Substance Function
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
Excipient3	("3", substance3, { substanceFunction1, substanceFunction2}, 3)
Excipient4	("4", substance4, { substanceFunction3, substanceFunction4}, 4)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	12 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Excipient object	Excipient object
1	Test excipient which is correct the formal excipient object.	(null,substance1,{substanceFunction1, substanceFunction1} , 1)	(not null, substance1 , { substanceFunction1, substanceFunction3} , 1)
2	Test add excipient which is correct the formal of excipient object.	(null, substance2 , { substanceFunction2, substanceFunction4} , 2)	(not null, substance4 , { substanceFunction2, substanceFunction4} , 2)
3	Test add excipient object which is contained in the database already.	("3", substance3 , { substanceFunction1, substanceFunction2} , 3)	null
4	Test add excipient object which is contained in the database already.	("4", substance4, { substanceFunction3, substanceFunction4} , 4)	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	13 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.2.2 Unit Test Case for Client Side 06 (UTC-CI -06)

updateExcipient(excipient : Excipient) : Excipient

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String ionicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	14 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("3", substance3, { substanceFunction1, substanceFunction2}, 3)
excipient2	("4", substance4, { substanceFunction3, substanceFunction4}, 4)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	15 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Excipient object	Excipient object
1	Test update excipient which is correct the formal of object excipient and contained in the database.	("3" , substance1 , { substanceFunction1, substanceFunction2} , 5)	("3" , substance1 , { substanceFunction1, substanceFunction2} , 5)
2	Test update excipient which is correct the formal of excipient object and contained in the database.	("4" , substance2, { substanceFunction3, substanceFunction4} , 7)	("4" , substance2, { substanceFunction3, substanceFunction4} , 7)
3	Test update excipient which is not contained in the database.	("1" , substance1 , { substanceFunction1, substanceFunction2} , 4)	Null
4	Test update excipient which is not contained in the database.	("2" , substance2 , { substanceFunction3, substanceFunction4} , 9)	null

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	16 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.2.3 Unit Test Case for Client Side 07 (UTC-CI -07)

deleteExcipient (excipient : Excipient):Excipient

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	17 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("3", substance3, { substanceFunction1, substanceFunction2}, 3)
excipient2	("4", substance4, { substanceFunction3, substanceFunction4}, 4)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	18 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Excipient object	Excipient object
1	Test delete excipient which is contained in database .	("3" , substance3 , { substanceFunction1, substanceFunction2} , 3)	(null, substance3 , {substanceFunction1, substanceFunction2} , 3)
2	Test delete excipient which is contained in database.	("4" , substance4, { substanceFunction3, substanceFunction4} , 4)	(null , substance4, {substanceFunction3, substanceFunction4} , 4)
3	Test delete excipient which is not contained in database.	("1" , substance1, { substanceFunction3, substanceFunction4} , 5)	null
4	Test delete excipient which is not contained in database.	("2" , substance2, { substanceFunction1, substanceFunction2} , 7)	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	19 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.2.4 Unit Test Case for Client Side 08 (UTC-CI -08)

getAllExcipient () : Excipient []

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	20 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("3", substance3, { substanceFunction1, substanceFunction2}, 3)
excipient2	("4", substance4, { substanceFunction3, substanceFunction4}, 4)

Test Case

case	Description	Expect result
		excipient object List
1	Test get all excipient list.	{ excipient1,excipient2}

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	21 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.2.5 Unit Test Case for Client Side 09 (UTC-CI -09)

getSubstaneList() : Substance []

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	22 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("3", substance3, { substanceFunction1, substanceFunction2}, 3)
excipient2	("4", substance4, { substanceFunction3, substanceFunction4}, 4)

Test case

case	Description	Expect result
		substance object List
1	Test get all substance list.	{ substance1, substance2, substance3, substance4}

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	23 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.2.6 Unit Test Case for Client Side 10 (UTC-CI -10)

getCurrentSubstanceFnList() : SubstanceFunction []

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Test data

Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)

Test Case

case	Description	Expect result
		substanceFunction object List
1	Test get all substanceFunction list.	{ substanceFunction1, substanceFunction2, substanceFunction3, substanceFunction4}

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	24 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.3 FormulationCtrl Class

1.1.3.1 Unit Test Case for Client Side 11 (UTC-CI -11)

addFormulation(formulation : Formulation) : Formulation

Formulation object value = value (String id, String name, String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id, Substance substance, List<SubstanceFunction> substanceFunctions, double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	25 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2)
Object Name	formulation object
formulation3	("3", "name3", "type3", 3, {excipient1,excipient2})
formulation4	("4", "name4", "type4", 4, {excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	26 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Formulation object	Formulation object
1	Test add formulation object which is correct the formal of formulation object.	(null , "name1", "type1", 1, {excipient1,excipient2})	(not null , "name1", "type1", 1, {excipient1,excipient2})
2	Test add formulation which is correct the formal of formulation object.	(null , "name4", "type4", 4, {excipient3,excipient4})	(not null, "name4", "type4", 4, {excipient3,excipient4})
3	Test add formulation object which is contained in the database already.	("3" , "name3", "type3", 3, {excipient1,excipient2})	null
4	Test add formulation object which is contained in the database already.	("4" , "name4", "type4", 4, {excipient3,excipient4})	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	27 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.3.2 Unit Test Case for Client Side 12 (UTC-CI -12)

updateFormulation(formulation : Formulation) : Formulation

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String ionicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	28 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2)
Object Name	formulation object
formulation3	("3", "name3", "type3", 3, {excipient1,excipient2})
formulation4	("4", "name4", "type4", 4, {excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	29 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		formulation object	formulation object
1	Test update formulation object which is correct the formal of formulation object.	("3" , "name1", "type1", 1, {excipient3,excipient4})	("3" , "name1", "type1", 1, {excipient3,excipient4})
2	Test update formulation object which is correct the formal of formulation object.	("4" , "name2", "type2", 2, {excipient1,excipient2})	("4" , "name2", "type2", 2, {excipient1,excipient2})
3	Test update formulation object which is not contained in the database.	("1" , "name1", "type1", 1, {excipient1,excipient2})	null
4	Test update formulation object which is not contained in the database.	("2" , "name2", "type2", 2, {excipient3,excipient4})	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	30 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.3.3 Unit Test Case for Client Side 13 (UTC-CI -13)

deleteFormulation(formulation : Formulation) : Formulation

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String ionicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	31 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2)
Object Name	formulation object
formulation3	("3", "name3", "type3", 3, {excipient1,excipient2})
formulation4	("4", "name4", "type4", 4, {excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	32 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		formulation object	formulation object
1	Test delete formulation object which is contained in database and correct format formulation object.	("3" , "name3" , "type3" , 3, {excipient1,excipient2})	("3" , "name3" , "type3" , 3, {excipient1,excipient2})
2	Test delete formulation object which is contained in database and correct format formulation object.	("4" , "name4" , "type4" , 4, {excipient3,excipient4})	("4" , "name4" , "type4" , 4, {excipient3,excipient4})
3	Test delete formulation object which is not contained in database.	("1" , "name1" , "type1" , 1, {excipient1,excipient1})	null
4	Test delete formulation object which is not contained in database.	("2" , "name2" , "type2" , 2, {excipient3,excipient4})	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	33 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.3.4 Unit Test Case for Client Side 14 (UTC-CI -14)

geFormulationList() : Formulation []

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String ionicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	34 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2)
Object Name	formulation object
formulation3	("3", "name3", "type3", 3, {excipient1,excipient2})
formulation4	("4", "name4", "type4", 4, {excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	35 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

case	Description	Expect result
		List of formulation object
1	Test get all formulation object list.	{formulation1,formulation2}

1.1.3.5 Unit Test Case for Client Side 15 (UTC-CI -15)

getExcipientList () : Excipient []

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molecularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	36 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("3", substance3, { substanceFunction1, substanceFunction2}, 3)
excipient2	("4", substance4, { substanceFunction3, substanceFunction4}, 4)

Test Case

case	Description	Expect result
		excipient object List
1	Test get all excipient list.	{ excipient1,excipient2}

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	37 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.4 ReformulationCtrl Class

1.1.4.1 Unit Test Case for Client Side 16 (UTC-CI -16)

getFormulationList() : Formulation []

ReformulationHistory object value = value(String id , List<ReformulatedProduction> reformulatedProductionList , Date date , User user)

ReformulatedProduction object value = value(String id , Production production , boolean accept , String inferenceEngine)

User object value =value (String id , String username , String password , String name , String address , String telno , String email , String type);

