

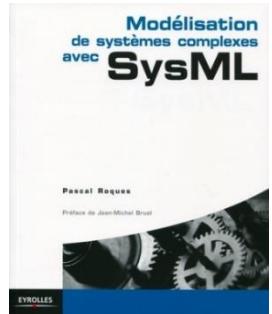


Clarity

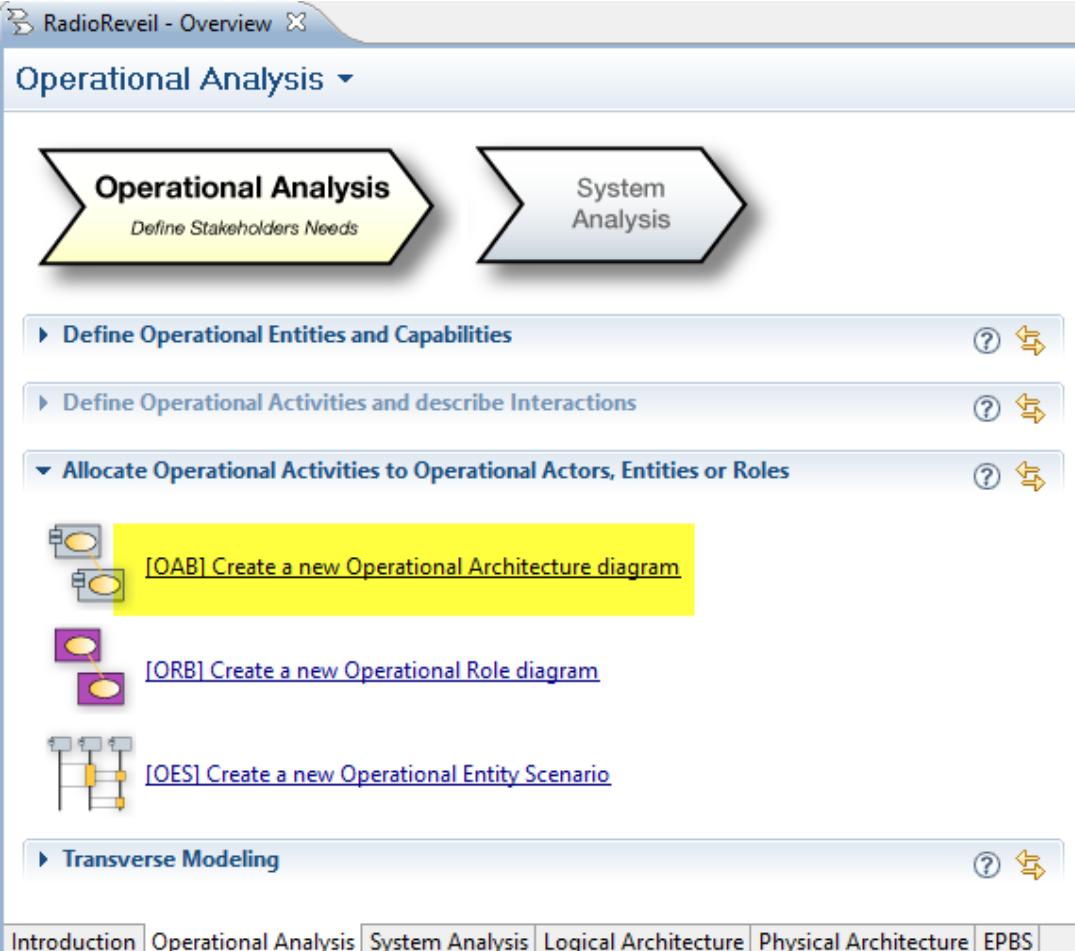
Exemple du Radio-réveil - 03/2015

Présentations

- Pascal Roques : consultant senior, 25+ ans d'expérience
 - SADT, OMT, UML, SysML, ARCADIA
- Certifié UML2 et SysML par l'OMG
- Co-fondateur de l'association
- Formateur pour Thales sur ARCADIA / Melody
 - 80+ sessions, 1000+ stagiaires formés
 - Partie prenante du projet Clarity
- Auteur des ouvrages les plus lus en France sur UML ... et du premier livre sur SysML



Analyse Opérationnelle (OA)



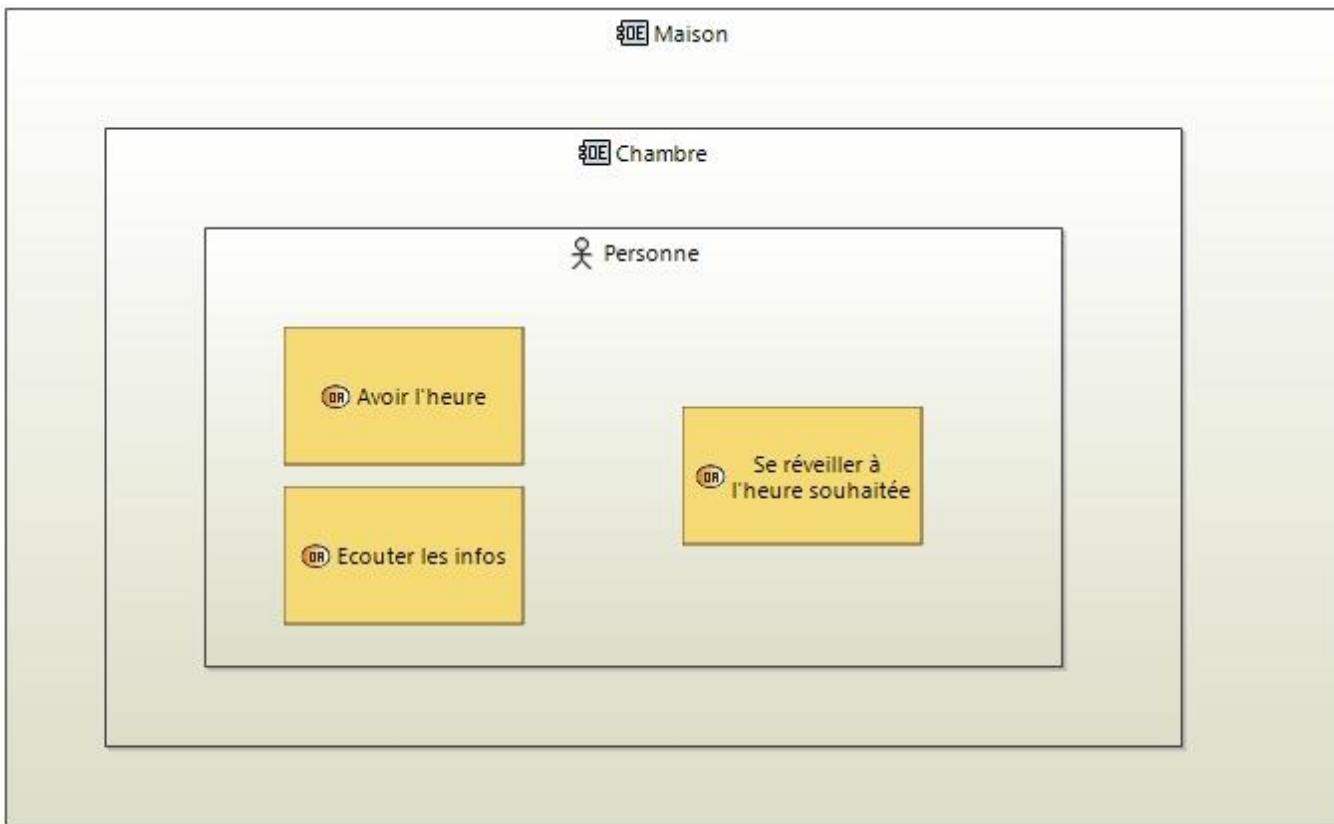
The screenshot shows the RadioReveil software interface with the title "RadioReveil - Overview". The main menu is "Operational Analysis". Below it, two large arrows point right: "Operational Analysis" (yellow background) and "System Analysis".

