INTERREF Editor – Loose Coupling

SCENARIO:

Auto-Selection of Appropriate Model and Auto-Setting INTERREF
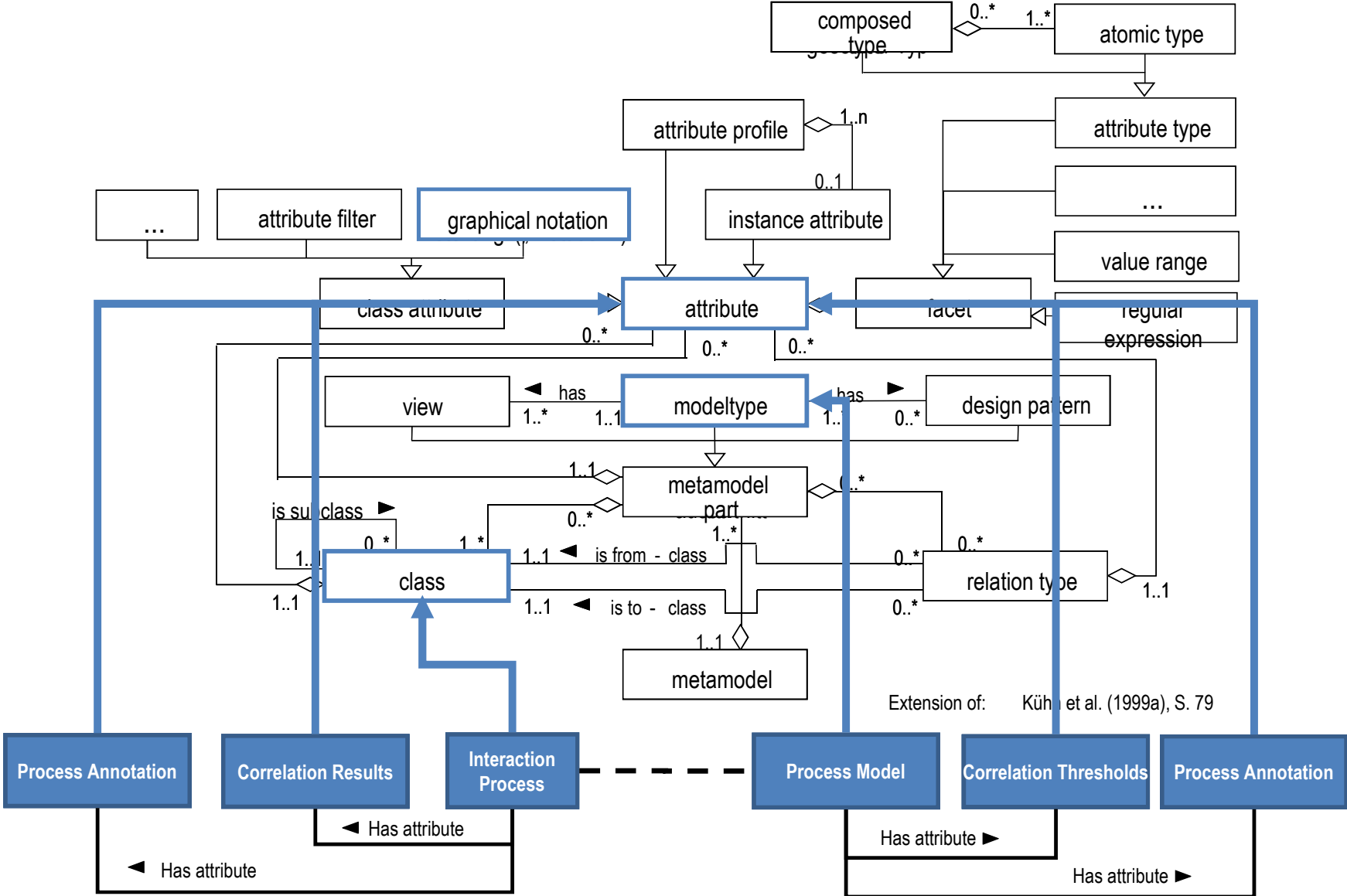
Scenario Description

Case:

Realization of auto-selection of appropriate process model and setting interref between interaction process object and process model due to correlation results and process annotation.
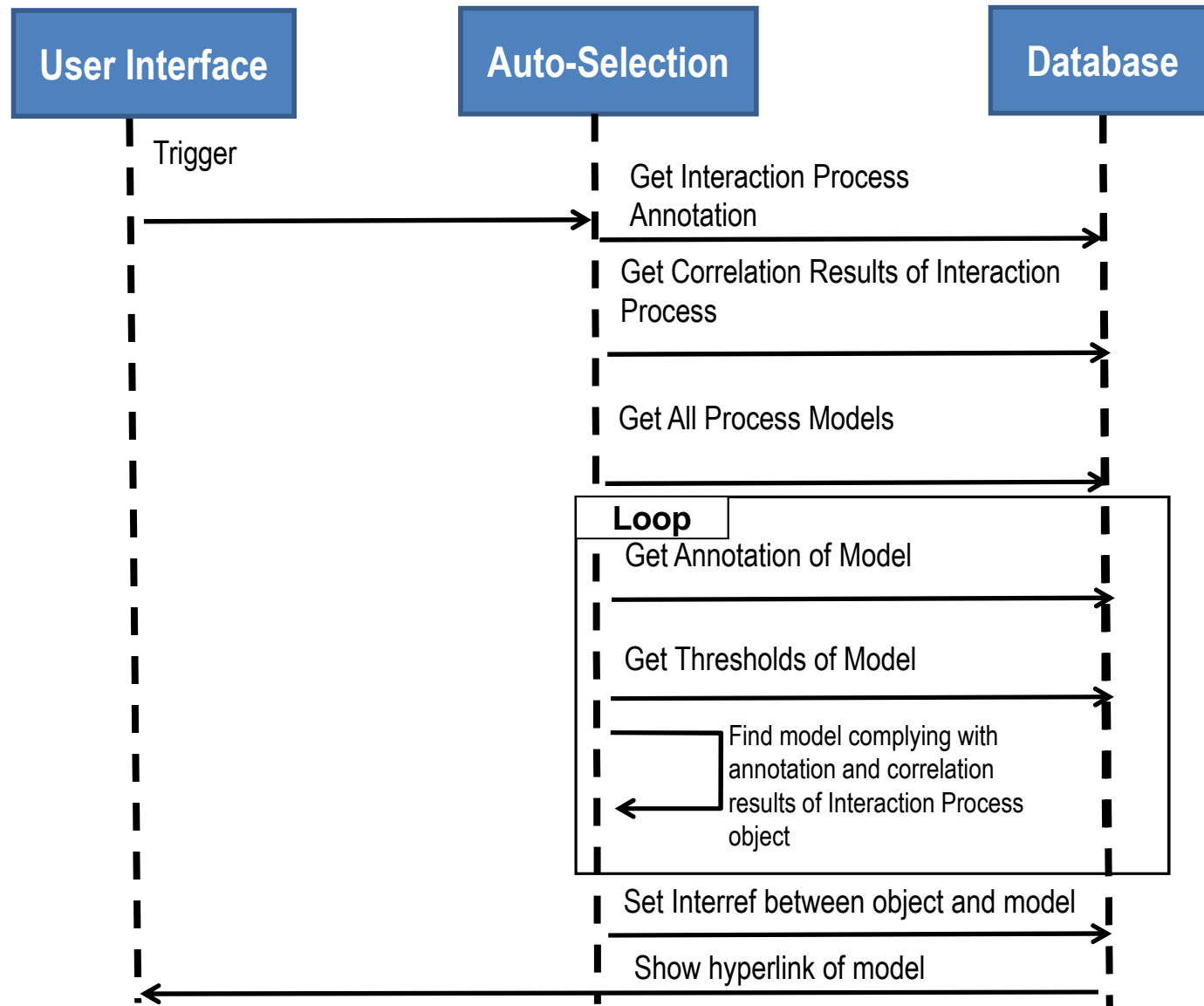
GOAL:

Demonstrate how auto-selection of model and auto-setting interref between a object and a model based on the attribute values.
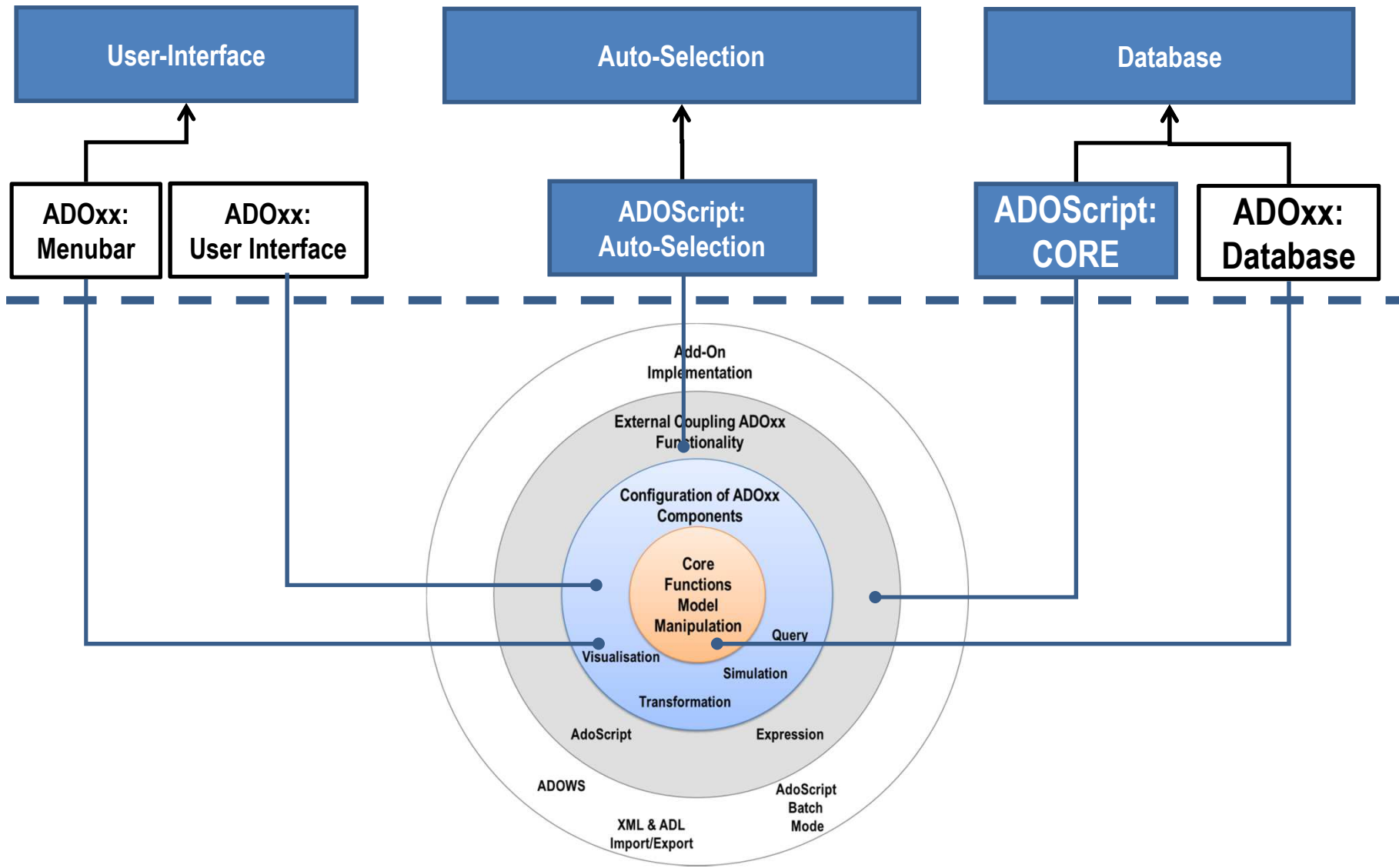
Meta Model of Meta Modelling Language