Production object value = value(String id , Formulation formulation, DFProperty dfProperty , String instruction , float formulationWeight)

DFProperty object value = value(float totalweight , int disgradationtime , float hardness , List<Double> dissolutionProfile)

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	38 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{"stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{"stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{"stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{"stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2)
Object Name	formulation object
formulation1	("1", "name1", "type1", 1, {excipient1,excipient4})
formulation2	("2", "name2", "type2", 2, {excipient2,excipient4})
formulation3	("3", "name3", "type3", 3, {excipient1,excipient2})
formulation4	("4", "name4", "type4", 4, {excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	39 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

case	Description	Expect result
		List of formulation object
1	Test get all formulation list	{ reformulation1, reformulationHistory2, reformulationHistory3, reformulationHistory2 }

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	40 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.5 ReformulationCtrl Class

1.1.5.1 Unit Test Case for Client Side 17 (UTC-CI -17)

updateReformulationHistory(reformulationHistory : ReformulationHistory) : ReformulationHistory

ReformulationHistory object value = value(String id , List<ReformulatedProduction> reformulatedProductionList , Date date , User user)

ReformulatedProduction object value = value(String id , Production production , boolean accept , String inferenceEngine)

User object value =value (String id , String username , String password , String name , String address , String telno , String email , String type);

Production object value = value(String id , Formulation formulation, DFProperty dfProperty , String instruction , float formulationWeight)

DFProperty object value = value(float totalweight , int disgradationtime , float hardness , List<Double> dissolutionProfile)

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	41 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{"stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{"stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{"stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{"stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2)
Object Name	formulation object
formulation1	("1", "name1", "type1", 1, {excipient1,excipient4})
formulation2	("2", "name2", "type2", 2, {excipient2,excipient4})
formulation3	("3", "name3", "type3", 3, {excipient1,excipient2})
formulation4	("4", "name4", "type4", 4, {excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	42 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Object Name	DFProperty object
dfProperty1	(1.11,1 , 1.11 , {3.2,4.2,5.6,6.6})
dfProperty2	(2.22,2 , 2.22 , {1.2,2.2,3.6,4.6})
dfProperty3	(3.33,3 , 3.33 , {1.6,5.2,6.6,7.8})
dfProperty4	(4.44,4 , 4.44 , {4.5,6.7,8.8,9.0})
Object Name	Production object
production1	("1" , formulation1 , dfProperty1 , "instruction1" , 1.12)
production2	("2" , formulation2 , dfProperty2 , "instruction2" , 2.23)
production3	("3" , formulation3 , dfProperty3 , "instruction3" , 3.34)
Production4	("4" , formulation4 , dfProperty4 , "instruction4" , 4.45)
Object Name	reformulationProduct object
reformulatedProduction1	("1" , production1 , true , "role base")
reformulatedProduction2	("2" , production4 , false , "case base")
reformulatedProduction3	("3" , production3 , true , "role base")
reformulatedProduction4	("4" , production4 , false , "case base")
Object Name	User object
user1	("1" , "username 1" , "password1" , "name1" , "173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "admin");
user2	("1" , "username 1" , "password1" , "name1" , "173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "user");
Object Name	reformulationHistory object
reformulationHistory3	("3" , {reformulatedProduction1, reformulatedProduction2}, "5/10/2014 " , user1)
reformulationHistory4	("4" , {reformulatedProduction3, reformulatedProduction4}, "7/4/2008 " , user2)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	43 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		reformulationHistory object	reformulationHistory object
1	Test update reformulationHistory object which is correct the formal of reformulationHistory object and contained in the database.	("3", {reformulatedProduction1, reformulatedProduction3},"4/11/209 ", user1)	("3", {reformulatedProduction1, reformulatedProduction3},"4/11/209 ", user1)
2	Test update reformulationHistory object which is correct the formal of reformulationHistory object and contained in the database.	("4", {reformulatedProduction2, reformulatedProduction4},"6/6/2013 ", user2)	("4", {reformulatedProduction2, reformulatedProduction4},"6/6/2013 ", user2)
3	Test update reformulationHistory object which is not contained in the database.	("1", {reformulatedProduction1, reformulatedProduction3},"4/11/209 ", user1)	null
4	Test update reformulationHistory object which is not contained in the database.	("2", {reformulatedProduction2, reformulatedProduction4},"6/6/2013 ", user2)	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	44 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.1.5.2 Unit Test Case for Client Side 18 (UTC-CI -18)

deleteReformulationHistory(String id) : ReformulationHistory

ReformulationHistory object value = value(String id , List<ReformulatedProduction> reformulatedProductionList , Date date , User user)

ReformulatedProduction object value = value(String id , Production production , boolean accept , String inferenceEngine)

User object value =value (String id , String username , String password , String name , String address , String telno , String email , String type);

Production object value = value(String id , Formulation formulation, DFProperty dfProperty , String instruction , float formulationWeight)

DFProperty object value = value(float totalweight , int disgradationtime , float hardness , List<Double> dissolutionProfile)

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	45 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substancename1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcohosolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substancename2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcohosolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substancename3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcohosolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substancename4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcohosolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1, 11)
substanceFunction2	("functionName2", "functionTyp2", 2, 12)
substanceFunction3	("functionName3", "functionTyp3", 3, 13)
substanceFunction4	("functionName4", "functionTyp4", 4, 14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2)
Object Name	formulation object
formulation1	("1", "name1", "type1", 1, {excipient1,excipient4})
formulation2	("2", "name2", "type2", 2, {excipient2,excipient4})
formulation3	("3", "name3", "type3", 3, {excipient1,excipient2})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	46 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

formulation4	("4" , "name4" , "type4" , 4 , {excipient3,excipient4})
Object Name	DFProperty object
dfProperty1	(1.11,1 , 1.11 , {3.2,4.2,5.6,6.6})
dfProperty2	(2.22,2 , 2.22 , {1.2,2.2,3.6,4.6})
dfProperty3	(3.33,3 , 3.33 , {1.6,5.2,6.6,7.8})
dfProperty4	(4.44,4 , 4.44 , {4.5,6.7,8.8,9.0})
Object Name	Production object
production1	("1" , formulation1 , dfProperty1 , "instruction1" , 1.12)
production2	("2" , formulation2 , dfProperty2 , "instruction2" , 2.23)
production3	("3" , formulation3 , dfProperty3 , "instruction3" , 3.34)
Production4	("4" , formulation4 , dfProperty4 , "instruction4" , 4.45)
Object Name	reformulationProduct object
reformulatedProduction1	("1" , production1 , true , "role base")
reformulatedProduction2	("2" , production4 , false , "case base")
reformulatedProduction3	("3" , production3 , true , "role base")
reformulatedProduction4	("4" , production4 , false , "case base")
Object Name	User object
user1	("1" , "username 1" , "password1" , "name1" , "173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "admin");
user2	("1" , "username 1" , "password1" , "name1" , "173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "user");
Object Name	reformulationHistory object
reformulationHistory3	("3" , {reformulatedProduction1, reformulatedProduction2}, "5/10/2014 " , user1)
reformulationHistory4	("4" , {reformulatedProduction3, reformulatedProduction4}, "7/4/2008 " , user2)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	47 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Id	reformulationHistory object
1	Test delete reformulationHistory object which is contained in database and correct format reformulationHistory object.	"3"	("3", {reformulatedProduction1, reformulatedProduction2},"5/10/2014", user1)
2	Test delete reformulationHistory object which is contained in database and correct format reformulationHistory.	"4"	("4", {reformulatedProduction3, reformulatedProduction4},"7/4/2008", user2)
3	Test delete reformulationHistory object which is not contained in database or incorrect format reformulationHistory object.	"1"	null
4	Test delete reformulationHistory object which is not contained in database or incorrect format reformulationHistory object.	"2"	null

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	48 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2 Unit Test Case for Server Side (UTC-SV)

1.2.1 SubstanceServiceImpl Class

1.2.1.1 Unit Test Case for Server Side 01 (UTC-SV -01)

addSubstance (substance:Substance): Substance

Test data

Substance object value= (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

Object Name	Substance object
substance3	("3","substancename2","watersolubility2",{"stability1","stability2"},3.43,4.56,"solidstate2","hygroscopicity2","particlesize2","alcoholSolubility2","flowability2",4.54,"saltfrom2",5.54,"iconicity2")
substance4	("4","substancename3","watersolubility3",{"stability3","stability4"},6.54,7.65,"solidstate3","hygroscopicity3","particlesize3","alcoholSolubility3","flowability3",4.54,"saltfrom3",5.54,"iconicity3")