The "Operational Analysis" section contains the following steps:

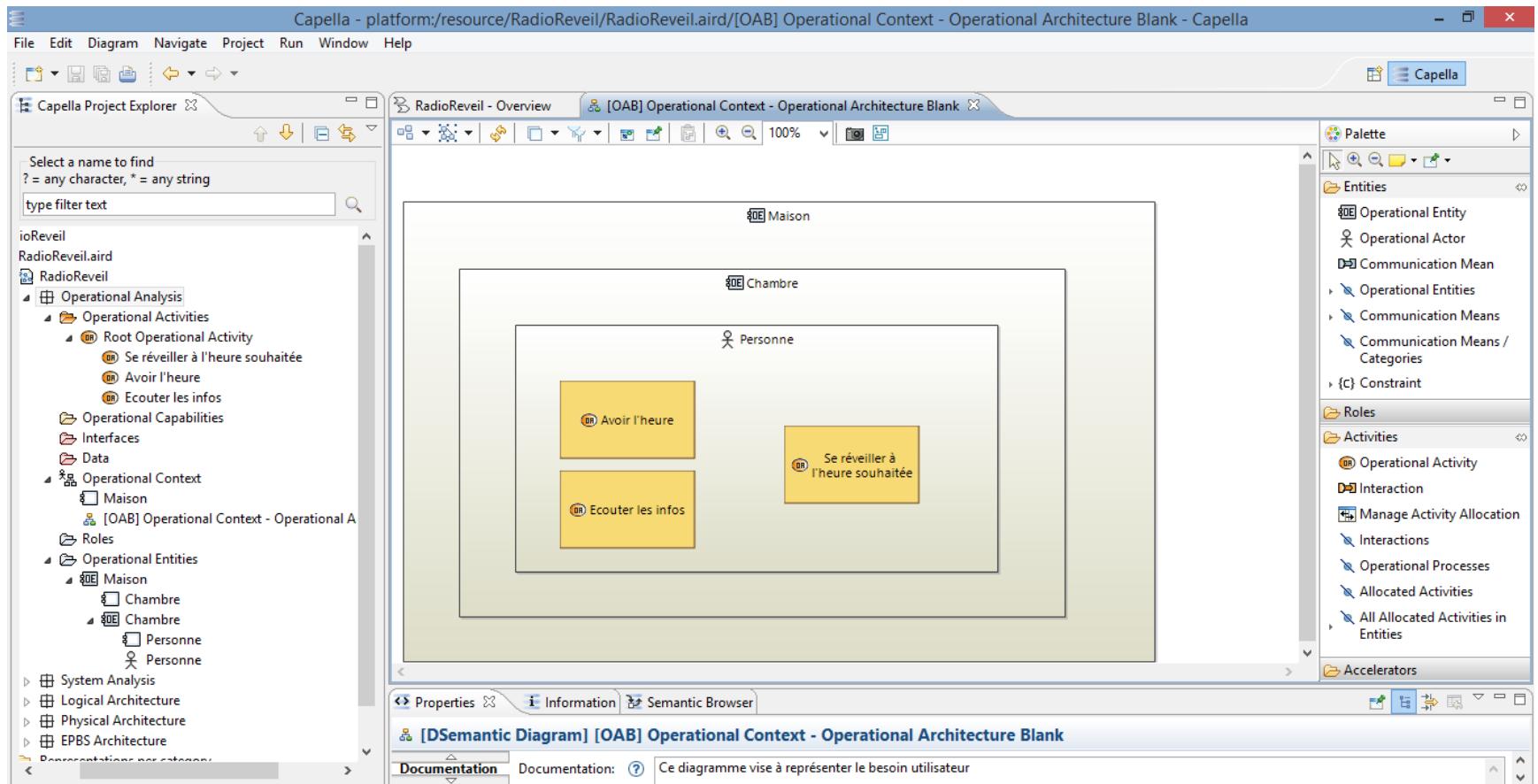
- ▶ Define Operational Entities and Capabilities
- ▶ Define Operational Activities and describe Interactions
- ▼ Allocate Operational Activities to Operational Actors, Entities or Roles
 - [OAB] Create a new Operational Architecture diagram (highlighted with a yellow box)
 - [ORB] Create a new Operational Role diagram
 - [OES] Create a new Operational Entity Scenario
- ▶ Transverse Modeling

At the bottom, there is a navigation bar with tabs: Introduction, Operational Analysis (selected), System Analysis, Logical Architecture, Physical Architecture, EPBS, and a blank box.

Operational Architecture Blank



OAB



OA : Diagrams Viewer

Operational Analysis ▾

Operational Analysis
Define Stakeholders Needs

System Analysis

- ▶ Define Operational Entities and Capabilities ? 
- ▶ Define Operational Activities and describe Interactions ? 
- ▶ Allocate Operational Activities to Operational Actors, Entities or Roles ? 
- ▶ Transverse Modeling ? 