Description of Algorithm

User Interface | Auto-Selection | Database

Trigger

Get Interaction Process Annotation

Get Correlation Results of Interaction Process

Get All Process Models

Loop
Get Annotation of Model

Get Thresholds of Model

Find model complying with annotation and correlation results of Interaction Process object

Set Interref between object and model

Show hyperlink of model

Mapping ADOxx Functionality

User-Interface		Auto-Selection	Database	
ADOxx: Menubar	**ADOxx:** User Interface	**ADOScript:** Auto-Selection	**ADOScript:** CORE	**ADOxx:** Database

Add-On Implementation

External Coupling ADOxx Functionality

Configuration of ADOxx Components

Core Functions Model Manipulation

Query

Visualisation

Simulation

Transformation

AdoScript

Expression

ADOWS

AdoScript Batch Mode

XML & ADL Import/Export

ADOxx Realisation Approach
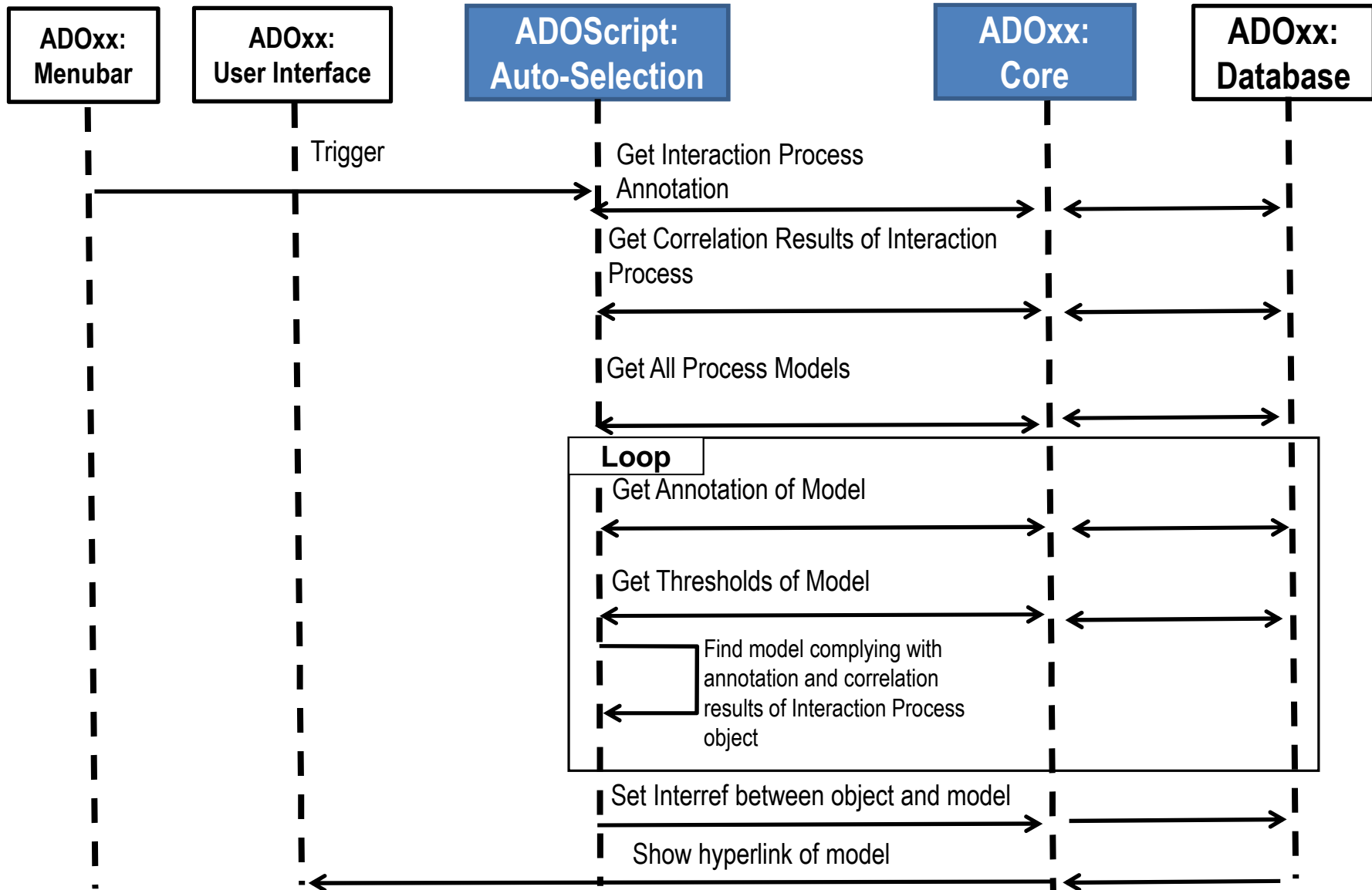
Added Value of Metamodelling Platform

Used meta-modelling functionality for realisation of the scenario:

- **Complex Attribute Types (Record Class)**
- **AttrRep (NOTEBOOK):**
- **Attribute Type: PROGRAMCALL**
- **Attribute Type: INTERREF**
- **AdoScript:**