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	49 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Substance object	Substance object
1	Test add substance object which is correct the formal of substance object.	(null,"substancename","watersolubility",{ "stability1","stability2"},3.43,4.56,"solidstate","hygroscopicity","particlesize","alcohosolubility","flowability",4.54,"saltfrom",5.54,"iconicity")	(not null,"substancename","watersolubility1",{ "stability","stability1"},3,4,"solidstate","hygroscopicity","particlesize","alcohosolubility","flowability",4,"saltfrom",5,"iconicity")
2	Test add substance object which is correct the formal of substance object.	(null,"substancename1","watersolubility1",{ "stability3","stability4"},5.54,7.54,"solidstate1","hygroscopicity1","particlesize1","alcohosolubility1","flowability1",5.43,"saltfrom1",8.43,"iconicity1")	(not null,"substancename1","watersolubility1",{ "stability3","stability4"},5.54,7.54,"solidstate1","hygroscopicity1","particlesize1","alcohosolubility1","flowability1",5.53,"saltfrom1",8.43,"iconicity1")
3	Test add substance object which is contained in the database already.	("3","substancename2","watersolubility2",{ "stability1","stability2"},3.43,4.56,"solidstate2","hygroscopicity2","particlesize2","alcohosolubility2","flowability2",4.54,"saltfrom2",5.54,"iconicity2")	null
4	Test add substance object which is contained in the database already.	("4","substancename3","watersolubility3",{ "stability3","stability4"},6.54,7.65,"solidstate3","hygroscopicity3","particlesize3","alcohosolubility3","flowability3",4.54,"saltfrom3",5.54,"iconicity3")	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	50 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.1.2 Unit Test Case for Server Side 02 (UTC-SV -02)

updateSubstance (substance : Substance): Substance

Test data

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

Object Name	Substance object
substance1	("3","substancename","watersolubility",{ "stability1","stability2"},3.5,4.7,"solidstate","hygroscopicity","particlesize","alcohosolubility","flowability",4.3,"saltfrom",5.7,"iconicity")
substance2	("4","substancename1","watersolubility1",{ "stability3","stability4"},5.6,7.8,"solidstate1","hygroscopicity1","particlesize1","alcohosolubility1","flowability1",5.5,"saltfrom1",8.6,"iconicity1")

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	51 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Substance object	Substance object
1	Test update substance object which is correct the formal of substance object and contained in the database.	("3","substancename2","watersolubility2",{ "stability1","stability2"},3.6,4.8,"solidstate2","hygroscopicity2","particlesize2","alcohol solubility2", "flowability2",4.7,"saltfrom2",5.9,"iconicity2")	("3","substancename2","watersolubility2",{ "stability1","stability2"},3.6,4.8,"solidstate2","hygroscopicity2","particlesize2","alcohol solubility2", "flowability2",4.7,"saltfrom2",5.9,"iconicity2")
2	Test update substance object which is correct the formal of substance object and contained in the database.	("4","substancename3","watersolubility3",{ "stability3","stability4"},5.4,7.7,"solidstate3","hygroscopicity3","particlesize3","alcohol solubility3", "flowability3",5.3,"saltfrom1",8.5,"iconicity3")	("4","substancename3","watersolubility3",{ "stability3","stability4"},5.4,7.7,"solidstate3","hygroscopicity3","particlesize3","alcohol solubility3", "flowability3",5.3,"saltfrom1",8.5,"iconicity3")
3	Test update substance object which is not contained in the database.	("1","substancename4","watersolubility4",{ "stability1","stability2"},3.5,4.2,"solidstate4","hygroscopicity4","particlesize4","alcohol solubility4", "flowability4",4.5,"saltfrom4",5.6,"iconicity4")	null
4	Test update substance object which is not contained in the database.	("2","substancename5","watersolubility5",{ "stability1","stability2"},3.5,4.7,"solidstate5","hygroscopicity5","particlesize5","alcohol solubility5", "flowability5",5.5,"saltfrom5",5.9,"iconicity5")	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	52 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.1.3 Unit Test Case for Server Side 03 (UTC-SV -03)

deleteSubstance (substance : Substance): Substance

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

Test data

Object Name	Substance object
substance1	("3","substancename","watersolubility",{ "stability1","stability2"},3.2,4.4,"solidstate","hygroscopicity","particlesize","alcoholSolubility","flowability",4.5,"saltform",5.6,"iconicity")
substance2	("4","substancename1","watersolubility1",{ "stability3","stability4"},5.5,7.7,"solidstate1","hygroscopicity1","particlesize1","alcoholSolubility1","flowability1",5.1,"saltform1",8.6,"iconicity1")

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	53 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Substance object	Substance object
1	Test delete substance object which is contained in database.	("3", "substance", "watersolubility", {"stability1", "stability2"}, 3.2, 4.4, "solidstate", "hygroscopicity", "particlesize", "alcoholubility", "flowability", 4.5, "saltfrom", 5.6, "iconicity")	(null, "substance", "watersolubility", {"stability1", "stability2"}, 3.2, 4.4, "solidstate", "hygroscopicity", "particlesize", "alcoholubility", "flowability", 4.5, "saltfrom", 5.6, "iconicity")
2	Test delete substance object which is contained in database.	("4", "substance1", "watersolubility1", {"stability3", "stability4"}, 5.5, 7.7, "solidstate1", "hygroscopicity1", "particlesize1", "alcoholubility1", "flowability1", 5.1, "saltfrom1", 8.6, "iconicity1")	(null, "substance1", "watersolubility1", {"stability3", "stability4"}, 5.5, 7.7, "solidstate1", "hygroscopicity1", "particlesize1", "alcoholubility1", "flowability1", 5.1, "saltfrom1", 8.6, "iconicity1")
3	Test delete substance object which is not contained in database.	("1", "substance2", "watersolubility2", {"stability1", "stability2"}, 3.5, 4.8, "solidstate2", "hygroscopicity2", "particlesize2", "alcoholubility2", "flowability2", 4.3, "saltfrom2", 5.5, "iconicity2")	null
4	Test delete substance object which is not contained.	("2", "substance3", "watersolubility3", {"stability1", "stability2"}, 3.5, 4.6, "solidstate3", "hygroscopicity3", "particlesize3", "alcoholubility3", "flowability3", 4.7, "saltfrom2", 5.9, "iconicity3")	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	54 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.1.4 Unit Test Case for Server Side 04 (UTC-SV -04)

getAllSubstance: Substance[]

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

Test data

Object Name	Substance object
substance1	("3","substancename","watersolubility",{ "stability1","stability2"},3.4,4.1,"solidstate","hygroscopicity","particlesize","alcoholSolubility","flowability",4,"saltform",5,"iconicity")
substance2	("4","substancename1","watersolubility1",{ "stability3","stability4"},5.6,7.8,"solidstate1","hygroscopicity1","particlesize1","alcoholSolubility1","flowability1",5.5,"saltform1",8.9,"iconicity1")

Test Plan

case	Description	Expect result
		List of substance object
1	Test get all substance list	{ substance1,substance2}

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	55 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.1.5 Unit Test Case for Server Side 05 (UTC-SV -05)

getSubstanceById (String id):substance

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

Test data

Object Name	Substance object
substance1	(1,"substancename","watersolubility",{ "stability1","stability2"},3.6,4.8,"solidstate","hygroscopicity","particlesize","alcoholSolubility","flowability",4.4,"saltform",5.7,"iconicity")
substance2	(2,"substancename1","watersolubility1",{ "stability3","stability4"},5.8,7.9,"solidstate1","hygroscopicity1","particlesize1","alcoholSolubility1","flowability1",5.3,"saltform1",8.7,"iconicity1")

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	56 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		substance id	Substance object
1	Test get substance object which is contained in database by substance id.	1	(1,"substancename","watersolubility",{ "stability1","stability2"},3.6,4.8,"solidstate","hygroscopicity","particlesize","alcohosolubility","flowability",4.4,"saltfrom",5.7,"iconicity"}
2	Test get substance object which is contained in database by substance id.	2	(2,"substancename1","watersolubility1",{ "stability3","stability4"},5.8,7.9,"solidstate1","hygroscopicity1","particlesize1","alcohosolubility1","flowability1",5.3,"saltfrom1",8.7,"iconicity1"}
3	Test get substance object which is not contain in database by substance id.	3	null
4	Test get substance object which is not contain by substance id in database.	4	Null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	57 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.2 ExcipientServiceimpl Class

