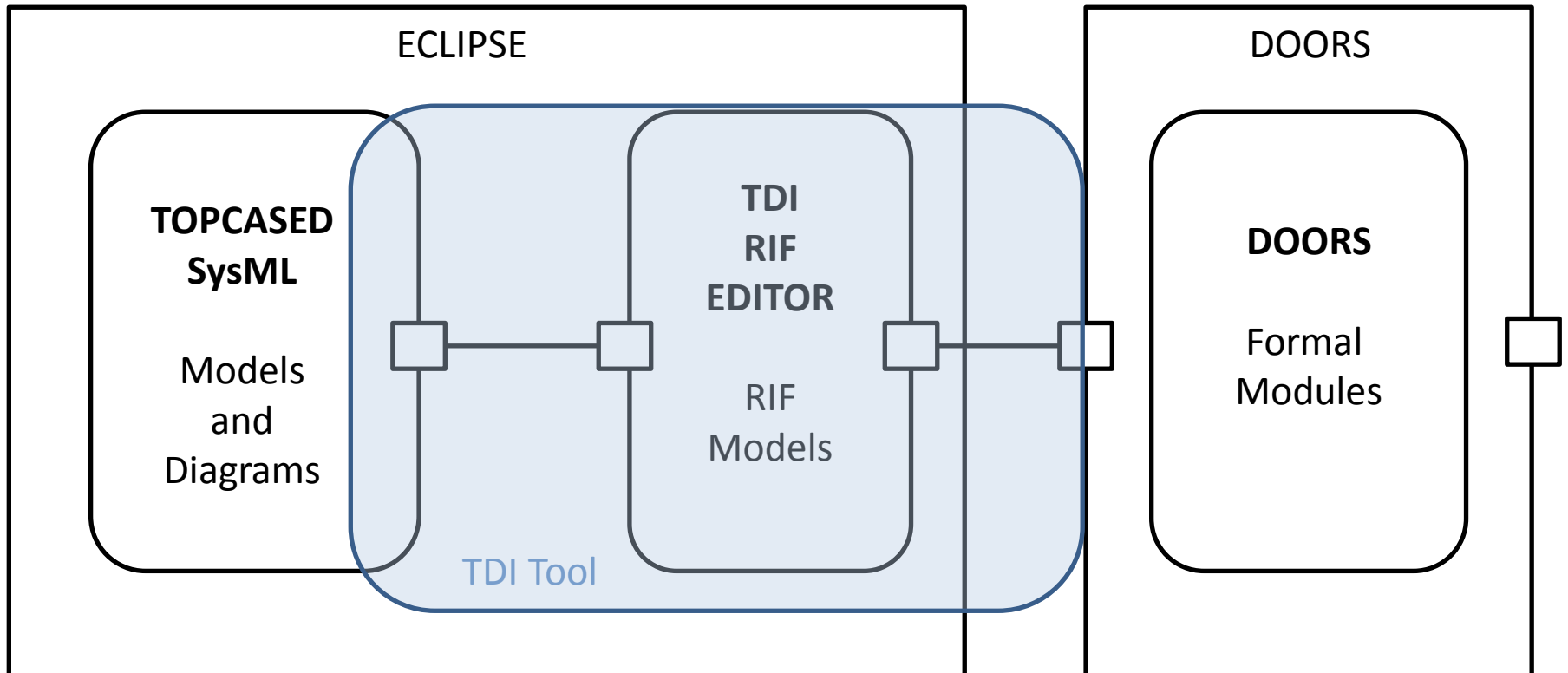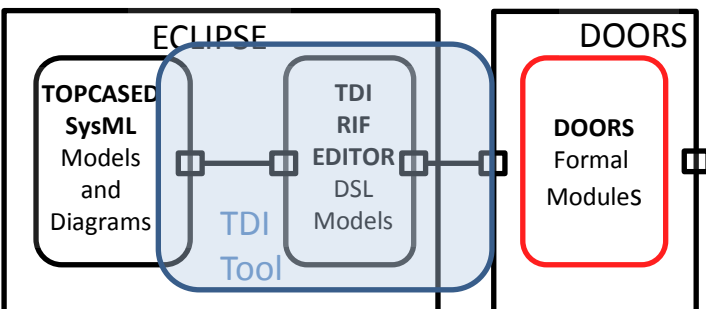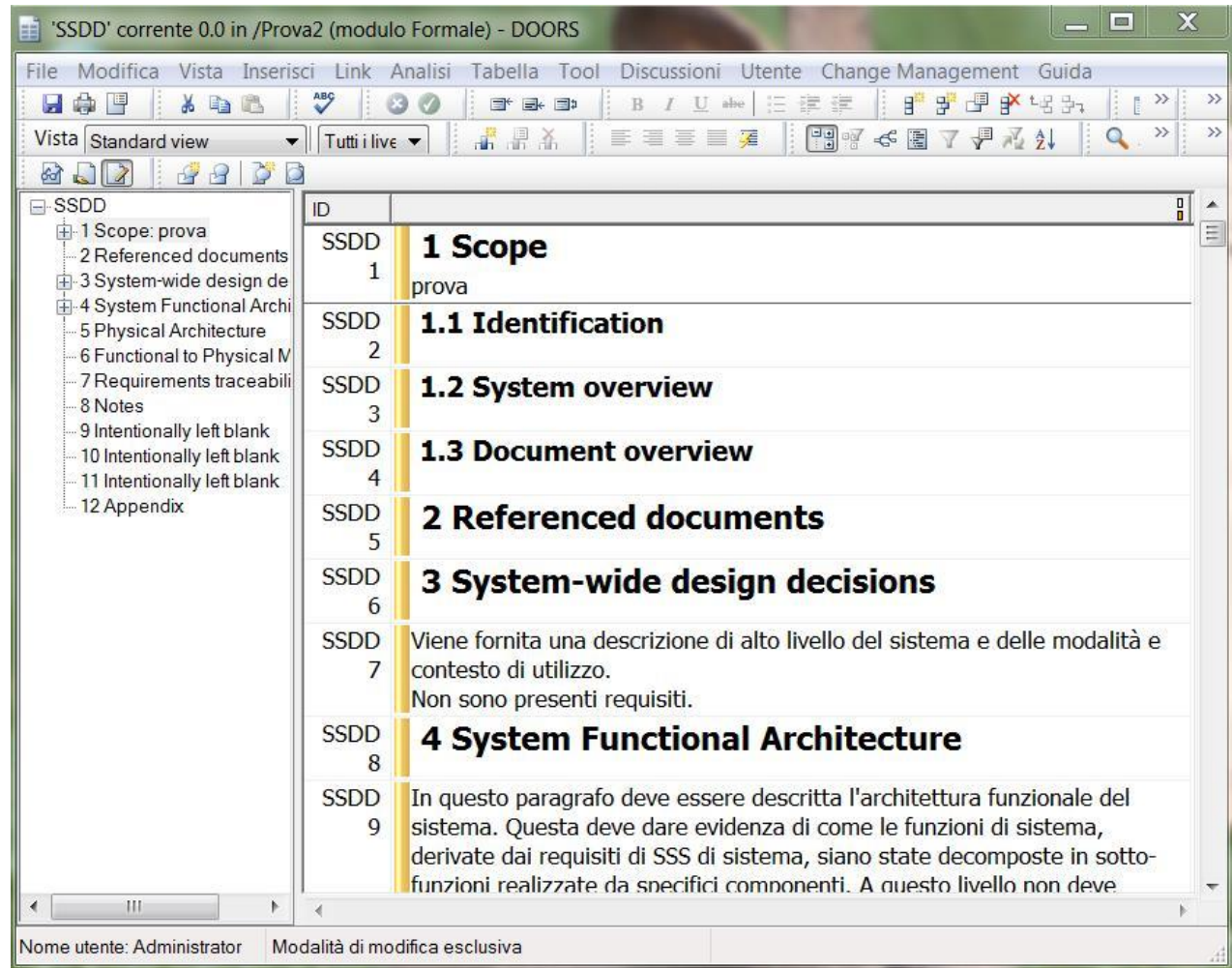# TOPCASED-DOORS Integration (TDI)