ADOxx Realisation Hands-On

1. Realisation of Modelling Language

  1. Define Model Types "Process Model","Space Model", "Preference Model"

  2. New class "Interaction Process", "Preference"

  3. Add Complex Attribute Type

  4. Add Attributes

  5. Configure Notebooks

2. Implement Algorithm with ADOscript

  1. Auto-selection

Used ADOxx Functionality: Implementing an Algorithm

Introduction

Setup of Implementation Environment

Modelling Language Implementation

Classes ✓

Relations

Class Attributes and Attributes ✓

GRAPHREP ✓

ATTRREP ✓

CLASS Cardinality

CONVERSION

Model Pointer

Attribute Facets ✓

Model Types ✓

Mechanisms & Algorithms Implementation

Core Functions for Model Manipulation

Database

Visualisation

Query

Transformation

Configuration of ADOxx Components

Visualisation

Query

External Coupling ADOxx Functionality ✓

ADOscript Triggers

ADOscript Language Constructs

Visualisation ADOscript

Visualisation Expression

Query ADOscript

Transformation ADOscript

ADD-ON Implementation

ADOxx Web-Service
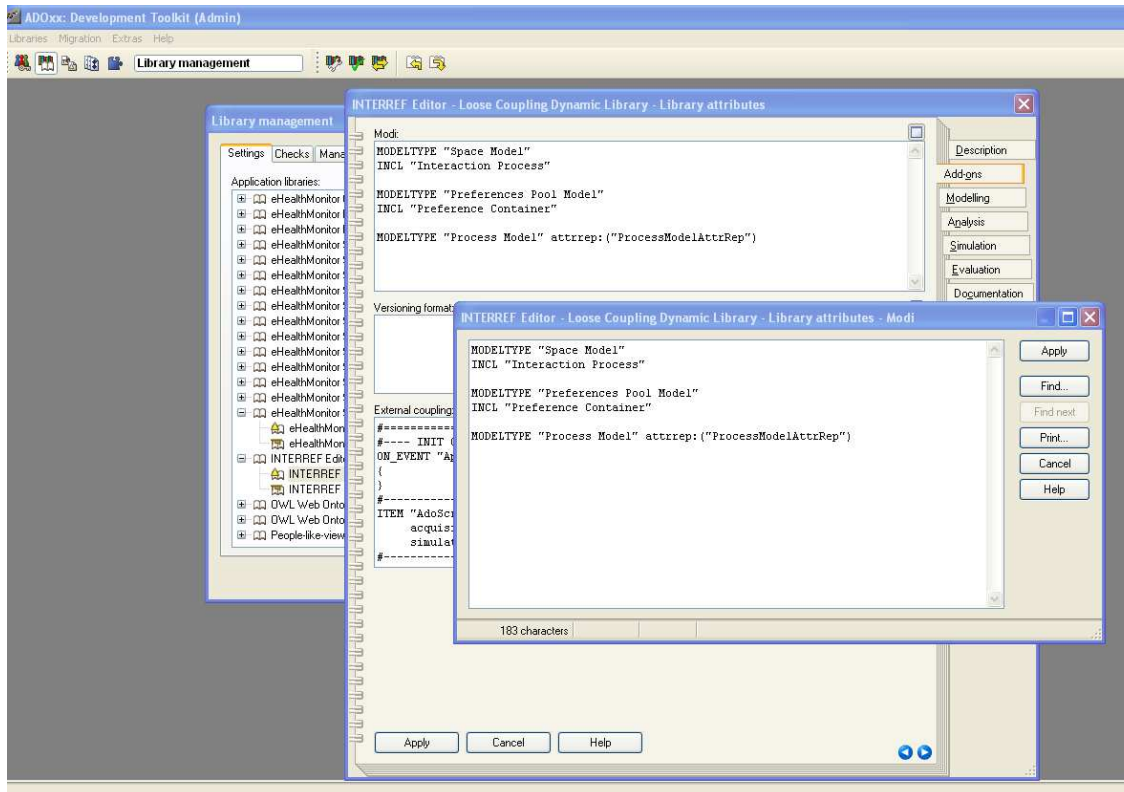
XML / ADL Import – Export

ADOscriptBatch Mode

HANDS-ON

INTERREF Editor – Loose Coupling

SCENARIO:

**Auto-Selection of Appropriate Model and Auto-Setting INTERREF**

Define Model Types "Process Model, "Space Model" and "Preference Pool Model"

New Modeltypes:

- Select "Interref Editor – Loose Coupling Dynamic Library" and open Library attributes.

- Got to Add Ons

- Add the Modeltypes "Process Model", "Space Model" and "Prefences Pool Model" in the Modi attribute

- When the classes are defined, you need to INCLUDE "Interaction Process" under "Space Model" and "Preferences Container" under "Preferences Pool Model"