1.2.2.1 Unit Test Case for Server Side 06 (UTC-SV -06)

addExcipient(excipient : Excipient): Excipient

Excipient object value = value (String id, Substance substance, List<SubstanceFunction> substanceFunctions, double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient, String solidState, String hygroscopicity, String particleSize, String alcoholSolubility, String flowability, double density, String saltForm, double molecularWeight, String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	58 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substancename1","watersolubility1",{ "stability1","stability2"},3.5,4.7, "solidstate1","hygroscopicity1","particlesize1","alcohosolubility1", "flowability1",4.7,"saltfrom1",5.4,"iconicity1")
substance2	(2,"substancename2","watersolubility2",{ "stability3","stability4"},5.6,7.9, "solidstate2","hygroscopicity2","particlesize2","alcohosolubility2", "flowability2",5.2,"saltfrom2",8.5,"iconicity2")
Substance3	("3","substancename3","watersolubility3",{ "stability5","stability5"},6.7,9.9, "solidstate3","hygroscopicity3","particlesize3","alcohosolubility3", "flowability3",2.4,"saltfrom3",6.6,"iconicity3")
Substance4	("4","substancename4","watersolubility4",{ "stability6","stability6"},12.7,4.8, "solidstate4","hygroscopicity4","particlesize4","alcohosolubility4", "flowability4",7.4,"saltfrom4",9.7,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1,11)
substanceFunction2	("functionName2","functionTyp2",2,12)
substanceFunction3	("functionName3","functionTyp3",3,13)
substanceFunction4	("functionName4","functionTyp4",4,14)
Object Name	Excipient object
Excipient3	("3", substance3 , { substanceFunction1, substanceFunction2} , 3.7)
Excipient4	("4", substance4, { substanceFunction3, substanceFunction4} , 4.7)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	59 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Excipient object	Excipient object
1	Test excipient which is correct the formal excipient object.	(null,substance1,{substanceFunction1, substanceFunction1} , 1.5)	(not null, substance1 , { substanceFunction1, substanceFunction3} , 1.5)
2	Test add excipient which is correct the formal of excipient object.	(null, substance2 , { substanceFunction2, substanceFunction4} , 2.7)	(not null, substance4 , { substanceFunction2, substanceFunction4} , 2.7)
3	Test add excipient object which is contained in the database already.	("3", substance3 , { substanceFunction1, substanceFunction2} , 3.7)	null
4	Test add excipient object which is contained in the database already.	("4", substance4, { substanceFunction3, substanceFunction4} , 4.7)	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	60 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.2.2 Unit Test Case for Server Side 07 (UTC-SV -07)

updateExcipient(excipient : Excipient) : Excipient

Excipient object value = value (String id, Substance substance, List<SubstanceFunction>substanceFunctions ,double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molecularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	61 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substancename1","watersolubility1",{ "stability1","stability2"},3.6,4.8, "solidstate1","hygroscopicity1","particlesize1","alcohosolubility1", "flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substancename2","watersolubility2",{ "stability3","stability4"},5.9,7.4, "solidstate2","hygroscopicity2","particlesize2","alcohosolubility2", "flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substancename3","watersolubility3",{ "stability5","stability5"},6.7,9.8, "solidstate3","hygroscopicity3","particlesize3","alcohosolubility3", "flowability3",2.9,"saltfrom3",6.7,"iconicity3")
Substance4	("4","substancename4","watersolubility4",{ "stability6","stability6"},12.7,4.8, "solidstate4","hygroscopicity4","particlesize4","alcohosolubility4", "flowability4",7.7,"saltfrom4",9.4,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1.7,11.8)
substanceFunction2	("functionName2","functionTyp2",2.1,12.7)
substanceFunction3	("functionName3","functionTyp3",3.2,13.5)
substanceFunction4	("functionName4","functionTyp4",4.6,14.8)
Object Name	Excipient object
excipient1	("3", substance3 , { substanceFunction1, substanceFunction2} , 3.6)
excipient2	("4", substance4, { substanceFunction3, substanceFunction4} , 4.7)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	62 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Excipient object	Excipient object
1	Test update excipient which is correct the formal of object excipient and contained in the database.	("3" , substance1 , { substanceFunction1, substanceFunction2} , 5.5)	("3" , substance1 , { substanceFunction1, substanceFunction2} , 5.5)
2	Test update excipient which is correct the formal of excipientobject and contained in the database.	("4" , substance2 , { substanceFunction3, substanceFunction4} , 7.7)	("4" , substance2 , { substanceFunction3, substanceFunction4} , 7.7)
3	Test update excipient which is not contained in the database.	("1" , substance1 , { substanceFunction1, substanceFunction2} , 4)	null
4	Test update excipient which is not contained in the database.	("2" , substance2 , { substanceFunction3, substanceFunction4} , 9)	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	63 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.2.3 Unit Test Case for Server Side 08 (UTC-SV -08)

getExcipientById(id : String) : Excipient

Excipient object value = value (String id, Substance substance, List<SubstanceFunction>substanceFunctions ,double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molarWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	64 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substancename1","watersolubility1",{ "stability1","stability2"},3.6,4.4, "solidstate1","hygroscopicity1","particlesize1","alcohosolubility1", "flowability1",4.2,"saltfrom1",5.0,"iconicity1")
substance2	(2,"substancename2","watersolubility2",{ "stability3","stability4"},5.4,7.9, "solidstate2","hygroscopicity2","particlesize2","alcohosolubility2", "flowability2",5.2,"saltfrom2",8.6,"iconicity2")
Substance3	("3","substancename3","watersolubility3",{ "stability5","stability5"},6.9,9.4, "solidstate3","hygroscopicity3","particlesize3","alcohosolubility3", "flowability3",2.6,"saltfrom3",6.7,"iconicity3")
Substance4	("4","substancename4","watersolubility4",{ "stability6","stability6"},12,4, "solidstate4","hygroscopicity4","particlesize4","alcohosolubility4", "flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1.4,11.6)
substanceFunction2	("functionName2","functionTyp2",2.7,12.3)
substanceFunction3	("functionName3","functionTyp3",3.6,13.7)
substanceFunction4	("functionName4","functionTyp4",4.8,14.8)
Object Name	Excipient object
excipient1	("3", substance3, { substanceFunction1, substanceFunction2} , 3.4)
excipient2	("4", substance4, { substanceFunction3, substanceFunction4} , 4.8)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	65 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

case	Description	Input	Expect result
		Id	Excipient object
1	Test get excipient object by excipientid.	"3"	("3" , substance3 , { substanceFunction1, substanceFunction2} , 3.4)
2	Test get excipient object by excipientid.	"4"	("4" , substance4, { substanceFunction3, substanceFunction4} , 4.8)
3	Test get excipient object which is not contain in database.	1	null
4	Test get excipient object which is not contain in database.	2	null

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	66 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.2.4 Unit Test Case for Server Side 09 (UTC-SV -09)

getSubstanceFunction() : SubstanceFunction []

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Test data

Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1,11)
substanceFunction2	("functionName2","functionTyp2",2,12)
substanceFunction3	("functionName3","functionTyp3",3,13)
substanceFunction4	("functionName4","functionTyp4",4,14)

Test Case

case	Description	Expect result
		Excipient object List
1	Test get all substanceFunction list.	{ substanceFunction1, substanceFunction2, substanceFunction3, substanceFunction4}

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	67 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.2.5 Unit Test Case for Server Side 10 (UTC-SV -10)

getSubstanceForExcipient() : Substance[]

Excipient object value = value (String id, Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double molecularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	68 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1,11)
substanceFunction2	("functionName2","functionTyp2",2,12)
substanceFunction3	("functionName3","functionTyp3",3,13)
substanceFunction4	("functionName4","functionTyp4",4,14)
Object Name	Excipient object
excipient1	("3", substance3 , { substanceFunction1, substanceFunction2} , 3)
excipient2	("4", substance4, { substanceFunction3, substanceFunction4} , 4)

Test Case

case	Description	Expect result
		Excipient object List
1	Test get all substance list that.	{ substance1, substanc2, substance3, substance4}

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	69 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.3 FormulationServiceimpl Class

1.2.3.1 Unit Test Case for Server Side 11 (UTC-SV -11)

addFormulation(formulation : Formulation) : Formulation

Formulation object value = value (String id, String name,String type, double usedWeight, List<Excipient>api)