Diagrams Viewer

Select a name to find
? = any character, * = any string

type filter text

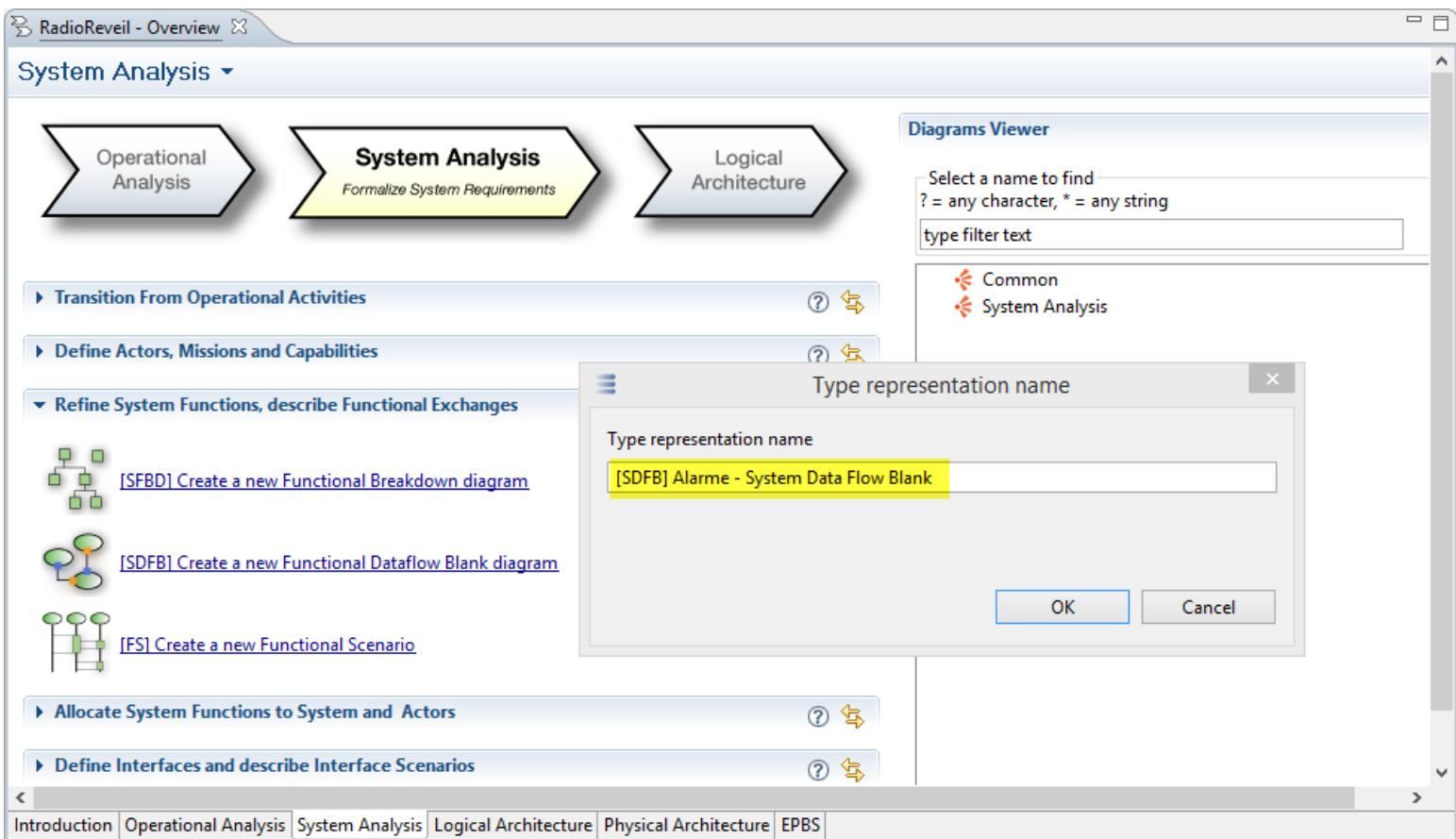
- Common
- ↳ Operational Analysis
 - ↳ Operational Architecture Blank
 - [OAB] Operational Context - Operational Architecture Blank

[Introduction](#) | [Operational Analysis](#) | [System Analysis](#) | [Logical Architecture](#) | [Physical Architecture](#) | [EPBS](#)

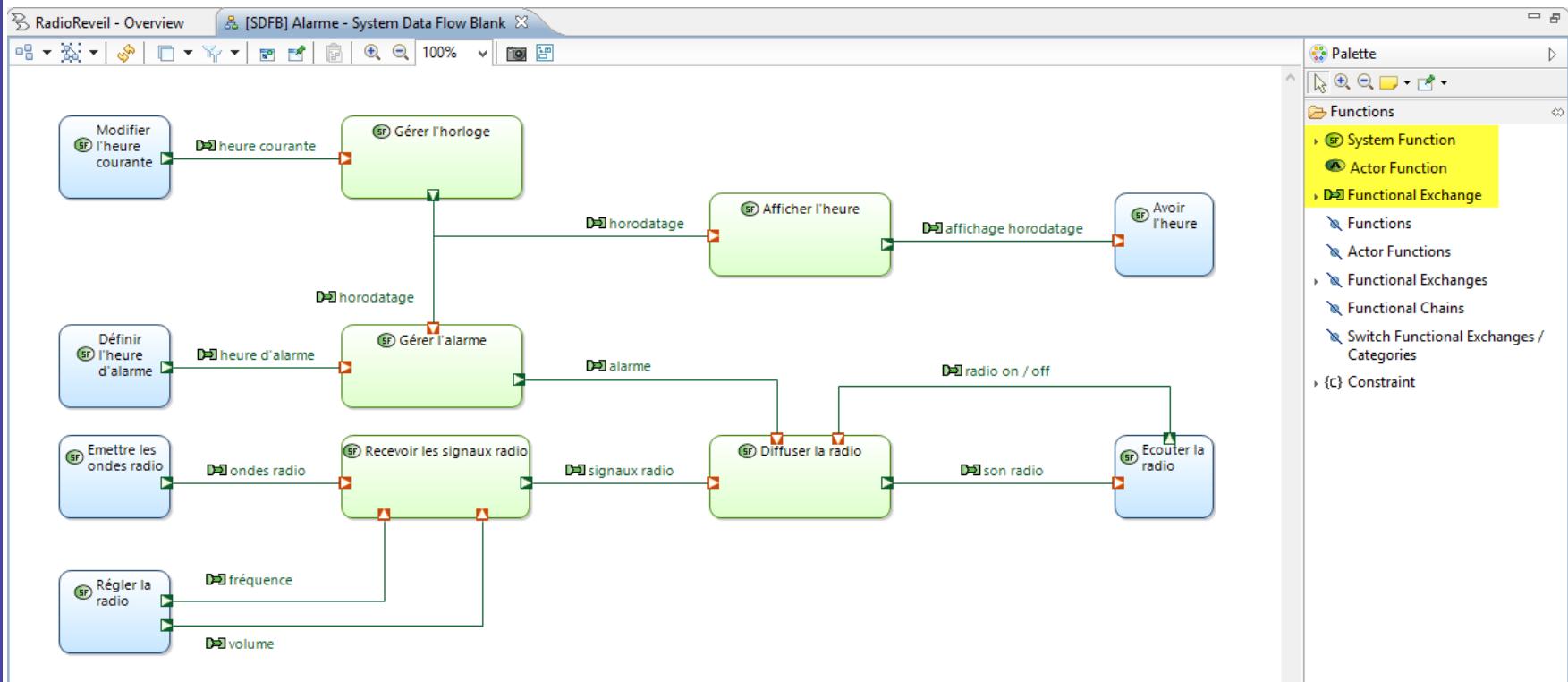
Analyse Système (SA)