Create New Classes
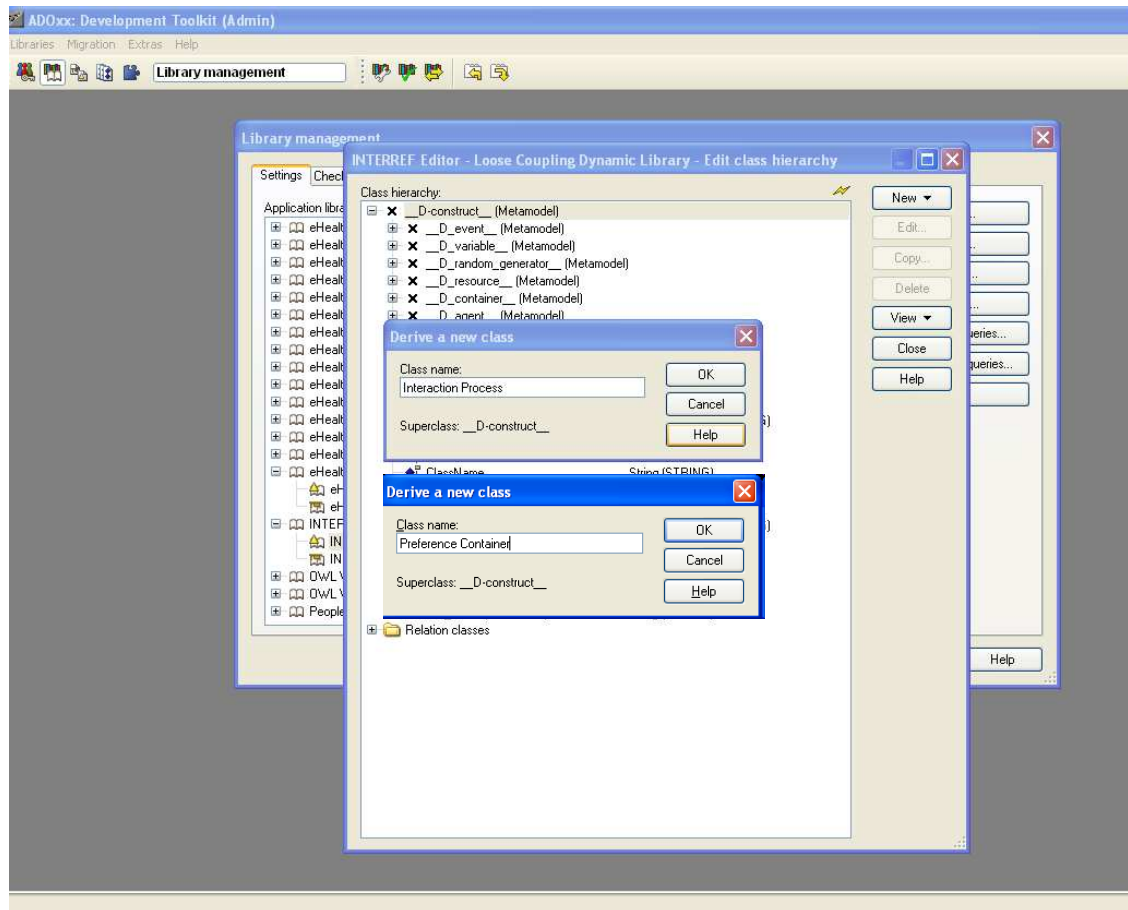
Create New Classes

- Select "Interref Editor – Loose Coupling Dynamic Library" and open Library attributes.
- Open Class hierarchy, view "Metamodel" and "Class hierarchy" in the View button, select __D-construct__ and click new class.
- Name new classes: "Interaction Process", "Preference Container" and "__ModelTypeMetaData__" they are now sub-classes of __D-construct__

Add and Configure Complex Attribute Types
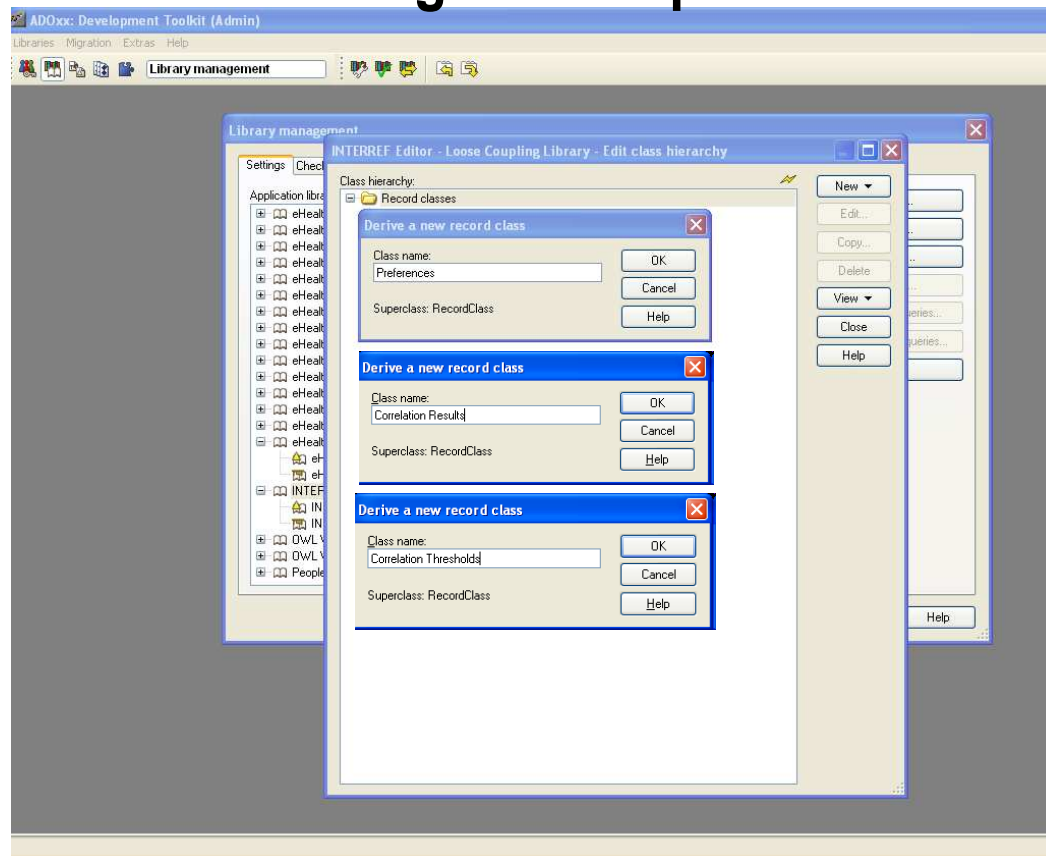
Add Complex Attribute Types

- Select Cooperative Attribute Library, open Class Hierarchy, select Record Classes.

- Make Recordclass "Preferences", "Correlation Results" and "Correlation Thresholds".