Excipient object value = value (String id,Substance substance ,List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	70 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substancename1","watersolubility1",{ "stability1","stability2"},3.4,4.5, "solidstate1","hygroscopicity1","particlesize1","alcohosolubility1", "flowability1",4.6,"saltfrom1",5.8,"iconicity1")
substance2	(2,"substancename2","watersolubility2",{ "stability3","stability4"},5.3,7.5, "solidstate2","hygroscopicity2","particlesize2","alcohosolubility2", "flowability2",5.7,"saltfrom2",8.9,"iconicity2")
Substance3	("3","substancename3","watersolubility3",{ "stability5","stability5"},6.3,9.6, "solidstate3","hygroscopicity3","particlesize3","alcohosolubility3", "flowability3",2.7,"saltfrom3",6.7,"iconicity3")
Substance4	("4","substancename4","watersolubility4",{ "stability6","stability6"},12.5,4.6, "solidstate4","hygroscopicity4","particlesize4","alcohosolubility4", "flowability4",7.7,"saltfrom4",9.8,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1,11)
substanceFunction2	("functionName2","functionTyp2",2,12)
substanceFunction3	("functionName3","functionTyp3",3,13)
substanceFunction4	("functionName4","functionTyp4",4,14)
Object Name	Excipient object
excipient1	("1", substance1 , { substanceFunction1, substanceFunction3} , 1.5)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4} , 2.6)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3} , 2.4)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4} , 2.0)
Object Name	formulation object
formulation3	("3", "name3", "type3", 3.3,{excipient1,excipient2})
formulation4	("4", "name4", "type4", 4.4,{excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	71 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		Formulation object	Formulation object
1	Test add formulation object which is correct the formal of formulation object.	(null,"name1", "type1", 1.5,{excipient1,excipient2})	(not null,"name1", "type1", 1.5,{excipient1,excipient2})
2	Test add formulation which is correct the formal of formulation object.	(null,"name4", "type4", 4.3,{excipient3,excipient4})	(not null,"name4", "type4", 4.3,{excipient3,excipient4})
3	Test add formulation object which is contained in the database already.	("3", "name3", "type3", 3.3,{excipient1,excipient2})	null
4	Test add formulation object which is contained in the database already.	("4", "name4", "type4", 4.4,{excipient3,excipient4})	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	72 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.3.2 Unit Test Case for Server Side 12 (UTC-SV -12)]

updateFormulation(formulation : Formulation) : Formulation

Formulation object value = value (String id, String name,String type, double usedWeight, List<Excipient>api)

Excipient object value = value (String id,Substance substance,List<SubstanceFunction>substanceFunctions ,double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	73 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3.4,4.6, "solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1", "flowability1",4.7,"saltfrom1",5.9,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5.4,7.7, "solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2", "flowability2",5.4,"saltfrom2",8.6,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6.7,9.8, "solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3", "flowability3",2.2,"saltfrom3",6.4,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12.5,4.6, "solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4", "flowability4",7.6,"saltfrom4",9.6,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1.9,11.4)
substanceFunction2	("functionName2","functionTyp2",2.2,12.5)
substanceFunction3	("functionName3","functionTyp3",3.6,13.8)
substanceFunction4	("functionName4","functionTyp4",4.4,14.7)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3} , 1.6)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4} , 2.7)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3} , 2.3)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4} , 2.5)
Object Name	formulation object
formulation3	("3", "name3", "type3", 3.3,{excipient1,excipient2})
formulation4	("4", "name4", "type4", 4.3,{excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	74 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		formulation object	formulation object
1	Test update formulation object which is correct the formal of formulation object.	("3" ,"name1", "type1", 1.1,{excipient3,excipient4})	("3" ,"name1", "type1", 1.1,{excipient3,excipient4})
2	Test update formulation object which is correct the formal of formulationobject.	("4" ,"name2", "type2", 2.2,{excipient1,excipient2})	("4" ,"name2", "type2", 2.2,{excipient1,excipient2})
3	Test update formulation object which is not contained in the database.	("1" ,"name1", "type1", 1.3,{excipient1,excipient2})	null
4	Test update formulation object which is not contained in the database.	("2" ,"name2", "type2", 2.4,{excipient3,excipient4})	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	75 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.3.3 Unit Test Case for Server Side 13 (UTC-SV -13)

deleteFormulation (id:String): Formulation

Formulation object value = value (String id, String name,String type, double usedWeight, List<Excipient>api)

Excipient object value = value (String id,Substance substance ,List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	76 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substanceName1","watersolubility1",{ "stability1","stability2"},3.5,4.7, "solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1", "flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substanceName2","watersolubility2",{ "stability3","stability4"},5.5,7.6, "solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2", "flowability2",5.6,"saltfrom2",8.7,"iconicity2")
Substance3	("3","substanceName3","watersolubility3",{ "stability5","stability5"},6.6,9.3, "solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3", "flowability3",2.6,"saltfrom3",6.7,"iconicity3")
Substance4	("4","substanceName4","watersolubility4",{ "stability6","stability6"},12.4,4.6, "solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4", "flowability4",7.7,"saltfrom4",9.5,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1.3, 11.6)
substanceFunction2	("functionName2", "functionTyp2", 2.7, 12.8)
substanceFunction3	("functionName3", "functionTyp3", 3.4, 13.6)
substanceFunction4	("functionName4", "functionTyp4", 4.7, 14.4)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1.5)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2.6)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2.7)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2.9)
Object Name	formulation object
formulation3	("3", "name3", "type3", 3.3, {excipient1,excipient2})
formulation4	("4", "name4", "type4", 4.4, {excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	77 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		formulation object	formulation object
1	Test delete formulation object which is contained in database and correct format formulation object.	("3", "name3", "type3", 3.3, {excipient1, excipient2})	("3", "name3", "type3", 3.3, {excipient1, excipient2})
2	Test delete formulation object which is contained in database and correct format formulation object.	("4", "name4", "type4", 4.4, {excipient3, excipient4})	("4", "name4", "type4", 4.4, {excipient3, excipient4})
3	Test delete formulation object which is not contained in database.	("1", "name1", "type1", 1.1, {excipient1, excipient1})	null
4	Test delete formulation object which is not contained in database.	("2", "name2", "type2", 2.2, {excipient3, excipient4})	null

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	78 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.3.4 Unit Test Case for Server Side 14 (UTC-SV -14)

getAllFormulation() : Formulation []

Formulation object value = value (String id, String name,String type, double usedWeight, List<Excipient>api)

Excipient object value = value (String id,Substance substance,List<SubstanceFunction>substanceFunctions ,double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	79 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substanceName1","watersolubility1",{ "stability1","stability2"},3.4,4.6, "solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1", "flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substanceName2","watersolubility2",{ "stability3","stability4"},5.5,7.2, "solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2", "flowability2",5.4,"saltfrom2",8.5,"iconicity2")
Substance3	("3","substanceName3","watersolubility3",{ "stability5","stability5"},6.6,9.8, "solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3", "flowability3",2.3,"saltfrom3",6.7,"iconicity3")
Substance4	("4","substanceName4","watersolubility4",{ "stability6","stability6"},12.5,4.8, "solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4", "flowability4",7.5,"saltfrom4",9.7,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1.8, 11.6)
substanceFunction2	("functionName2", "functionTyp2", 2.6, 12.4)
substanceFunction3	("functionName3", "functionTyp3", 3.4, 13.7)
substanceFunction4	("functionName4", "functionTyp4", 4.7, 14.8)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3} , 1.4)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4} , 2.7)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3} , 2.9)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4} , 2.3)
Object Name	formulation object
formulation3	("3", "name3", "type3", 3, {excipient1,excipient2})
formulation4	("4", "name4", "type4", 4, {excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	80 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

case	Description	Expect result
		List of formulation object
1	Test get all formulation object list.	{formulation1,formulation2}

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	81 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3.6,4.8,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4.5,"saltfrom1",5.7,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5.7,7.8,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5.3,"saltfrom2",8.6,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6.7,9.3,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2.7,"saltfrom3",6.9,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12.5,4.7,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7.5,"saltfrom4",9.6,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1", "functionTyp1", 1.6, 11.5)
substanceFunction2	("functionName2", "functionTyp2", 2.5, 12.8)
substanceFunction3	("functionName3", "functionTyp3", 3.8, 13.4)
substanceFunction4	("functionName4", "functionTyp4", 4.8, 14.7)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1.5)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2.8)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2.3)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2.7)
Object Name	formulation object
formulation3	("3", "name3", "type3", 3.5, {excipient1,excipient2})
formulation4	("4", "name4", "type4", 4.6, {excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	82 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

case	Description	Input	Expect result
		Id	formulation object
1	Test get formulationobject by formulation id.	3	("3", "name3", "type3", 3.5,{excipient1,excipient2})
2	Test get formulation object by formulation id.	4	("4", "name4", "type4", 4.6,{excipient3,excipient4})
3	Test get formulation object which is not contain in database.	1	null