TDI Tool

DOORS

A DOORS Module (DOORS 9.3) can be exported as a "RIF file".
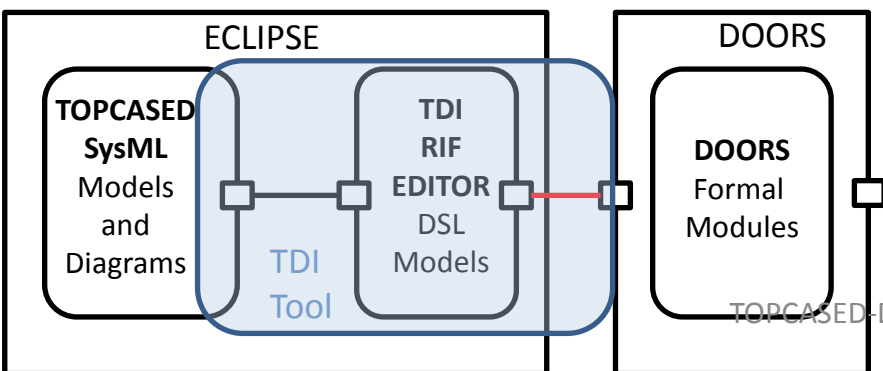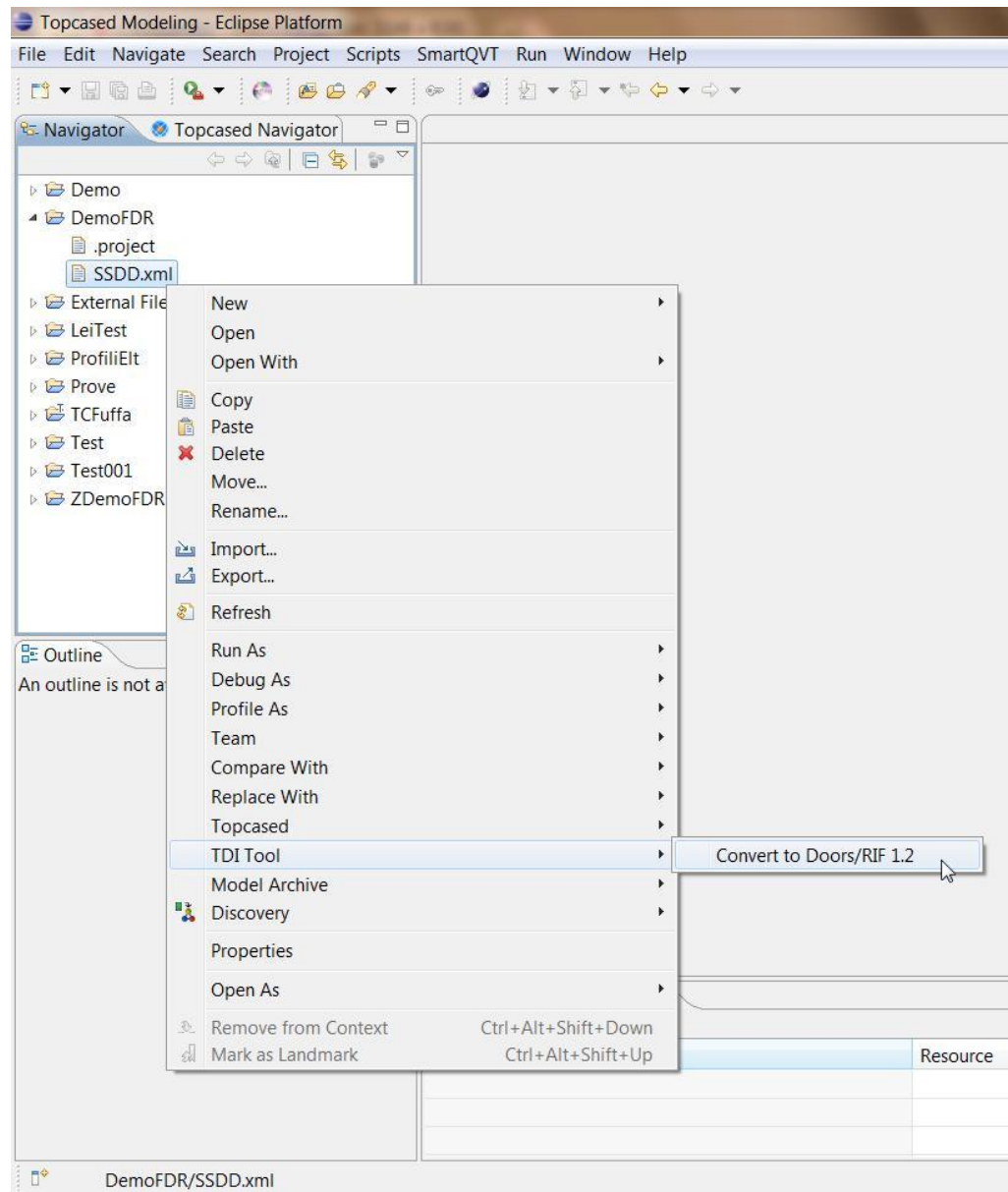It's format though is not totally compliant with the standard RIF12 format

Import from DOORS

Convert
$\longrightarrow$ *DOORS / RIF12*

In this example SSDD.xml is the RIF exported from DOORS.
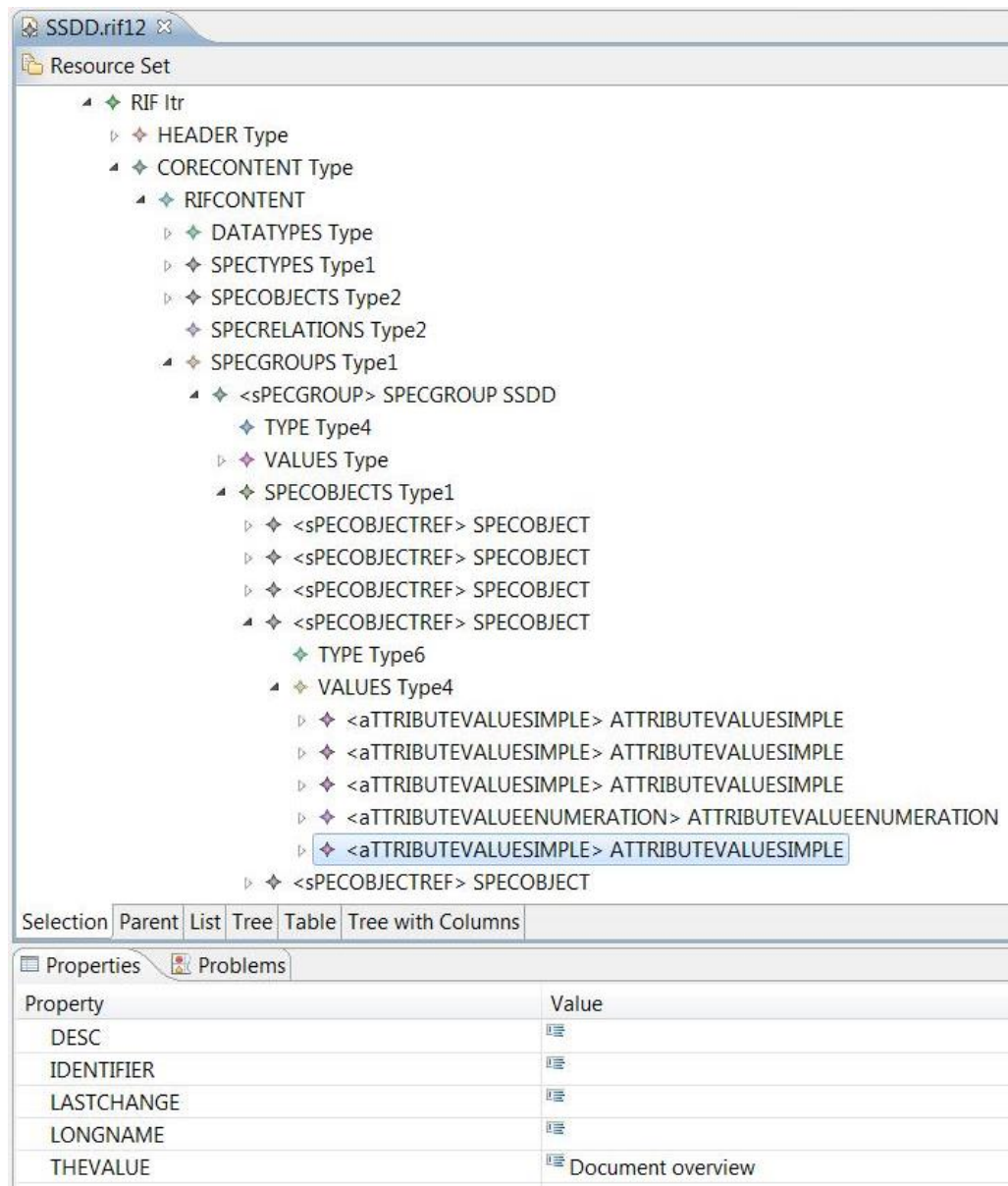*It can be automatically converted in SSDD.rif12 (standard RIF format).*