- Add under class "Preferences" attributes "Preference", "Dimension" as type STRING, and "Weight" as type ENUMERATION and value range {-3@-2@-1@0@1@2@3}

- Add under class "Correlation Results" attributes "Preference", "Dimension" as type STRING and "Correlation Results" as type "DOUBLE"

- Add under class "Correlation Thresholds" attributes "Preference", "Dimension" as type STRING and "Lower bound" and "Upper bound" as type "DOUBLE"

- Configure Attrep Attributes of recordclasses like;

Preferences AttrRep
NOTEBOOK
CHAPTER "Description"
ATTR "Preference" width:5.0 write-protected
ATTR "Dimension" width:5.0 write-protected
ATTR "Weight" width:5.0

Correlation Results AttrRep
NOTEBOOK
CHAPTER "Description"
ATTR "Preference" width:5.0 write-protected
ATTR "Dimension" width:5.0 write-protected
ATTR "Correlation" width:5.0 write-protected

Correlation Thresholds AttrRep
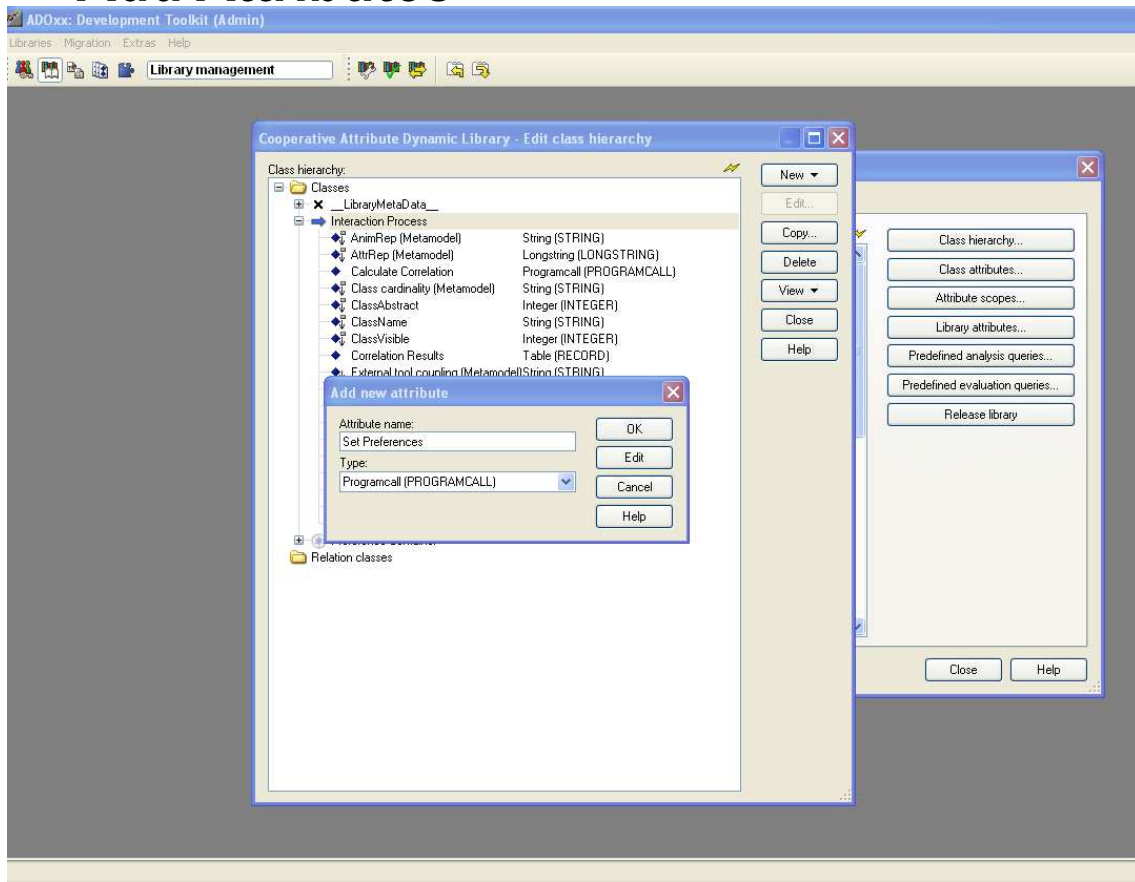NOTEBOOK
CHAPTER "Description"
ATTR "Preference" width:5.0 write-protected
ATTR "Dimension" width:5.0 write-protected
ATTR "Lower bound" width:5.0
ATTR "Upper bound" width:5.0

Add Attributes

Add Attributes

- Select "_ModelTypeMetaData__" and click New attribute
- Make "Set Annotation" and "Set Thresholds" as type PROGRAMCALL
- Make "Process Annotation" as type STRING and "Correlation Thresholds" as type TABLE and select "Correlation Thresholds as referenced record class.
- Select "Interaction Process" and click New attribute.
- Make "Set Annotation","Set Preferences" and "Calculate Correlation" as type PROGRAMCALL, set their Standart values "Set Annotation" "Set Preferences and "Calculate Correlation" respectively.
- Make "First User Preferences" and "Second User Preferences" as TABLE and select "Preferences" as Referenced record class
- Make "Correlation Results" as TABLE and select "Correlation Results" as References record class.
- Select "Preference Container" and click New, attribute.
- Make "Dimension" as type ENUMERION with value range {Reliability@Availibility@Cost}.