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	83 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.4 ReformulationHistoryServiceimpl Class

1.2.4.1 Unit Test Case for Server Side 15 (UTC-SV -15)

createHistory(reformulationHistory : ReformulationHistory) : ReformulationHistory

ReformulationHistory object value = value(String id , List<ReformulatedProduction> reformulatedProductionList , Date date , User user)

ReformulatedProduction object value = value(String id , Production production , boolean accept , String inferenceEngine)

User object value =value (String id, String username , String password , String name , String address , String telno , String email , String type);

Production object value = value(String id , Formulation formulation,DFProperty dfProperty , String instruction , float formulationWeight)

DFProperty object value = value(float totalweight , int disgradationtime , float hardness , List<Double> dissolutionProfile)

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	84 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3.4,4.6, "solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1", "flowability1",4.7,"saltfrom1",5.6,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5.5,7.5, "solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2", "flowability2",5.7,"saltfrom2",8.0,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6.3,9.5, "solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3", "flowability3",2.7,"saltfrom3",6.8,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12.5,4.6, "solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4", "flowability4",7.7,"saltfrom4",9.5,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1.6,11.5)
substanceFunction2	("functionName2","functionTyp2",2.5,12.9)
substanceFunction3	("functionName3","functionTyp3",3.5,13.7)
substanceFunction4	("functionName4","functionTyp4",4.6,14.7)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1.5)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2.7)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2.2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2.6)
Object Name	formulation object
formulation1	("1", "name1", "type1", 1.6,{excipient1,excipient4})
formulation2	("2", "name2", "type2", 2.3,{excipient2,excipient4})
formulation3	("3", "name3", "type3", 3.7,{excipient1,excipient2})
formulation4	("4", "name4", "type4", 4.9,{excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	85 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Object Name	DFPropertyobject
dfProperty1	(1.11,1 , 1.11 , {3.2,4.2,5.6,6.6})
dfProperty2	(2.22,2 , 2.22 , {1.2,2.2,3.6,4.6})
dfProperty3	(3.33,3 , 3.33 , {1.6,5.2,6.6,7.8})
dfProperty4	(4.44,4 , 4.44 , {4.5,6.7,8.8,9.0})
Object Name	Production object
production1	("1" , formulation1 ,dfProperty1 , "instruction1" , 1.12)
production2	("2" , formulation2 ,dfProperty2 , "instruction2" , 2.23)
production3	("3" , formulation3 ,dfProperty3 , "instruction3" , 3.34)
Production4	("4" , formulation4 ,dfProperty4 , "instruction4" , 4.45)
Object Name	reformulationProduct object
reformulatedProduction1	("1" , production1 , true , "role base")
reformulatedProduction2	("2" , production4 , false , "case base")
reformulatedProduction3	("3" , production3 , true , "role base")
reformulatedProduction4	("4" , production4 , false , "case base")
Object Name	User object
user1	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "admin");
user2	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "user");
Object Name	reformulationHistory object
reformulationHistory3	("3" , {reformulatedProduction1, reformulatedProduction2} ,"5/10/2014" , user1)
reformulationHistory4	("4" , {reformulatedProduction3, reformulatedProduction4} ,"7/4/2008 " , user2)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	86 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		reformulationHistory object	reformulationHistory object
1	Test addreformulationHistoryobject which is correct the formal of reformulationHistory object.	(null, {reformulatedProduction1, reformulatedProduction3}, "4/11/209 ", user1)	(null, {reformulatedProduction1, reformulatedProduction3}, "4/11/209 ", user1)
2	Test add reformulationHistory object which is correct the formal of reformulationHistory object.	(null, {reformulatedProduction2, reformulatedProduction4}, "6/6/2013 ", user2)	(null, {reformulatedProduction2, reformulatedProduction4}, "6/6/2013 ", user2)
3	Test add reformulationHistory t object which is contained in the database already.	("3", {reformulatedProduction1, reformulatedProduction2}, "5/10/2014 ", user1)	null
4	Test add reformulationHistory object which is contained in the database already.	("4", {reformulatedProduction3, reformulatedProduction4}, "7/4/2008 ", user2)	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	87 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.4.2 Unit Test Case for Server Side 16 (UTC-SV -16)

updateHistory(reformulationHistory : ReformulationHistory) : ReformulationHistory

ReformulationHistory object value = value(String id , List<ReformulatedProduction> reformulatedProductionList , Date date , User user)

ReformulatedProduction object value = value(String id , Production production , boolean accept , String inferenceEngine)

User object value =value (String id, String username , String password , String name , String address , String telno , String email , String type);

Production object value = value(String id , Formulation formulation,DFProperty dfProperty , String instruction , float formulationWeight)

DFProperty object value = value(float totalweight , int disgradationtime , float hardness , List<Double> dissolutionProfile)

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	88 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substancename1","watersolubility1",{ "stability1","stability2"},3.5,4.7, "solidstate1","hygroscopicity1","particlesize1","alcohosolubility1", "flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substancename2","watersolubility2",{ "stability3","stability4"},.5.5,7.7, "solidstate2","hygroscopicity2","particlesize2","alcohosolubility2", "flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substancename3","watersolubility3",{ "stability5","stability5"},6.3,9.6, "solidstate3","hygroscopicity3","particlesize3","alcohosolubility3", "flowability3",2.5,"saltfrom3",6.7,"iconicity3")
Substance4	("4","substancename4","watersolubility4",{ "stability6","stability6"},12.7,4.7, "solidstate4","hygroscopicity4","particlesize4","alcohosolubility4", "flowability4",7.7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1,11)
substanceFunction2	("functionName2","functionTyp2",2,12)
substanceFunction3	("functionName3","functionTyp3",3,13)
substanceFunction4	("functionName4","functionTyp4",4,14)
Object Name	Excipient object
excipient1	("1", substance1 , { substanceFunction1, substanceFunction3} , 1)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4} , 2)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3} , 2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4} , 2)
Object Name	formulation object
formulation1	("1", "name1", "type1", 1.5,{excipient1,excipient4})
formulation2	("2", "name2", "type2", 2.6,{excipient2,excipient4})
formulation3	("3", "name3", "type3", 3.7,{excipient1,excipient2})
formulation4	("4", "name4", "type4", 4.3,{excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	89 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Object Name	DFPropertyobject
dfProperty1	(1.11,1 , 1.11 , {3.2,4.2,5.6,6.6})
dfProperty2	(2.22,2 , 2.22 , {1.2,2.2,3.6,4.6})
dfProperty3	(3.33,3 , 3.33 , {1.6,5.2,6.6,7.8})
dfProperty4	(4.44,4 , 4.44 , {4.5,6.7,8.8,9.0})
Object Name	Production object
production1	("1" , formulation1 ,dfProperty1 , "instruction1" , 1.12)
production2	("2" , formulation2 ,dfProperty2 , "instruction2" , 2.23)
production3	("3" , formulation3 ,dfProperty3 , "instruction3" , 3.34)
Production4	("4" , formulation4 ,dfProperty4 , "instruction4" , 4.45)
Object Name	reformulationProduct object
reformulatedProduction1	("1" , production1 , true , "role base")
reformulatedProduction2	("2" , production4 , false , "case base")
reformulatedProduction3	("3" , production3 , true , "role base")
reformulatedProduction4	("4" , production4 , false , "case base")
Object Name	User object
user1	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "admin");
user2	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "user");
Object Name	reformulationHistory object
reformulationHistory3	("3" , {reformulatedProduction1, reformulatedProduction2}, "5/10/2014 " , user1)
reformulationHistory4	("4" , {reformulatedProduction3, reformulatedProduction4}, "7/4/2008 " , user2)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	90 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		reformulationHistory object	reformulationHistory object
1	Test update reformulationHistoryobject which is correct the formal of reformulationHistory object and contained in the database.	("3", {reformulatedProduction1, reformulatedProduction3},"4/11/209 ", user1)	("3", {reformulatedProduction1, reformulatedProduction3},"4/11/209 ", user1)
2	Test update reformulationHistory object which is correct the formal of reformulationHistory object and contained in the database.	("4", {reformulatedProduction2, reformulatedProduction4},"6/6/2013 ", user2)	("4", {reformulatedProduction2, reformulatedProduction4},"6/6/2013 ", user2)
3	Test update reformulationHistory object which is not contained in the database.	("1", {reformulatedProduction1, reformulatedProduction3},"4/11/209 ", user1)	null
4	Test update reformulationHistory object which is not contained in the database.	("2", {reformulatedProduction2, reformulatedProduction4},"6/6/2013 ", user2)	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	91 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.4.3 Unit Test Case for Server Side 17 (UTC-SV -17)

removeHistory(String id) : ReformulationHistory

ReformulationHistory object value = value(String id , List<ReformulatedProduction> reformulatedProductionList , Date date , User user)