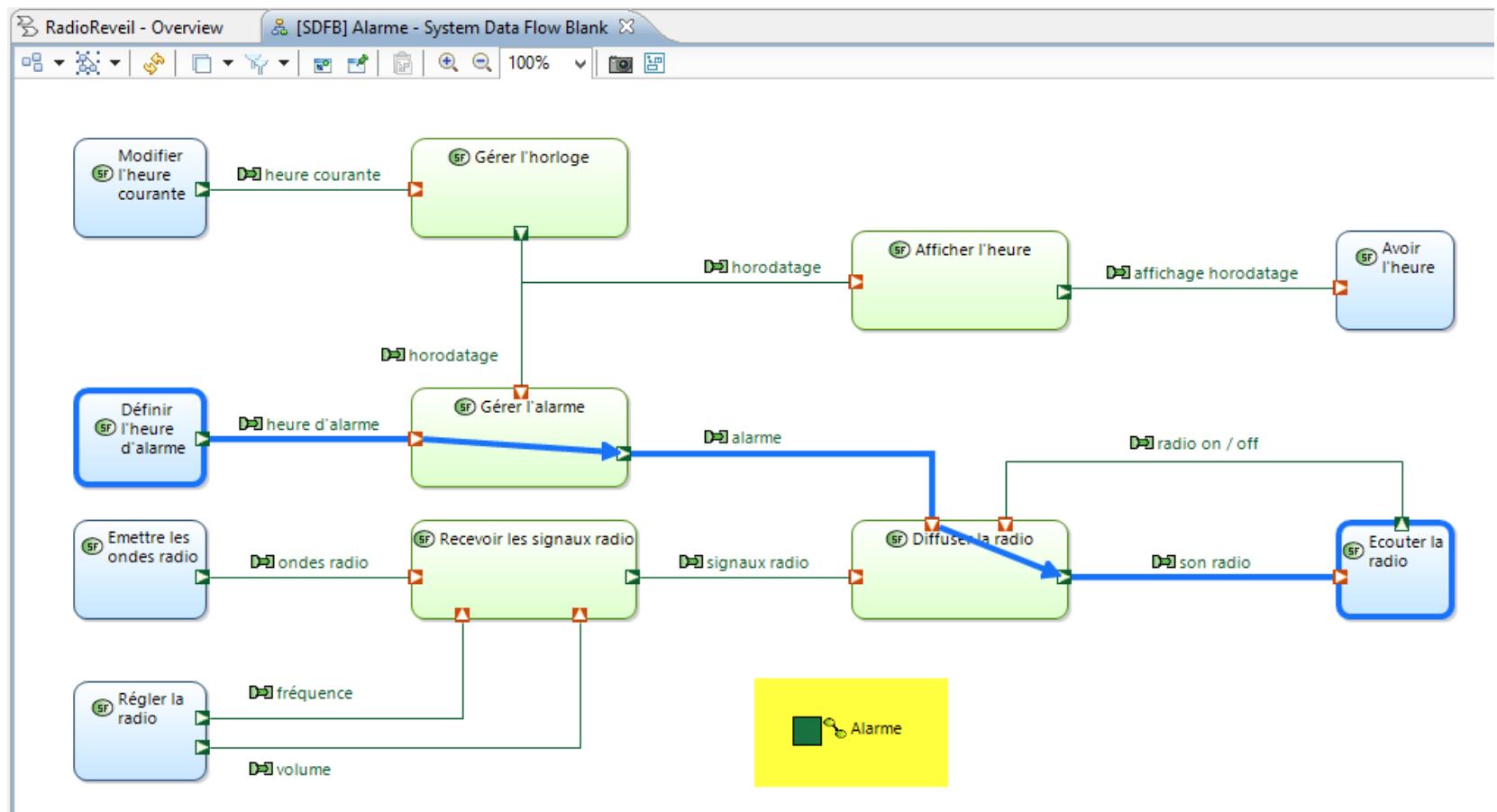
System Data Flow Blank



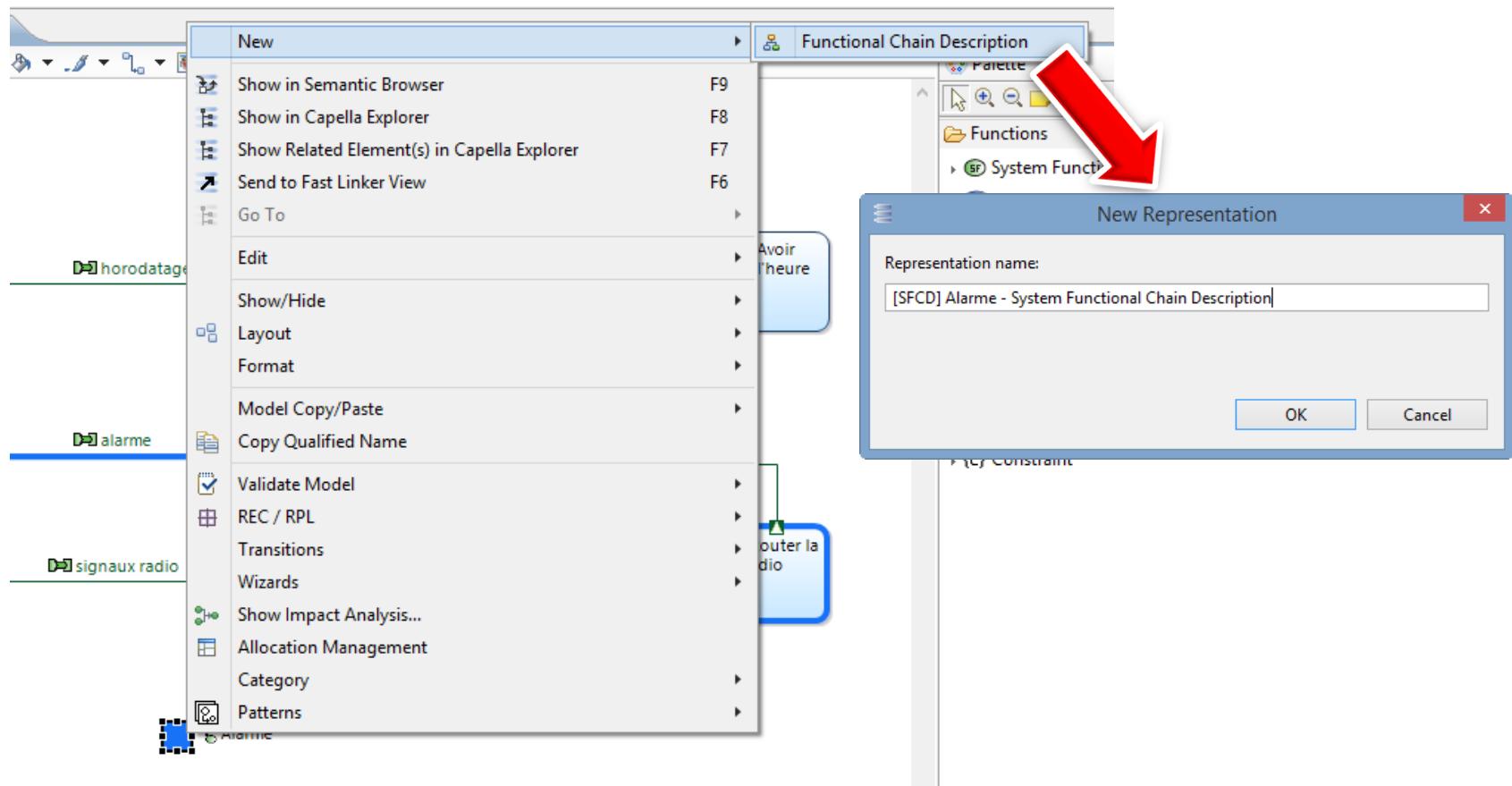
SDFB



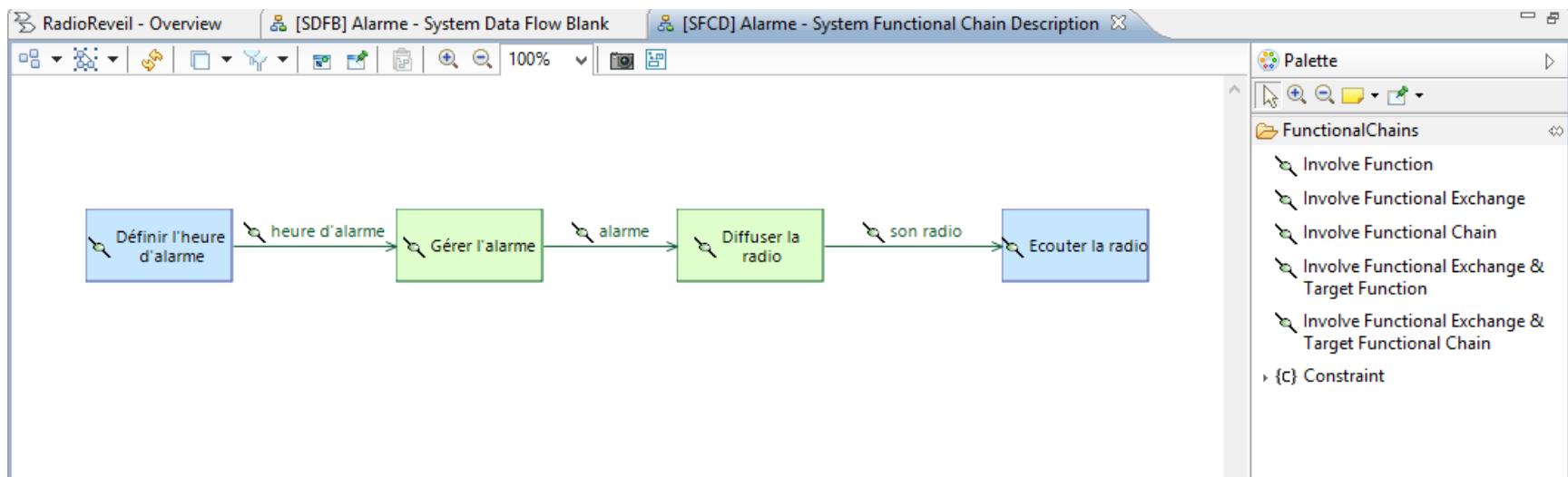
SDFB et Chaine Fonctionnelle



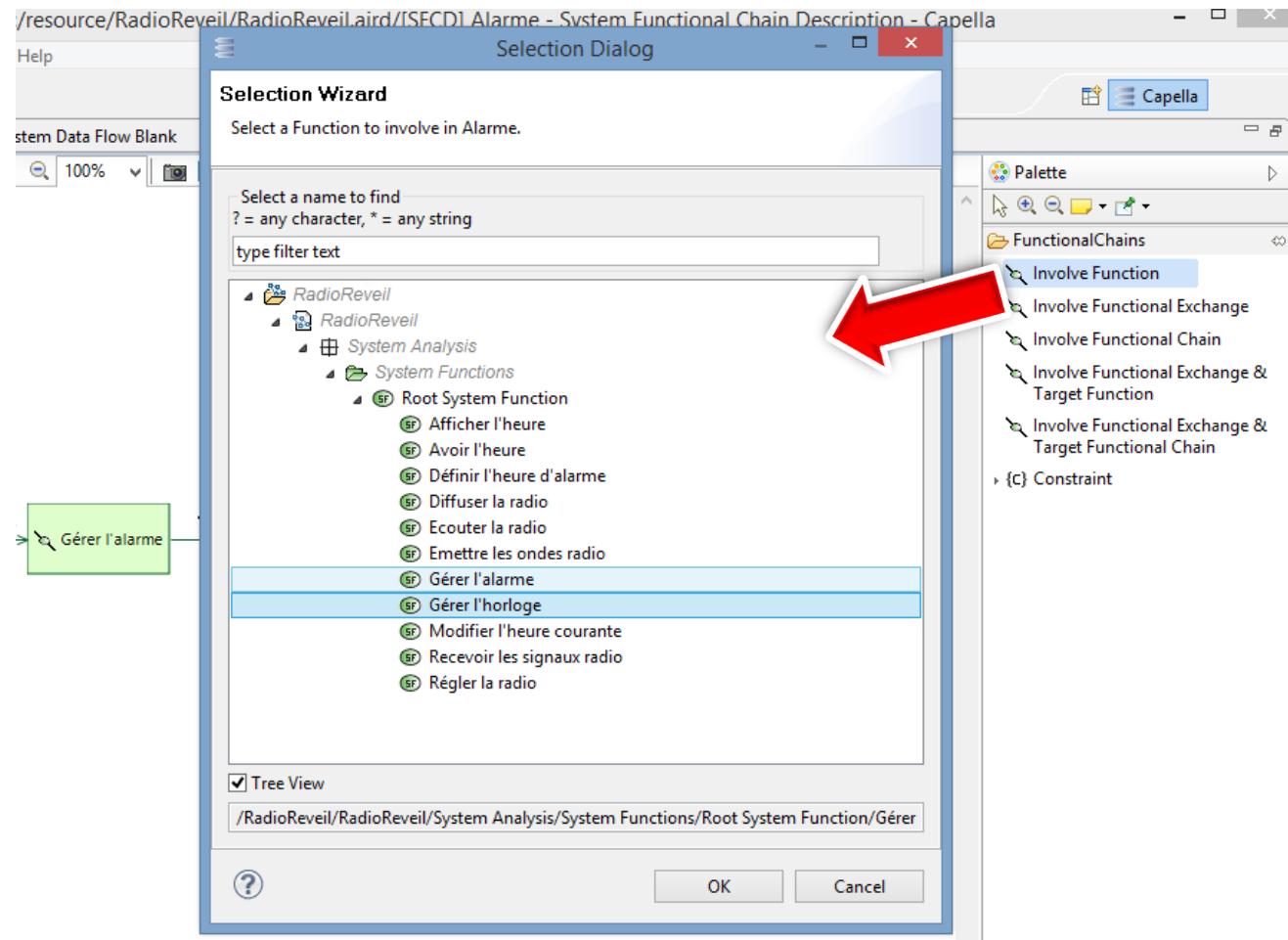
System Functional Chain Description