Configure Notebook of Interaction Process and Process Model

Interaction Process (AttrRep)

NOTEBOOK

CHAPTER "Description"

ATTR "Name"

ATTR "Referenced process"

CHAPTER "Preferences"

ATTR "Set Process Annotation" no-param push-button

ATTR "Process Annotation"

ATTR "Set Preferences" no-param push-button

ATTR "First User Preferences"

ATTR "Second User Preferences"

ATTR "Calculate Correlation" no-param push-button

ATTR "Correlation Results"

Process Model (ProcessModelAttrRep)

NOTEBOOK

ATTR "Set Process Annotation" no-param push-button

ATTR "Process Annotation"

ATTR "Set Correlation Thresholds" no-param push-button

ATTR "Correlation Thresholds"

Implement and Import ADOscripts File into Database

setIntProcessAnnotation.asc

```
CC "CoreUI"  MODEL_SELECT_BOX  modeltype:("Preferences Pool Model") title:("Select Preferences Pool Model")
boxtext:("Please select a Preferences Pool Model") oktext:("Select")
SET n_selected_prefpool_modelid:(modelids)
IF (endbutton = "ok")
{
          CC "Core" LOAD_MODEL modelid:(VAL n_selected_prefpool_modelid)

          CC "Core" GET_ALL_OBJS_OF_CLASSNAME modelid:(VAL n_selected_prefpool_modelid) classname:("Preference
Container")
          #--> RESULT ecode: intValue objids: list .
          SET s_prefcont_objids:(objids)
          SET a_listof_objnames:(array(tokcnt(s_prefcont_objids," ")))
          SET a_listof_objdimension:(array(tokcnt(s_prefcont_objids," ")))
          SET counter:0

          FOR s_prefcont_objid in: (s_prefcont_objids)
          {
                    CC "Core" GET_OBJ_NAME objid:(VAL s_prefcont_objid)
                    SET a_listof_objnames[counter]:(objname)

                    CC "Core" GET_ATTR_VAL objid:(VAL s_prefcont_objid) attrname:("Dimension")
                    SET a_listof_objdimension[counter]:(val)
                    SET counter:(counter+1)
          }

          CC "Modeling" GET_SELECTED
          #--> RESULT ecode: intValue objids: strValue classid: id .
          SET s_selected_objid:(objids)

...
```

Implement and Import ADOscripts File into Database

setProcessModelAnnotation.asc

```
CC "Modeling" GET_ACT_MODEL
SET n_act_modelid:(modelid)

CC "AQL"   EVAL_AQL_EXPRESSION modelid:(n_act_modelid) expr:("<\"Interaction Process\">")
SET s_intprocess_objids:(objids)
CC "Core" GET_CLASS_ID classname:("Interaction Process") bp-library
SET n_intprocess_classid:(classid)

CC "AdoScript" PERCWIN_CREATE title:"Please wait! Correlations are being calculated..."
CC "AdoScript" SLEEP ms:100

SET n_percentage:0
SET n_count:0
FOR s_intprocess_objid in:(s_intprocess_objids)
{
          SET n_num_of_objs:(tokcnt(s_intprocess_objids," "))
          SET n_count:(n_count+1)
          SET n_percentage:((n_count/(n_num_of_objs+4))*100)
          CC "AdoScript" PERCWIN_SET percentage:(n_percentage)
          CC "AdoScript" SLEEP ms:200

          CC "Core" GET_CLASS_ID classname:("Interaction Process") bp-library
          SET n_intproc_classid:(classid)

          CC "Core" GET_ATTR_ID classid:(n_intproc_classid) attrname:("First User Preferences")
          SET n_intproc_inspacepref_attrid:(attrid)

          CC "Core" GET_ATTR_ID classid:(n_intproc_classid) attrname:("Second User Preferences")
          SET n_intproc_outspacepref_attrid:(attrid)

...
```

Implement and Import ADOscripts File into Database

setPreferenceInInteractionProcess.asc

```
CC "CoreUI"  MODEL_SELECT_BOX  modeltype:("Preferences Pool Model") title:("Select Preferences Pool Model")
boxtext:("Please select a Preferences Pool Model") oktext:("Select")
SET n_selected_prefpool_modelid:(modelids)
IF (endbutton = "ok")
{
            CC "Core" LOAD_MODEL modelid:(VAL n_selected_prefpool_modelid)

            CC "Core" GET_ALL_OBJS_OF_CLASSNAME modelid:(VAL n_selected_prefpool_modelid) classname:("Preference
Container")
            #--> RESULT ecode: intValue objids: list .
            SET s_prefcont_objids:(objids)
            SET a_listof_objnames:(array(tokcnt(s_prefcont_objids," ")))
            SET a_listof_objdimension:(array(tokcnt(s_prefcont_objids," ")))
            SET counter:0

            FOR s_prefcont_objid in: (s_prefcont_objids)
            {
                        CC "Core" GET_OBJ_NAME objid:(VAL s_prefcont_objid)
                        SET a_listof_objnames[counter]:(objname)

                        CC "Core" GET_ATTR_VAL objid:(VAL s_prefcont_objid) attrname:("Dimension")
                        SET a_listof_objdimension[counter]:(val)
                        SET counter:(counter+1)
            }

            CC "Modeling" GET_SELECTED
            #--> RESULT ecode: intValue objids: strValue classid: id .
            SET s_selected_objid:(objids)
```

...