ReformulatedProduction object value = value(String id , Production production , boolean accept , String inferenceEngine)

User object value =value (String id, String username , String password , String name , String address , String telno , String email , String type);

Production object value = value(String id , Formulation formulation,DFProperty dfProperty , String instruction , float formulationWeight)

DFProperty object value = value(float totalweight , int disgradationtime , float hardness , List<Double> dissolutionProfile)

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	92 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substancename1","watersolubility1",{ "stability1","stability2"},3,4,"solidstate1","hygroscopicity1","particlesize1","alcohosolubility1","flowability1",4,"saltfrom1",5,"iconicity1")
substance2	(2,"substancename2","watersolubility2",{ "stability3","stability4"},5,7,"solidstate2","hygroscopicity2","particlesize2","alcohosolubility2","flowability2",5,"saltfrom2",8,"iconicity2")
Substance3	("3","substancename3","watersolubility3",{ "stability5","stability5"},6,9,"solidstate3","hygroscopicity3","particlesize3","alcohosolubility3","flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substancename4","watersolubility4",{ "stability6","stability6"},12,4,"solidstate4","hygroscopicity4","particlesize4","alcohosolubility4","flowability4",7,"saltfrom4",9,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1,11)
substanceFunction2	("functionName2","functionTyp2",2,12)
substanceFunction3	("functionName3","functionTyp3",3,13)
substanceFunction4	("functionName4","functionTyp4",4,14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1.5)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2.7)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2.7)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2.8)
Object Name	formulation object
formulation1	("1", "name1", "type1", 1.5,{excipient1,excipient4})
formulation2	("2", "name2", "type2", 2.7,{excipient2,excipient4})
formulation3	("3", "name3", "type3", 3.4,{excipient1,excipient2})
formulation4	("4", "name4", "type4", 4.7,{excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	93 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Object Name	DFPropertyobject
dfProperty1	(1.11,1 , 1.11 , {3.2,4.2,5.6,6.6})
dfProperty2	(2.22,2 , 2.22 , {1.2,2.2,3.6,4.6})
dfProperty3	(3.33,3 , 3.33 , {1.6,5.2,6.6,7.8})
dfProperty4	(4.44,4 , 4.44 , {4.5,6.7,8.8,9.0})
Object Name	Production object
production1	("1" , formulation1 ,dfProperty1 , "instruction1" , 1.12)
production2	("2" , formulation2 ,dfProperty2 , "instruction2" , 2.23)
production3	("3" , formulation3 ,dfProperty3 , "instruction3" , 3.34)
Production4	("4" , formulation4 ,dfProperty4 , "instruction4" , 4.45)
Object Name	reformulationProduct object
reformulatedProduction1	("1" , production1 , true , "role base")
reformulatedProduction2	("2" , production4 , false , "case base")
reformulatedProduction3	("3" , production3 , true , "role base")
reformulatedProduction4	("4" , production4 , false , "case base")
Object Name	User object
user1	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "admin");
user2	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "user");
Object Name	reformulationHistory object
reformulationHistory3	("3" , {reformulatedProduction1, reformulatedProduction2}, "5/10/2014 " , user1)
reformulationHistory4	("4" , {reformulatedProduction3, reformulatedProduction4}, "7/4/2008 " , user2)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	94 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

Case No.	Description	Input data	Expect Result
		reformulationHistory object	reformulationHistory object
1	Test deletereformulationHistory object which is contained in database and correct format reformulationHistory object.	("3", {reformulatedProduction1, reformulatedProduction2},"5/10/2014 ", user1)	("3", {reformulatedProduction1, reformulatedProduction2},"5/10/2014 ", user1)
2	Test deletereformulationHistoryobject which is contained in database and correct format reformulationHistory.	("4", {reformulatedProduction3, reformulatedProduction4},"7/4/2008 ", user2)	("4", {reformulatedProduction3, reformulatedProduction4},"7/4/2008 ", user2)
3	Test delete reformulationHistoryobject which is not contained in database or incorrect format reformulationHistory object.	("1", {reformulatedProduction1, reformulatedProduction3},"4/11/209 ", user1)	null
4	Test delete reformulationHistoryobject which is not contained in database or incorrect format reformulationHistoryobject.	("2", {reformulatedProduction2, reformulatedProduction4},"6/6/2013 ", user2)	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	95 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.4.4 Unit Test Case for Server Side 18 (UTC-SV -18)

getAllHistory() : ReformulationHistory

ReformulationHistory object value = value(String id , List<ReformulatedProduction> reformulatedProductionList , Date date , User user)

ReformulatedProduction object value = value(String id , Production production , boolean accept , String inferenceEngine)

User object value =value (String id, String username , String password , String name , String address , String telno , String email , String type);

Production object value = value(String id , Formulation formulation,DFProperty dfProperty , String instruction , float formulationWeight)

DFProperty object value = value(float totalweight , int disgradationtime , float hardness , List<Double> dissolutionProfile)

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	96 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3.5,4.7,"solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1","flowability1",4.7,"saltfrom1",5.4,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5.5,7.7,"solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2","flowability2",5.3,"saltfrom2",8.7,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6.5,9.6,"solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3","flowability3",2.7,"saltfrom3",6.4,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12.6,4.7,"solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4","flowability4",7.5,"saltfrom4",9.5,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1,11)
substanceFunction2	("functionName2","functionTyp2",2,12)
substanceFunction3	("functionName3","functionTyp3",3,13)
substanceFunction4	("functionName4","functionTyp4",4,14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1.6)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2.7)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2.7)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2.7)
Object Name	formulation object
formulation1	("1", "name1", "type1", 1,{excipient1,excipient4})
formulation2	("2", "name2", "type2", 2,{excipient2,excipient4})
formulation3	("3", "name3", "type3", 3,{excipient1,excipient2})
formulation4	("4", "name4", "type4", 4,{excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	97 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Object Name	DFPropertyobject
dfProperty1	(1.11,1 , 1.11 , {3.2,4.2,5.6,6.6})
dfProperty2	(2.22,2 , 2.22 , {1.2,2.2,3.6,4.6})
dfProperty3	(3.33,3 , 3.33 , {1.6,5.2,6.6,7.8})
dfProperty4	(4.44,4 , 4.44 , {4.5,6.7,8.8,9.0})
Object Name	Production object
production1	("1" , formulation1 ,dfProperty1 , "instruction1" , 1.12)
production2	("2" , formulation2 ,dfProperty2 , "instruction2" , 2.23)
production3	("3" , formulation3 ,dfProperty3 , "instruction3" , 3.34)
Production4	("4" , formulation4 ,dfProperty4 , "instruction4" , 4.45)
Object Name	reformulationProduct object
reformulatedProduction1	("1" , production1 , true , "role base")
reformulatedProduction2	("2" , production4 , false , "case base")
reformulatedProduction3	("3" , production3 , true , "role base")
reformulatedProduction4	("4" , production4 , false , "case base")
Object Name	User object
user1	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "admin");
user2	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "user");
Object Name	reformulationHistory object
reformulationHistory3	("3" , {reformulatedProduction1, reformulatedProduction2}, "5/10/2014 " , user1)
reformulationHistory4	("4" , {reformulatedProduction3, reformulatedProduction4}, "7/4/2008 " , user2)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	98 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

case	Description	Expect result
		List of reformulationHistory object
1	Test get all reformulationHistorylist	{ reformulationHistory3, reformulationHistory3 }

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	99 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.4.5 Unit Test Case for Server Side 19 (UTC-SV -19)

getHistoryById(String id) : ReformulationHistory

ReformulationHistory object value = value(String id , List<ReformulatedProduction> reformulatedProductionList , Date date , User user)

ReformulatedProduction object value = value(String id , Production production , boolean accept , String inferenceEngine)

User object value =value (String id, String username , String password , String name , String address , String telno , String email , String type);

Production object value = value(String id , Formulation formulation,DFProperty dfProperty , String instruction , float formulationWeight)

DFProperty object value = value(float totalweight , int disgradationtime , float hardness , List<Double> dissolutionProfile)

Formulation object value = value (String id , String name , String type, double usedWeight, List<Excipient> api)