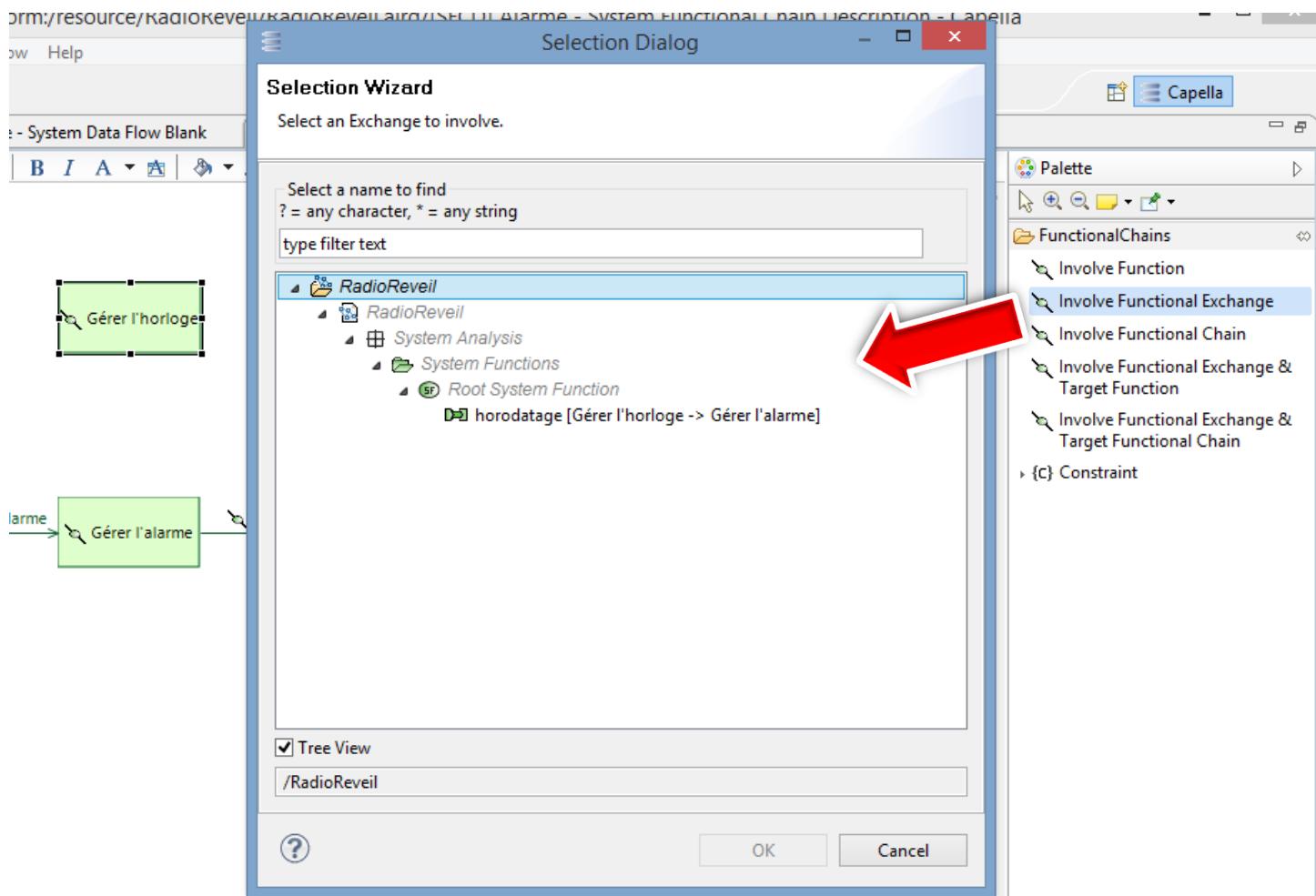
SFCD



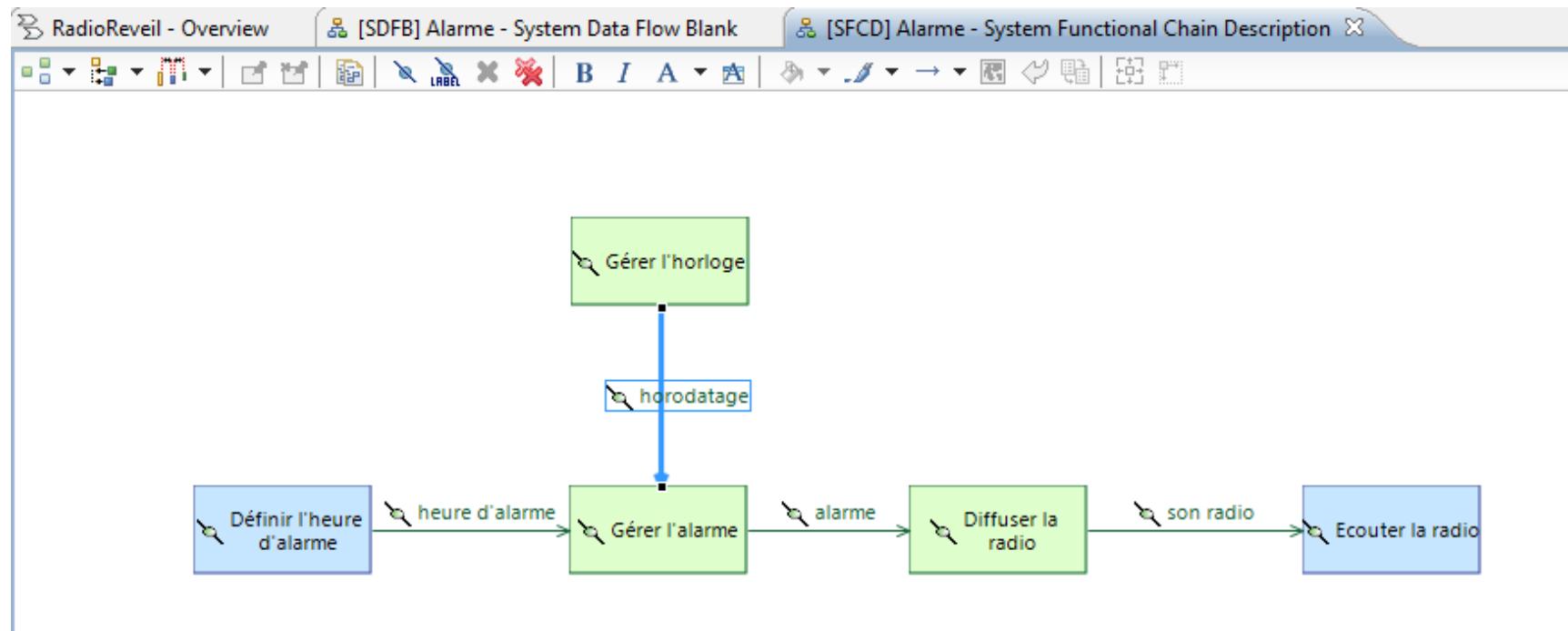
SFCD



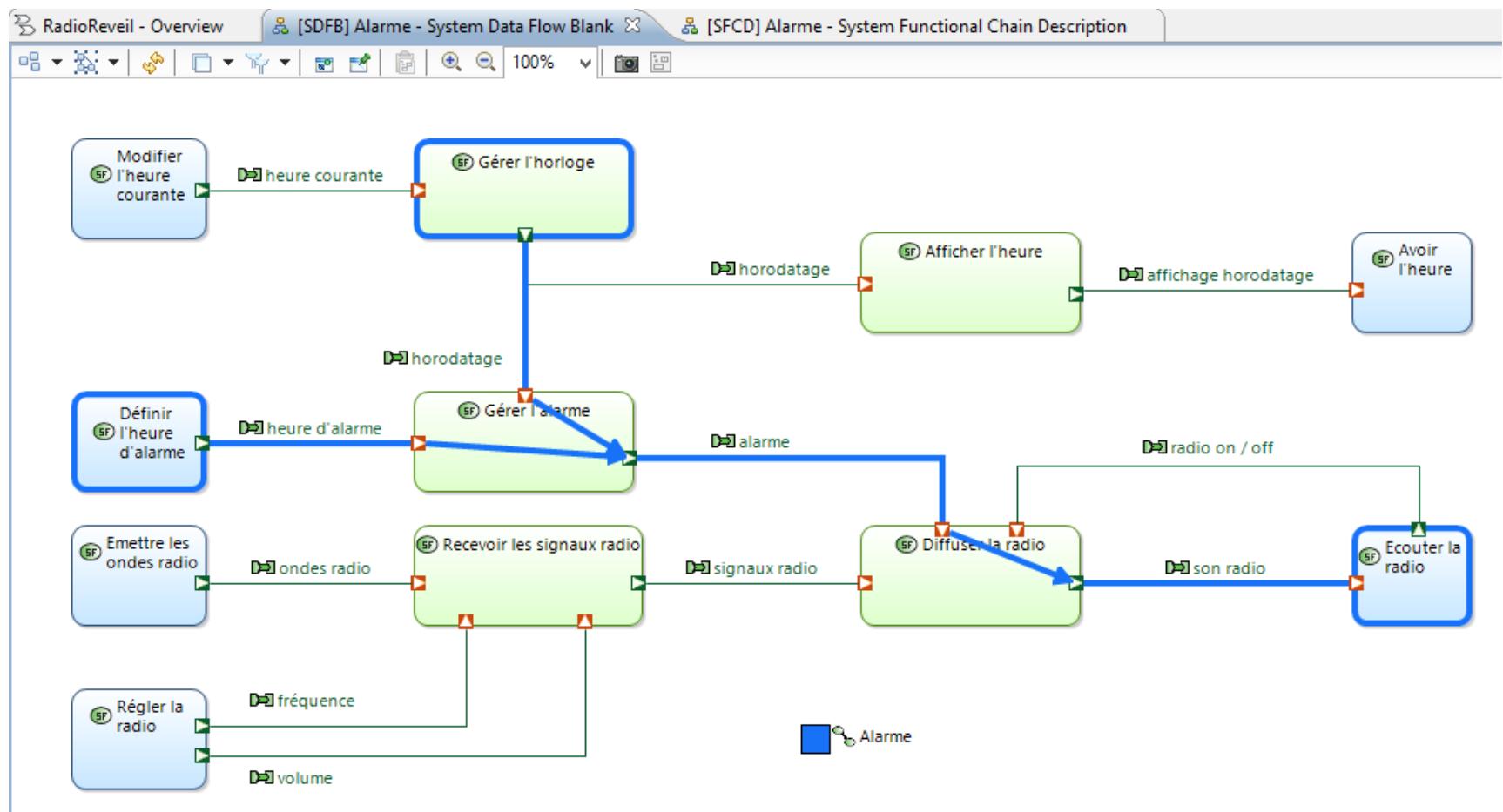
SFCD



SFCD modifié



SDFB + FC modifiée



System Architecture Blank

RadioReveil - Overview [SDFB] Alarme - System Data Flow Blank