EMF generated RIF Editor

A RIF model can be opened and edited with the EMF generated RIF Editor, based on the RIF meta-model but…

Not very user friendly!

Specially for a DOORS user who is not a RIF expert: lots of information but very difficult to understand. DOORS structure and terminology not visible.

TDI RIF Editor

Based on the RIF meta-model, but:

- *DOORS-like view: focused on DOORS models and objects*

- *New organization of attributes as properties or in customized editors*

- *DOORS levels: objects viewed in a parent/child hierarchy*

- *Improved creation/editing of links*
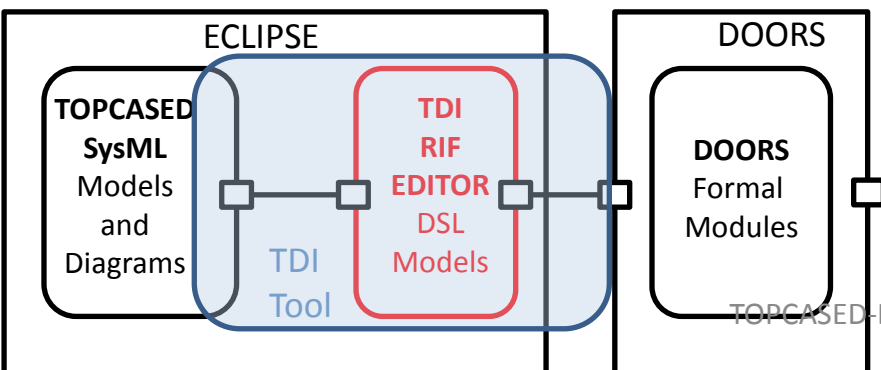
SSDD.rif12

Resource Set
- platform:/resource/DemoFDR/SSDD.rif12
  - RIF_Document
    - DOORS_Modules
      - \<sPECGROUP> DOORS_Formal_Module SSDD
        - DOORS_Object Scope
        - DOORS_Object Referenced documents
        - DOORS_Object System-wide design decisions
        - DOORS_Object System Functional Architecture
          - Attributes
            - Object Text
        - DOORS_Object Abs Num: 21
        - DOORS_Object Abs Num: 59
        - DOORS_Object Block Definition Diagram
        - DOORS_Object Internal Block Diagram
        - DOORS_Object Interface design
          - Attributes
          - DOORS_Object Abs Num: 28
          - DOORS_Object Abs Num: 41
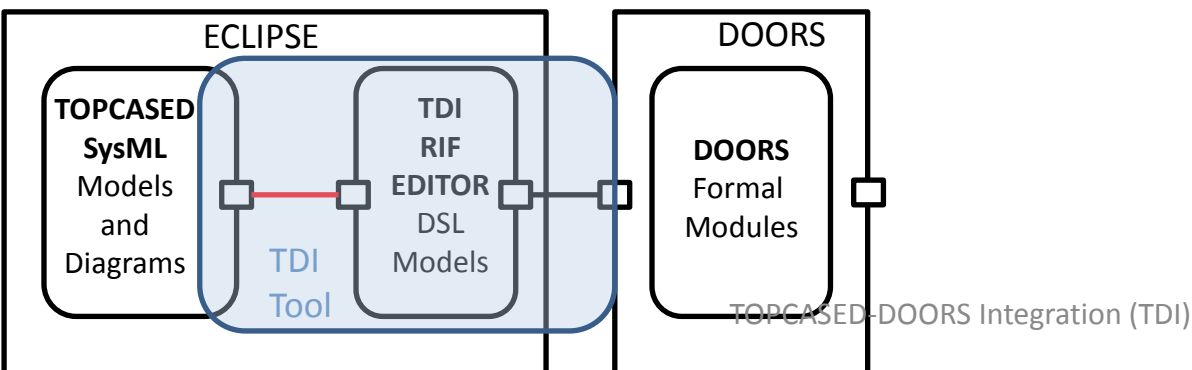   - DOORS_Object DataTypes
        - DOORS_Object System components

Selection | Parent | List | Tree | Table | Tree with Columns

Properties

Property	Value
ATTRIBUTEVALUEENUMERATION	
Created Thru	ENUMVALUE Extracting
IE Object Type	
ATTRIBUTEVALUESIMPLE	
Created On	2011-06-17
Description	
IE PUID	
Last Modified On	2012-01-12
Name	
Object Heading	System Functional Architecture