Excipient object value = value (String id , Substance substance , List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	100 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3.6,4.4, "solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1", "flowability1",4.5,"saltfrom1",5.5,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5.5,7.6, "solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2", "flowability2",5.6,"saltfrom2",8.6,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6.6,9.7, "solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3", "flowability3",2,"saltfrom3",6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12,4, "solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4", "flowability4",7.5,"saltfrom4",9.7,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1,11)
substanceFunction2	("functionName2","functionTyp2",2,12)
substanceFunction3	("functionName3","functionTyp3",3,13)
substanceFunction4	("functionName4","functionTyp4",4,14)
Object Name	Excipient object
excipient1	("1", substance1 , { substanceFunction1, substanceFunction3} , 1)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4} , 2.5)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3} , 2.7)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4} , 2.7)
Object Name	formulation object
formulation1	("1", "name1", "type1", 1.5,{excipient1,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	101 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

formulation2	("2", "name2", "type2", 2.7,{excipient2,excipient4})
formulation3	("3", "name3", "type3", 3.8,{excipient1,excipient2})
formulation4	("4", "name4", "type4", 4.2,{excipient3,excipient4})
Object Name	DFPropertyobject
dfProperty1	(1.11,1 , 1.11 , {3.2,4.2,5.6,6.6})
dfProperty2	(2.22,2 , 2.22 , {1.2,2.2,3.6,4.6})
dfProperty3	(3.33,3 , 3.33 , {1.6,5.2,6.6,7.8})
dfProperty4	(4.44,4 , 4.44 , {4.5,6.7,8.8,9.0})
Object Name	Production object
production1	("1", formulation1 ,dfProperty1 , "instruction1" , 1.12)
production2	("2", formulation2 ,dfProperty2 , "instruction2" , 2.23)
production3	("3", formulation3 ,dfProperty3 , "instruction3" , 3.34)
Production4	("4", formulation4 ,dfProperty4 , "instruction4" , 4.45)
Object Name	reformulationProduct object
reformulatedProduction1	("1", production1 , true , "role base")
reformulatedProduction2	("2", production4 , false , "case base")
reformulatedProduction3	("3", production3 , true , "role base")
reformulatedProduction4	("4", production4 , false , "case base")
Object Name	User object
user1	("1", "username 1", "password1","name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "admin");
user2	("1", "username 1", "password1","name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "user");
Object Name	reformulationHistory object
reformulationHistory3	("3", {reformulatedProduction1, reformulatedProduction2},"5/10/2014 " , user1)
reformulationHistory4	("4", {reformulatedProduction3, reformulatedProduction4},"7/4/2008 " , user2)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	102 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

case	Description	Input	Expect result
		Id	reformulationHistory
1	Test get reformulationHistory object by reformulationHistory id.	3	("3", {reformulatedProduction1, reformulatedProduction2},"5/10/2014 ", user1)
2	Test get reformulationHistory object by reformulationHistory id.	4	("4", {reformulatedProduction3, reformulatedProduction4},"7/4/2008 ", user2)
3	Test get reformulationHistory which is not contain in database.	1	null
4	Test get reformulationHistory which is not contain in database.	2	null

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	103 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

1.2.5 InferenceEngineDirector Class

1.2.5.1 Unit Test Case for Server Side 20 (UTC-SV -20)

getReformulationResult(production : Production) : ReformulationProduct []

ReformulationHistory object value = value (String id ,List<ReformulatedProduction> reformulatedProductionList , Date date , User user)

ReformulatedProduction object value = value (String id,Production production,booleanaccept,String inferenceEngine)

User object value =value (String id, String username, String password, String name, String address, Stringtelno , String email , String type);

Production object value = value (String id, Formulation formulation,DFProperty dfProperty , String instruction , float formulationWeight)

DFProperty object value = value (float totalweight ,int disgradationtime , float hardness , List<Double> dissolutionProfile)

Formulation object value = value (String id, String name,String type, double usedWeight, List<Excipient>api)

Excipient object value = value (String id,Substance substance ,List<SubstanceFunction> substanceFunctions , double usedWeight)

Substance object value = value (String id, String name, String waterSolubility, List stability, double pka, double partitionCoefficient , String solidState , String hygroscopicity , String particleSize , String alcoholSolubility , String flowability , double density , String saltForm , double mocularWeight , String iconicity)

SubstanceFunction object value = value (String functionName, String functionTyp, double minWeight, double maxWeight)

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	104 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test data

Object Name	Substance object
substance1	("1","substance1","watersolubility1",{ "stability1","stability2"},3.4,4.6, "solidstate1","hygroscopicity1","particlesize1","alcoholsolubility1", "flowability1",4.7,"saltfrom1",5.6,"iconicity1")
substance2	(2,"substance2","watersolubility2",{ "stability3","stability4"},5.4,7.6, "solidstate2","hygroscopicity2","particlesize2","alcoholsolubility2", "flowability2",5.6,"saltfrom2",8.7,"iconicity2")
Substance3	("3","substance3","watersolubility3",{ "stability5","stability5"},6.4,9.6, "solidstate3","hygroscopicity3","particlesize3","alcoholsolubility3", "flowability3",2.4,"saltfrom3",6.6,"iconicity3")
Substance4	("4","substance4","watersolubility4",{ "stability6","stability6"},12.7,4.4, "solidstate4","hygroscopicity4","particlesize4","alcoholsolubility4", "flowability4",7.6,"saltfrom4",9.7,"iconicity4")
Object Name	SubstanceFunction
substanceFunction1	("functionName1","functionTyp1",1,11)
substanceFunction2	("functionName2","functionTyp2",2,12)
substanceFunction3	("functionName3","functionTyp3",3,13)
substanceFunction4	("functionName4","functionTyp4",4,14)
Object Name	Excipient object
excipient1	("1", substance1, { substanceFunction1, substanceFunction3}, 1.4)
excipient2	("2", substance2, { substanceFunction1, substanceFunction4}, 2.6)
excipient3	("2", substance2, { substanceFunction2, substanceFunction3}, 2.2)
excipient4	("2", substance2, { substanceFunction2, substanceFunction4}, 2.5)
Object Name	formulation object
formulation1	("1", "name1", "type1", 1,{excipient1,excipient4})
formulation2	("2", "name2", "type2", 2,{excipient2,excipient4})
formulation3	("3", "name3", "type3", 3,{excipient1,excipient2})
formulation4	("4", "name4", "type4", 4,{excipient3,excipient4})

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	105 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Object Name	DFPropertyobject
dfProperty1	(1.11,1 , 1.11 , {3.2,4.2,5.6,6.6})
dfProperty2	(2.22,2 , 2.22 , {1.2,2.2,3.6,4.6})
dfProperty3	(3.33,3 , 3.33 , {1.6,5.2,6.6,7.8})
dfProperty4	(4.44,4 , 4.44 , {4.5,6.7,8.8,9.0})
Object Name	Production object
production1	("1" , formulation1 ,dfProperty1 , "instruction1" , 1.12)
production2	("2" , formulation2 ,dfProperty2 , "instruction2" , 2.23)
production3	("3" , formulation3 ,dfProperty3 , "instruction3" , 3.34)
Production4	("4" , formulation4 ,dfProperty4 , "instruction4" , 4.45)
Object Name	reformulationProduct object
reformulatedProduction1	("1" , production1 , true , "role base")
reformulatedProduction2	("2" , production4 , false , "case base")
reformulatedProduction3	("3" , production3 , true , "role base")
reformulatedProduction4	("4" , production4 , false , "case base")
Object Name	User object
user1	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "admin");
user2	("1" , "username 1" , "password1" ,"name1" ,"173/1 chaing mai thailand" , "0840423850" , "example1@hotmail.com" , "user");
Object Name	reformulationHistory object
reformulationHistory3	("3" , {reformulatedProduction1, reformulatedProduction2}, "5/10/2014 " , user1)
reformulationHistory4	("4" , {reformulatedProduction3, reformulatedProduction4}, "7/4/2008 " , user2)

Document Name	OEGP-Test Plan_V.1.1.docx	Owner	NS,PW	Page	106 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014

Test Case

case	Description	Input	Expect result
		Reformulation object	List ofReformulatedProductionobject
1	Test get all reformulaProduction list	("1" , formulation1 ,dfProperty1 , "instruction1" , 1.12)	{ reformulatedProduction1, reformulatedProduction2, reformulatedProduction3 , reformulatedProduction4 }

Document Name	OEGP-Test Plan_V.1.1.1.docx	Owner	NS,PW	Page	107 / 107
Document Type	Test Plan	Release Date	October 21, 2014	Print Date	October 21, 2014