System Analysis ▾

Operational Analysis System Analysis **Formalize System Requirements** Logical Architecture

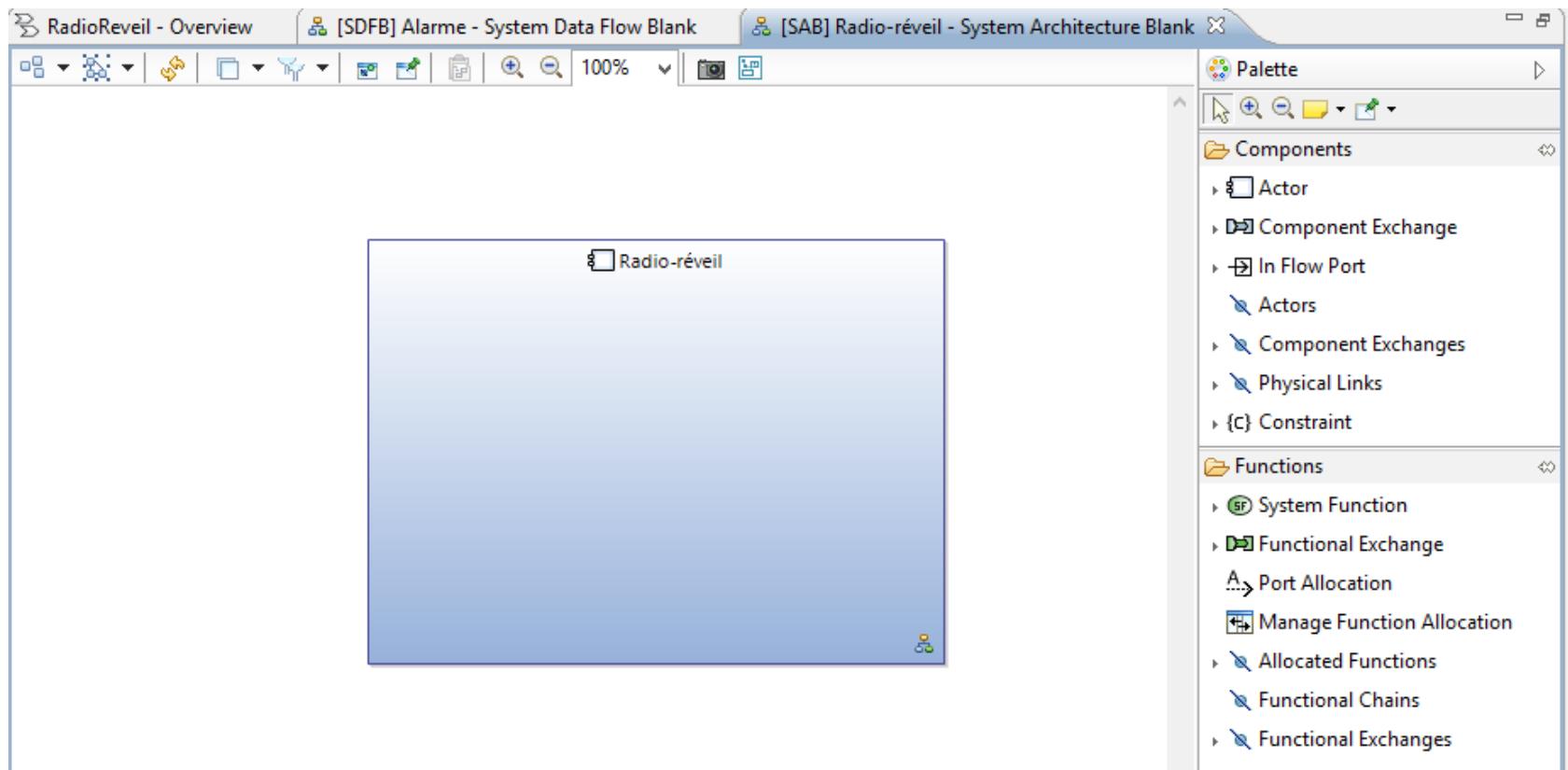
- ▶ Transition From Operational Activities
- ▶ Define Actors, Missions and Capabilities
- ▶ Refine System Functions, describe Functional Exchanges
- ▼ Allocate System Functions to System and Actors
 - [SAB] Create a new System Architecture diagram
 - [ES] Create a new Exchange Scenario
- ▶ Define Interfaces and describe Interface Scenarios
- ▶ Transverse Modeling