ECLIPSE

TOPCASED SysML Models and Diagrams

TDI Tool

TDI RIF EDITOR DSL Models
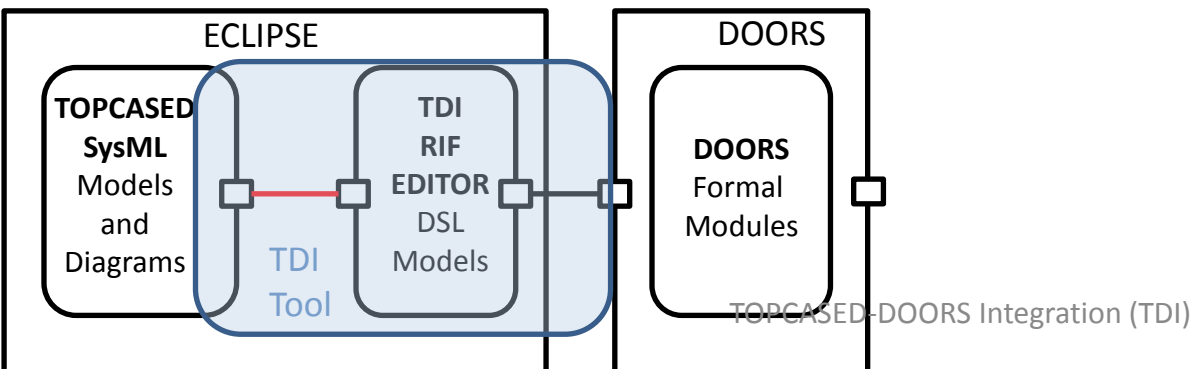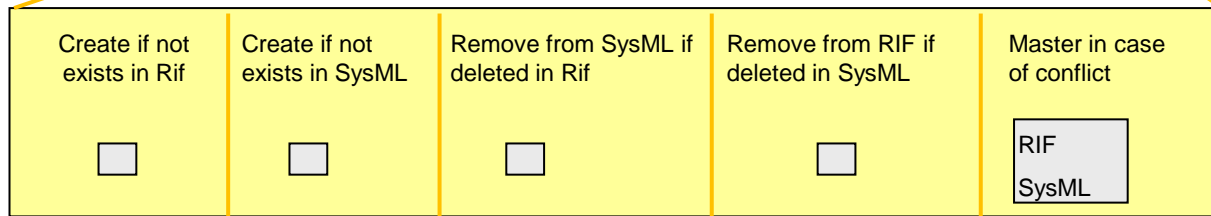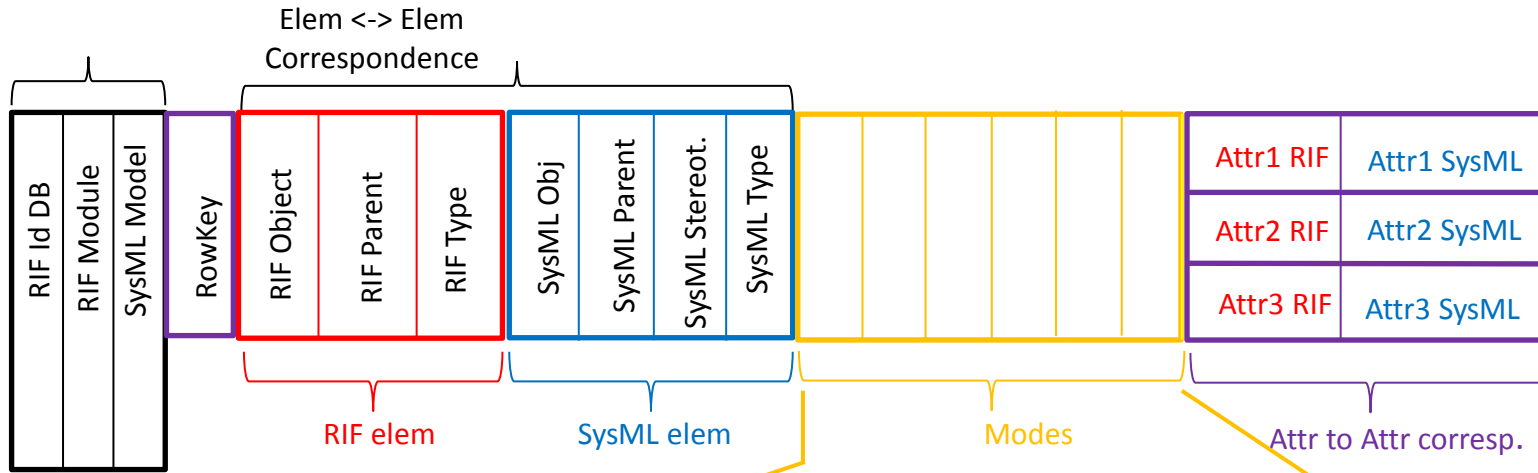
DOORS

DOORS Formal Modules

TDI Synchronization

DOORS RIF $\Longleftrightarrow$ TOPCASED SysML

- *Elements in TOPCASED SysML are in correspondence with elements in DOORS RIF*

- *SysML attributes are mapped onto DOORS attributes of corresponding elements in DOORS RIF and vice-versa*

- *Synchronization is an operation to guarantee that corresponding elements are aligned*

- *Synchronization is guided by a Synch Table that contains all the synchronization rules*

ECLIPSE

TOPCASED SysML Models and Diagrams

TDI RIF EDITOR DSL Models

TDI Tool

DOORS

DOORS Formal Modules
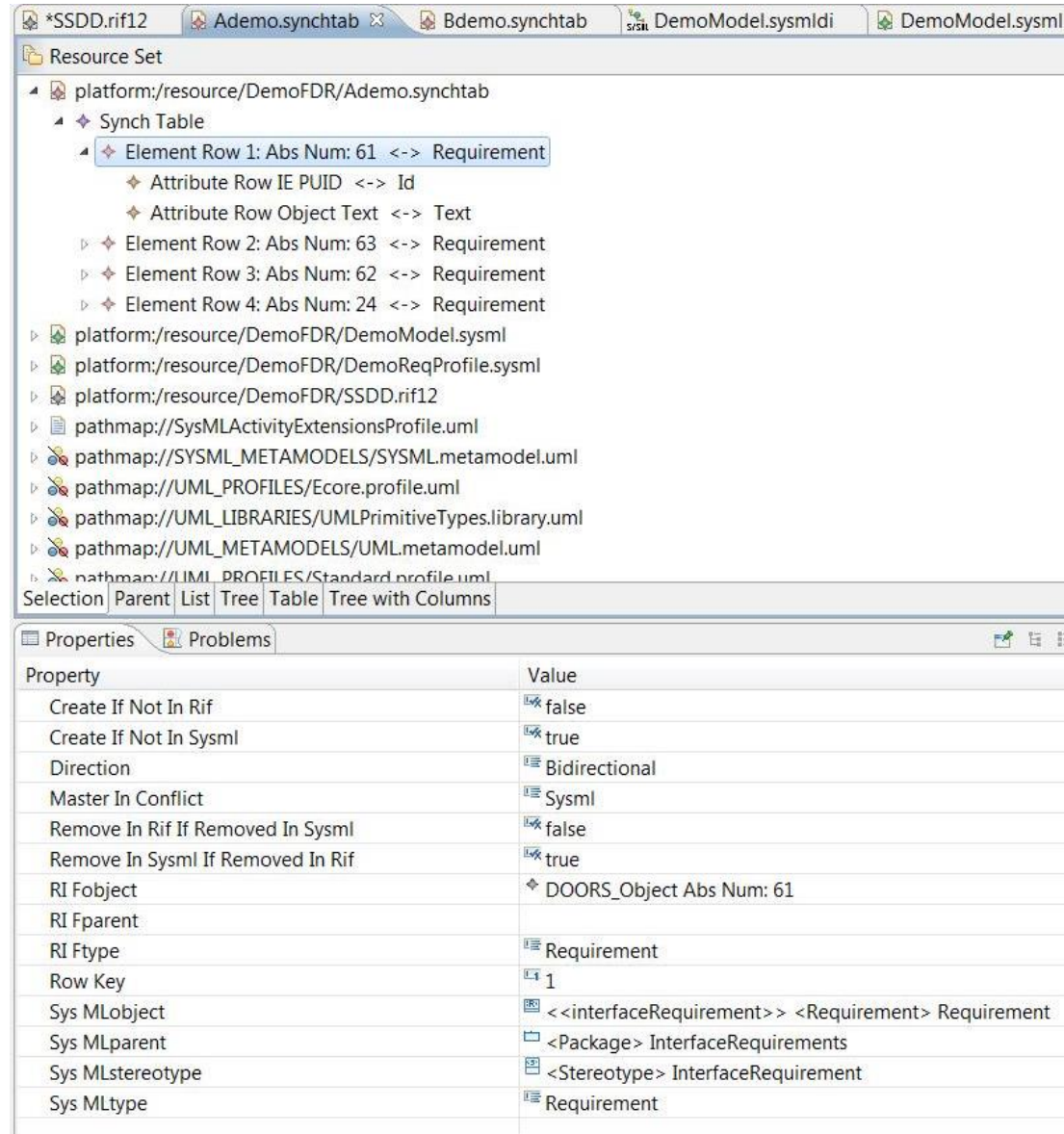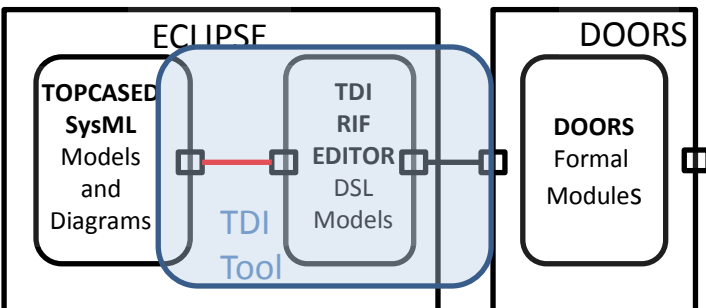
Synch Table Concept