Implement and Import ADOscripts File into Database

correlationCalculation.asc

```
CC "Modeling" GET_ACT_MODEL
SET n_act_modelid:(modelid)

CC "AQL"   EVAL_AQL_EXPRESSION modelid:(n_act_modelid) expr:("<\"Interaction Process\">")
SET s_intprocess_objids:(objids)
CC "Core" GET_CLASS_ID classname:("Interaction Process") bp-library
SET n_intprocess_classid:(classid)

CC "AdoScript" PERCWIN_CREATE title:"Please wait! Correlations are being calculated..."
CC "AdoScript" SLEEP ms:100

SET n_percentage:0
SET n_count:0
FOR s_intprocess_objid in:(s_intprocess_objids)
{
            SET n_num_of_objs:(tokcnt(s_intprocess_objids," "))
            SET n_count:(n_count+1)
            SET n_percentage:((n_count/(n_num_of_objs+4))*100)
            CC "AdoScript" PERCWIN_SET percentage:(n_percentage)
            CC "AdoScript" SLEEP ms:200


            CC "Core" GET_CLASS_ID classname:("Interaction Process") bp-library
            SET n_intproc_classid:(classid)

            CC "Core" GET_ATTR_ID classid:(n_intproc_classid) attrname:("First User Preferences")
            SET n_intproc_inspacepref_attrid:(attrid)

            CC "Core" GET_ATTR_ID classid:(n_intproc_classid) attrname:("Second User Preferences")
            SET n_intproc_outspacepref_attrid:(attrid)

...
```

Implement and Import ADOscripts File into Database

selectInteractionProcess.asc

```
CC "Modeling" GET_ACT_MODEL
SET n_act_modelid:(modelid)

CC "AQL"   EVAL_AQL_EXPRESSION modelid:(n_act_modelid) expr:("<\"Interaction Process\">")
SET s_intprocess_objids:(objids)
CC "Core" GET_CLASS_ID classname:("Interaction Process") bp-library
SET n_intprocess_classid:(classid)

CC "Core"  GET_ATTR_ID classid:(n_intprocess_classid) attrname:("Relates from")
#--> RESULT ecode: intValue attrid: id
SET n_intproc_relatesfrom_attrid:(attrid)

CC "Core"  GET_ATTR_ID classid:(n_intprocess_classid) attrname:("Referenced process")
#--> RESULT ecode: intValue attrid: id
SET n_intproc_refprocess_attrid:(attrid)

CC "Core"  GET_ATTR_ID classid:(n_intprocess_classid) attrname:("Relates to")
#--> RESULT ecode: intValue attrid: id
SET n_intproc_relatesto_attrid:(attrid)

CC "Core" GET_CLASS_ID classname:("Space") bp-library
SET n_space_classid:(classid)

CC "Core" GET_CLASS_ID classname:("Interaction Process") bp-library
SET n_intproc_classid:(classid)

CC "Core"  GET_ATTR_ID classid:(n_intproc_classid) attrname:("Correlation Results")
#--> RESULT ecode: intValue attrid: id
SET n_intproc_corrres_attrid:(attrid)
...
```

Configure and EnumerationDomains of PROGRAMCALLs

Set Interaction Process Annotation

ITEM "Set Annotation"

EXECUTE file:("db:\\setIntProcessAnnotation.asc")

Set Process Model Annotation

ITEM "Set Annotation"

EXECUTE file:("db:\\setProcessModelAnnotation.asc")

Set Preferences

ITEM "Set Preferences"

EXECUTE file:("db:\\setPreferenceInInteractionProcess.asc")

Correlation Thresholds

ITEM "Set Preferences"

EXECUTE file:("db:\\setPreferenceInInteractionProcess.asc")

Calculate Correlation

ITEM "Calculate Correlation"

EXECUTE file:("db:\\correlationCalculation.asc")

Correlation Thresholds

ITEM "Set Preferences"

EXECUTE file:("db:\\setPreferenceInInteractionProcess.asc")

Result
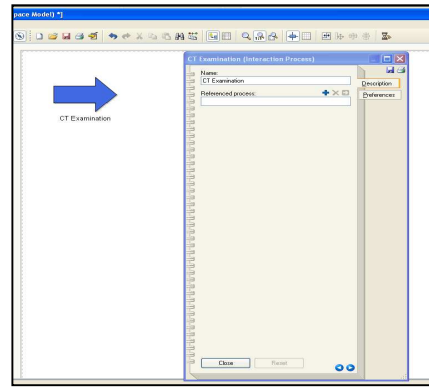
Search process complying with criteria

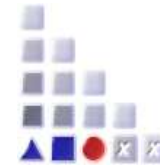**CT Examination Process in AKH**

CT Examination Process in EKH

CT Examination Process in WHS
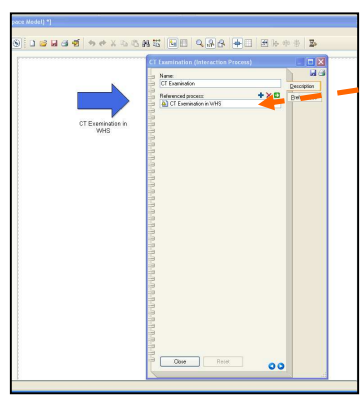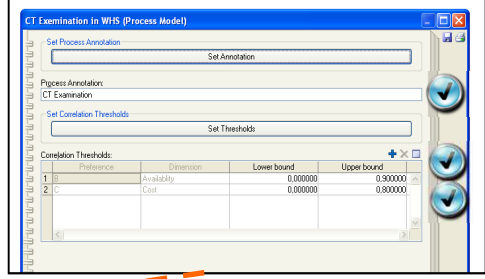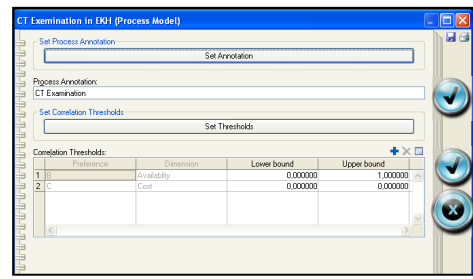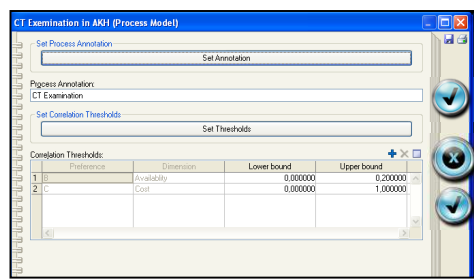
Add INTERREF

Further Questions?

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