Synch Table Model

EMF generated Editor based on a dedicated meta-model + some customization

Synch Table can be easily populated by hand to configure the needed synchronization or…
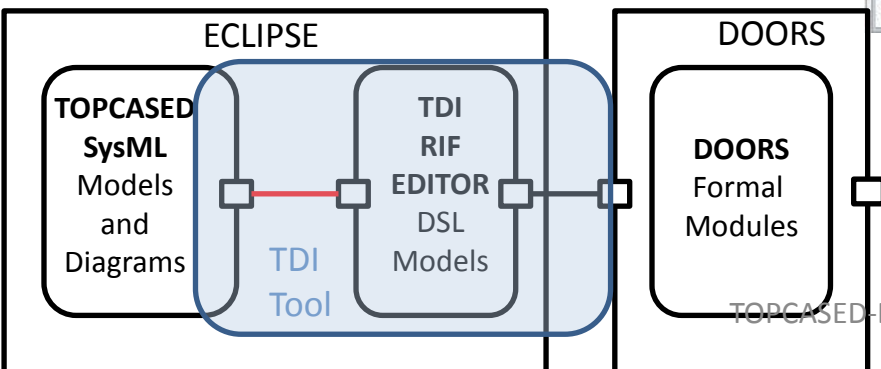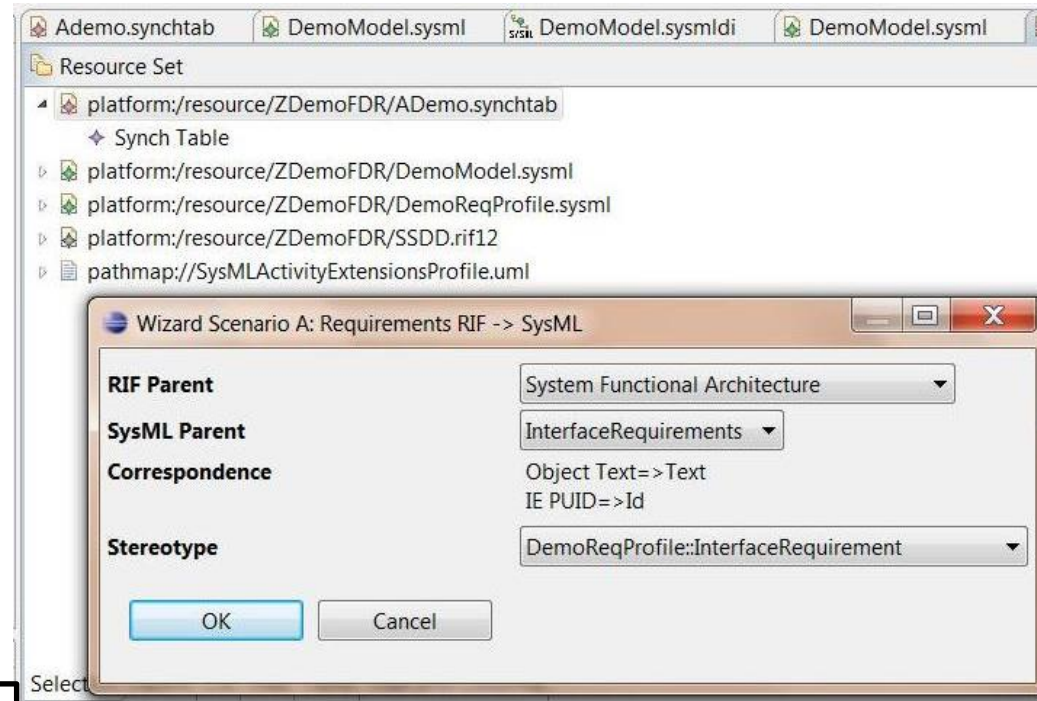
A: RIF Requirement $\longrightarrow$ SysML Requirement

B: SysML Requirement $\longleftarrow$ RIF Requirement

Wizards:
Simple configuration input
to automatically add rows to a
Synch Table for classical
synchronization scenarios

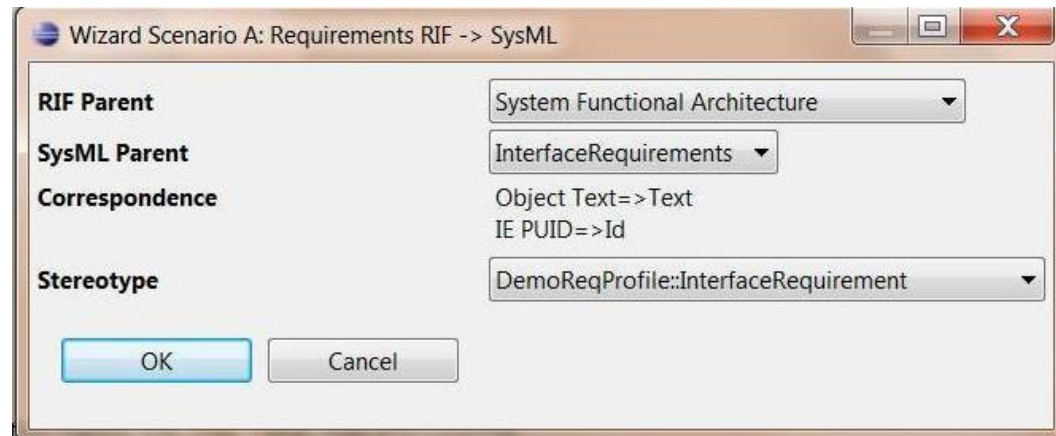**A: RIF Requirement** ⟶ **SysML Requirement**

Wizard A example:
all requirements in under RIF parent
"System Functional Architecture" must
have a correlated Requirement in
TOPCASED under SysML parent
"Interface Requirements".
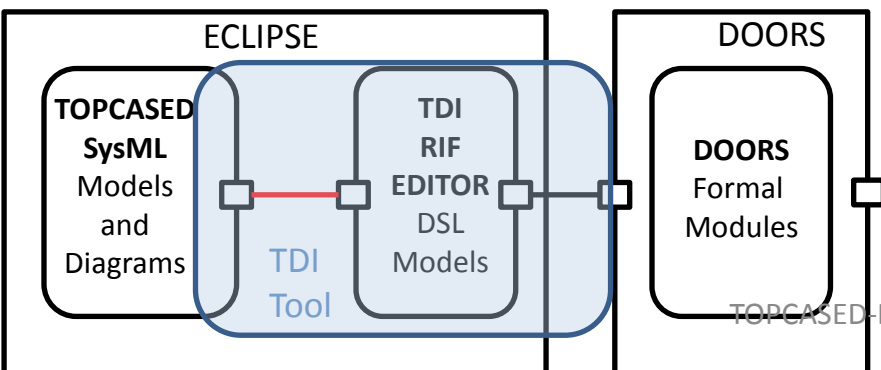*These requirements in SysML shall be*
stereotyped as
DemoReqProfile::InterfaceRequirement.
Attributes:

- *RIF Object Text = SysML Text*
- *RIF IE PUID = SysML Id .*

Wizard Scenario A: Requirements RIF -> SysML

RIF Parent	System Functional Architecture
SysML Parent	InterfaceRequirements
Correspondence	Object Text=>Text IE PUID=>Id
Stereotype	DemoReqProfile::InterfaceRequirement

OK   Cancel

Create if not exists in Rif	Create if not exists in SysML	Remove from SysML if deleted in Rif	Remove from Rif if deleted in SysML	Master in case of conflict
☐	☒	☒	☐	Rif

ECLIPSE

TOPCASED SysML Models and Diagrams

TDI Tool

TDI RIF EDITOR DSL Models

DOORS

DOORS Formal Modules

B: SysML Requirement $\longrightarrow$ RIF Requirement
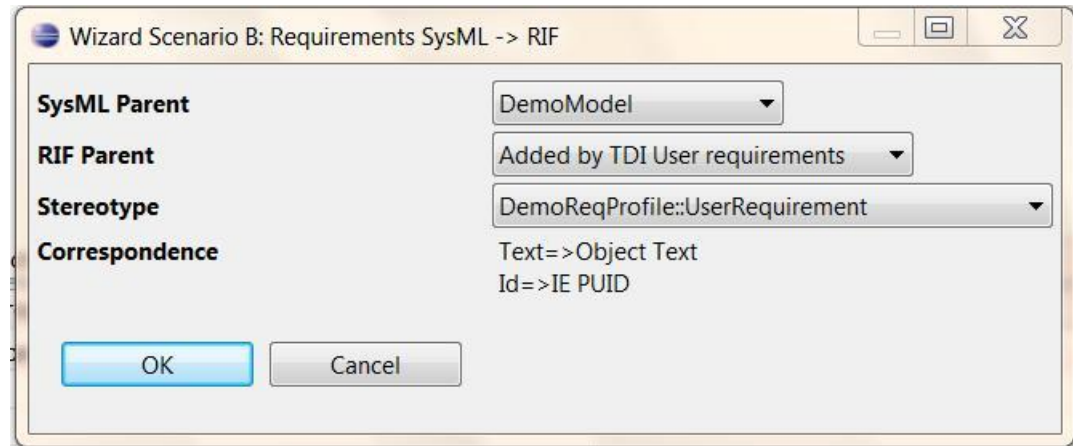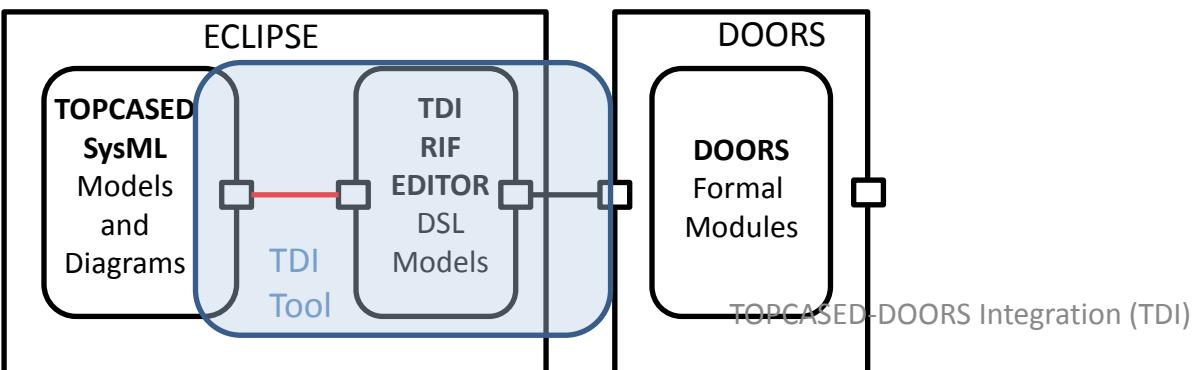
Wizard B example:
all requirements stereotyped as
DemoReqProfile::UserRequirement in
TOPCASED under SysML parent "Demo
Model" must have a correlated
Requirement under RIF parent "Added
by TDI User Requirements".
Attributes:
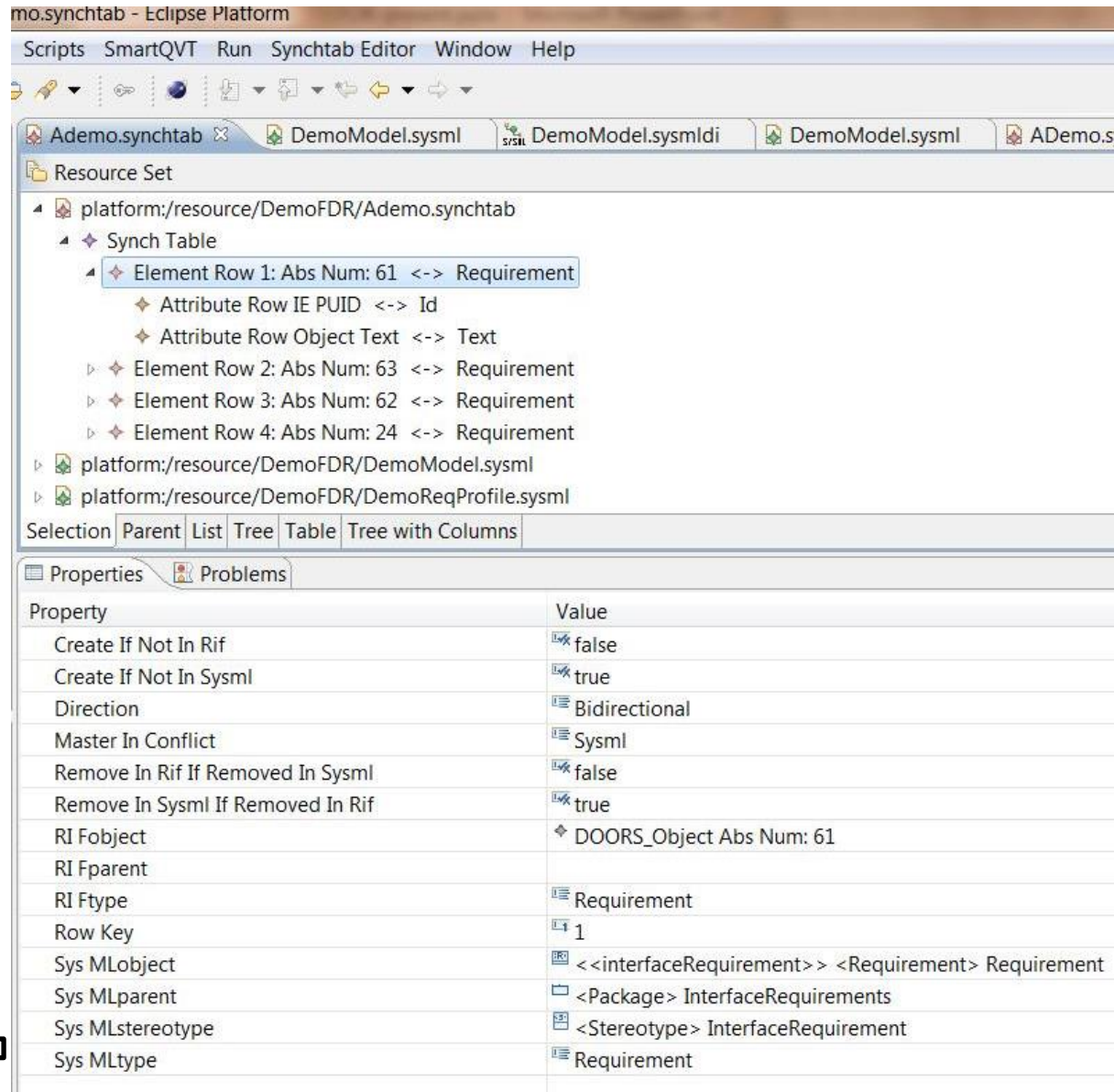- *RIF Object Text = SysML Text*
- *RIF IE PUID = SysML Id .*

Wizard Scenario B: Requirements SysML -> RIF

SysML Parent	DemoModel
RIF Parent	Added by TDI User requirements
Stereotype	DemoReqProfile::UserRequirement
Correspondence	Text=>Object Text
	Id=>IE PUID

OK   Cancel

Create if not exists in Rif	Create if not exists in SysML	Remove from SysML if deleted in Rif	Remove from Rif if deleted in SysML	Master in case of conflict
☒	☐	☐	☒	SysML

ECLIPSE

TOPCASED SysML Models and Diagrams

TDI Tool

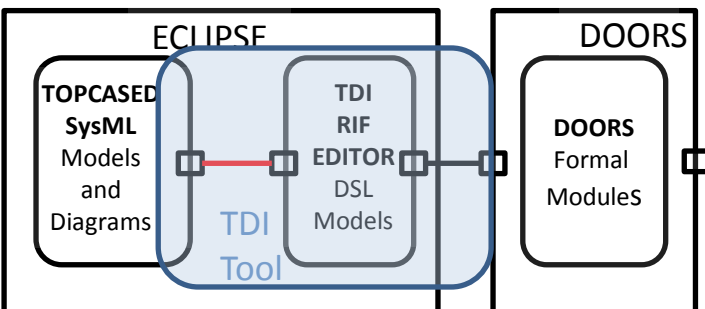**TDI RIF EDITOR** DSL Models

DOORS

DOORS Formal Modules

Synch Table Wizards [4/4]

Wizards:

- *Automatically add rows to a Synch Table for classical synchronization scenarios*
- *Consistency checks and automatic deletion of obsolete rows (with confirmation from user)*

TDI Synchronization

- *Triggered from Synch Table's contextual menu: «Synchronize»*
- *Based on a Synch Table: fine grain configurability*
- *SysML and RIF12 elements are aligned according to Synch Table's content*
- *Synch Table is updated upon synchronization so synch connections between RIF and SysML are maintained*
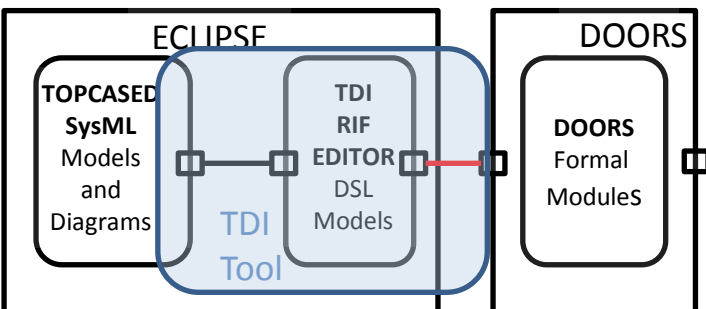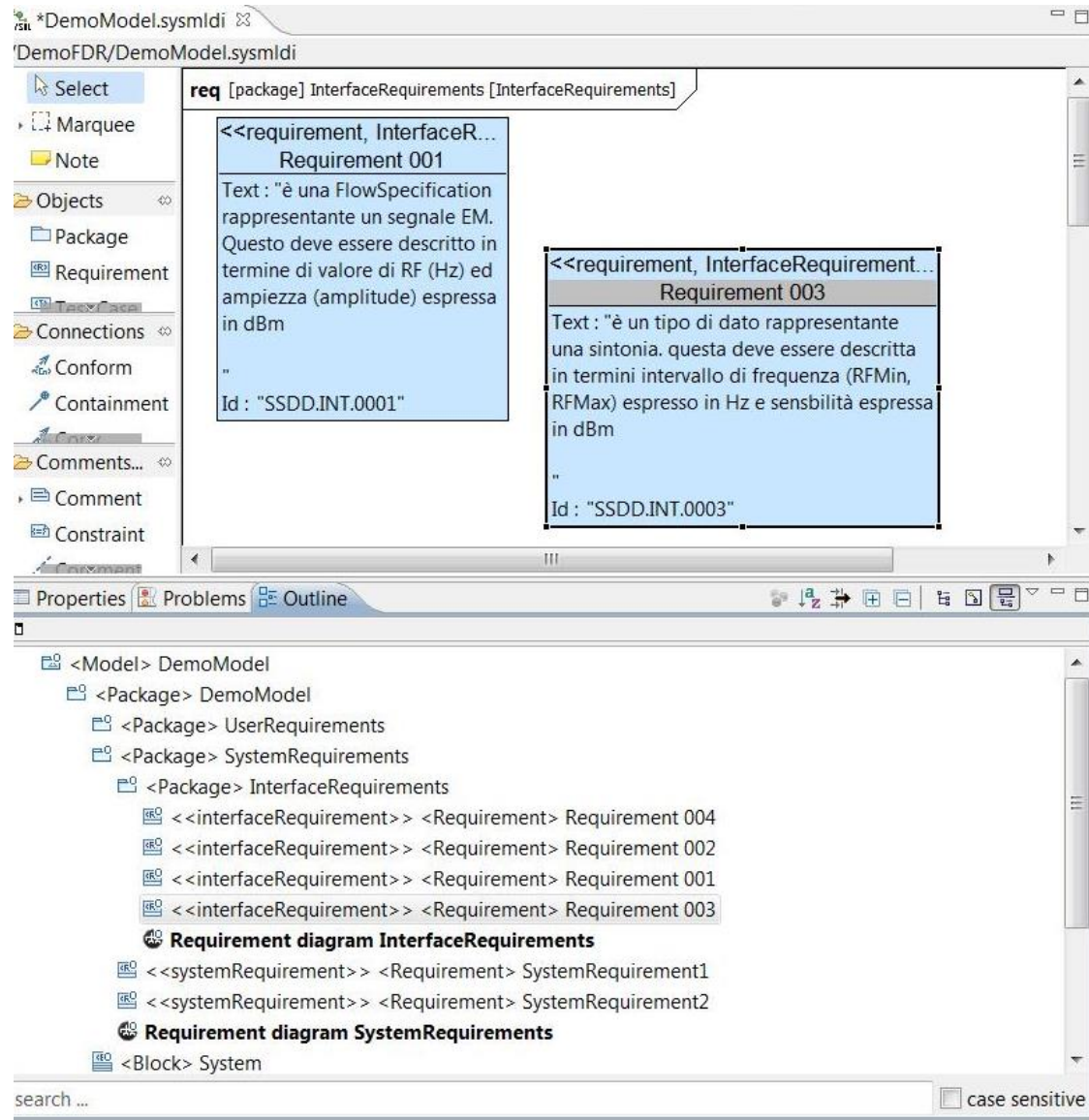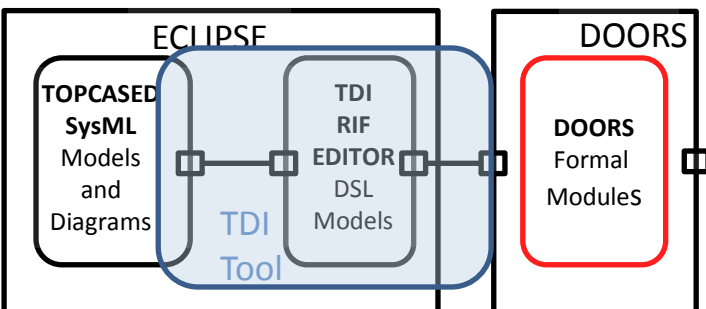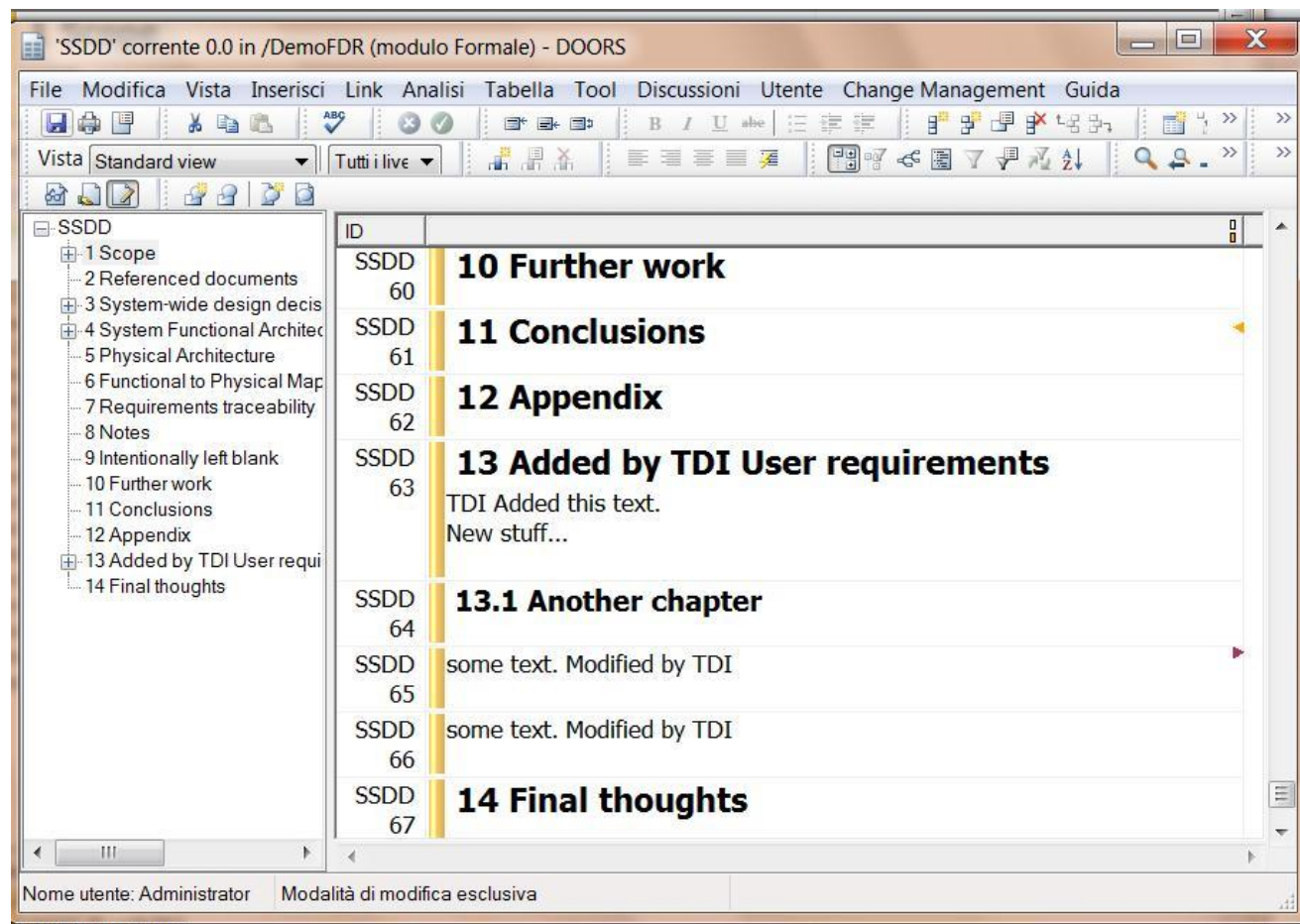
Export to DOORS

Convert RIF12 $\longrightarrow$ *DOORS*

After carrying out synchronization between RIF and TOPCASED SysML, the edited RIF12 file can be converted to DOORS format (SSDD.xml) and exported back into DOORS.
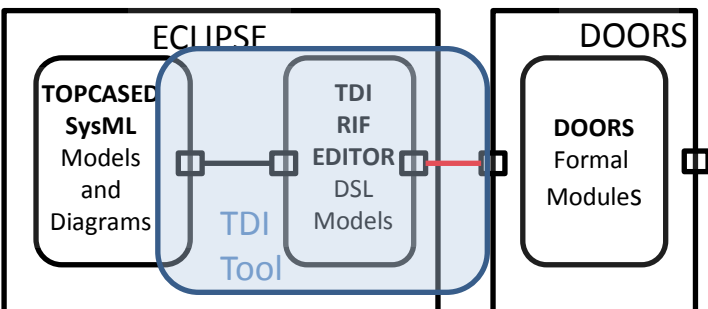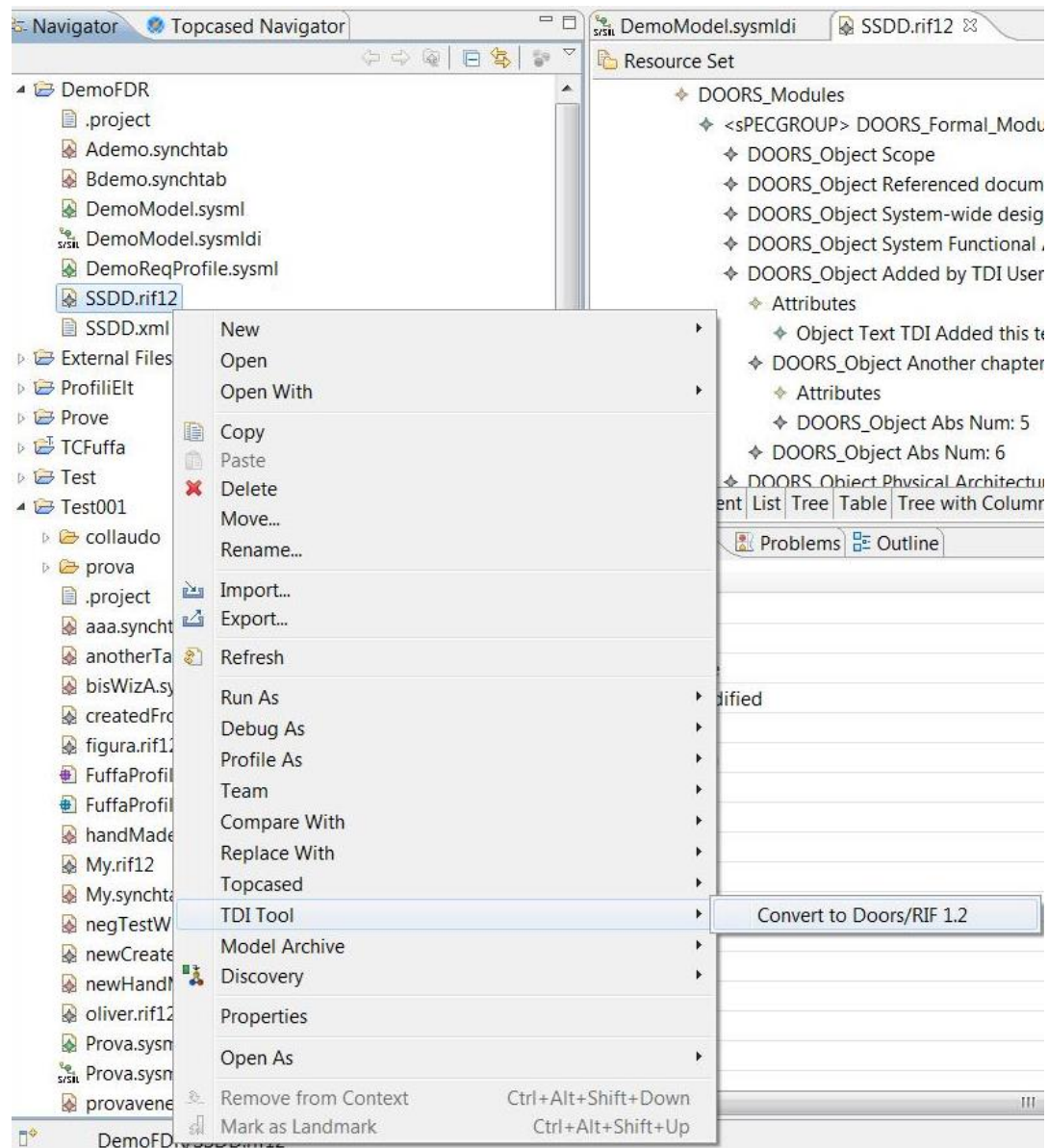
... back in DOORS

RIF file imported back into DOORS.
All changes are merged into original DOORS Module

TDI Tool Flexibility

Relying on the RIF standard format, a high level of flexibility is guaranteed:

- *despite its name, TDI could work with any requirement management tool that supports RIF, other than DOORS*