Diagrams Viewer

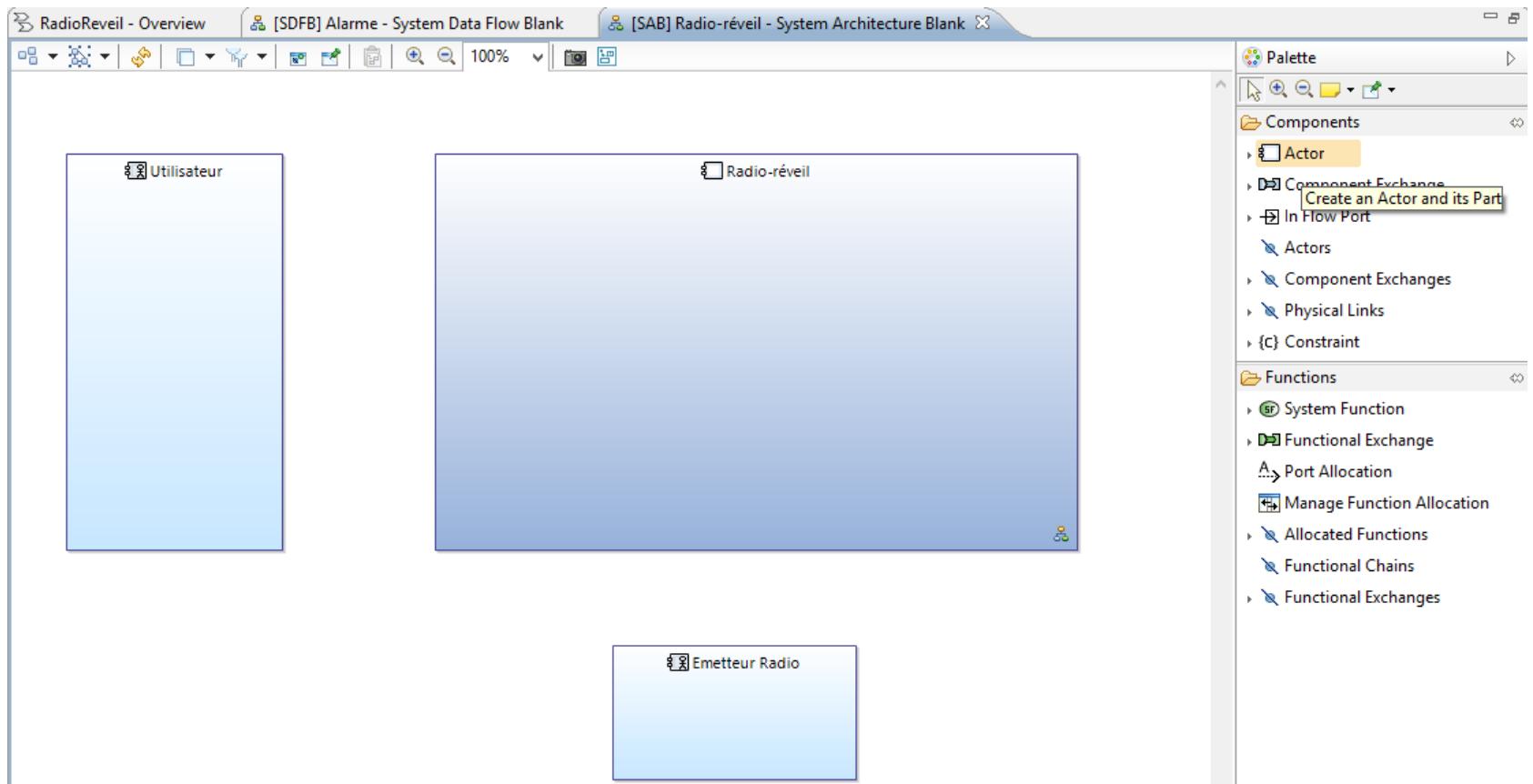
Select a name to find
? = any character, * = any string
type filter text

- ◀ Common
 - Functional Chain Description
 - [SFCD] Alarme - System Functional Chain Description
- ◀ System Analysis
 - System Data Flow Blank
 - [SDFB] Alarme - System Data Flow Blank

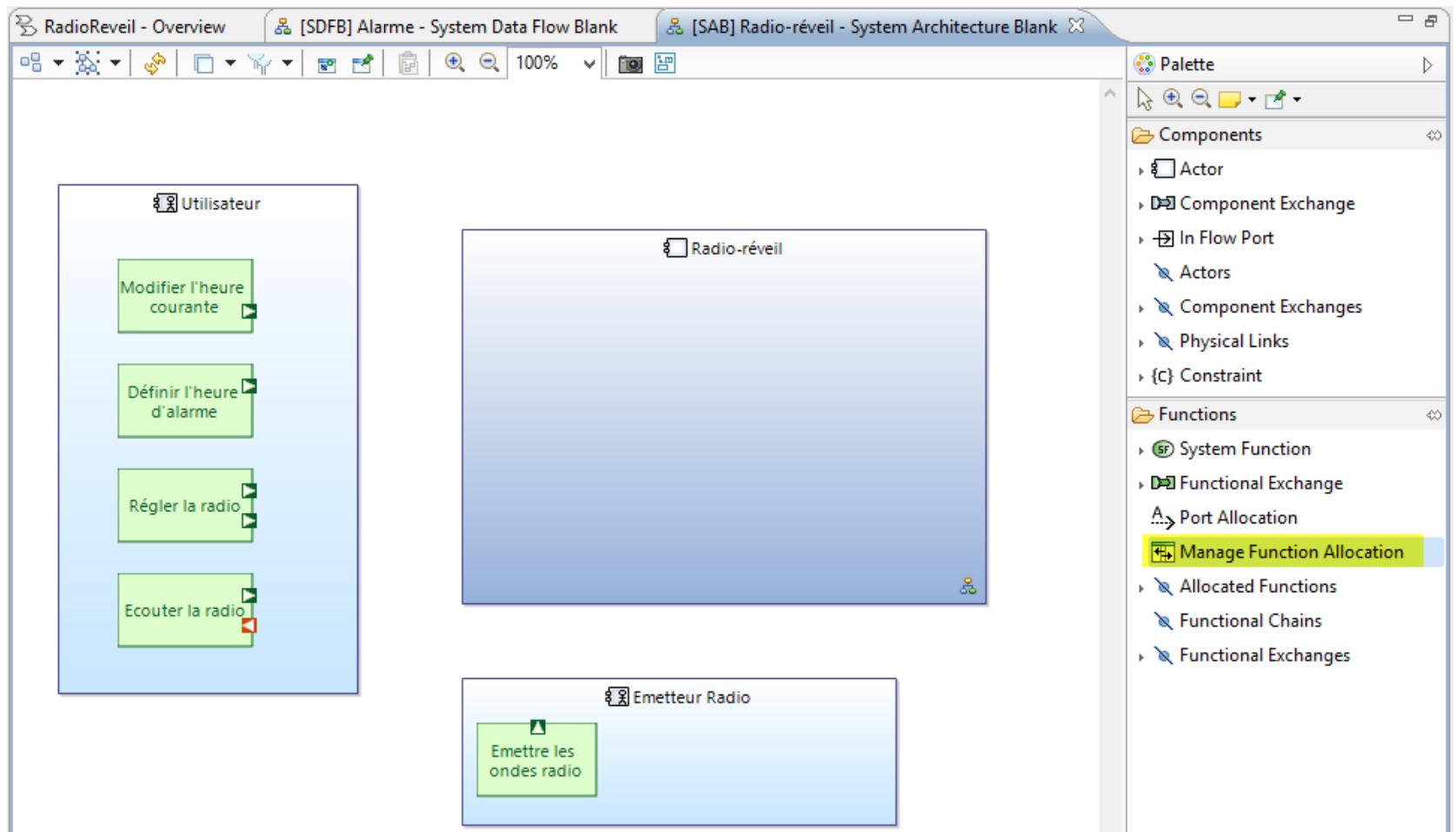
SAB



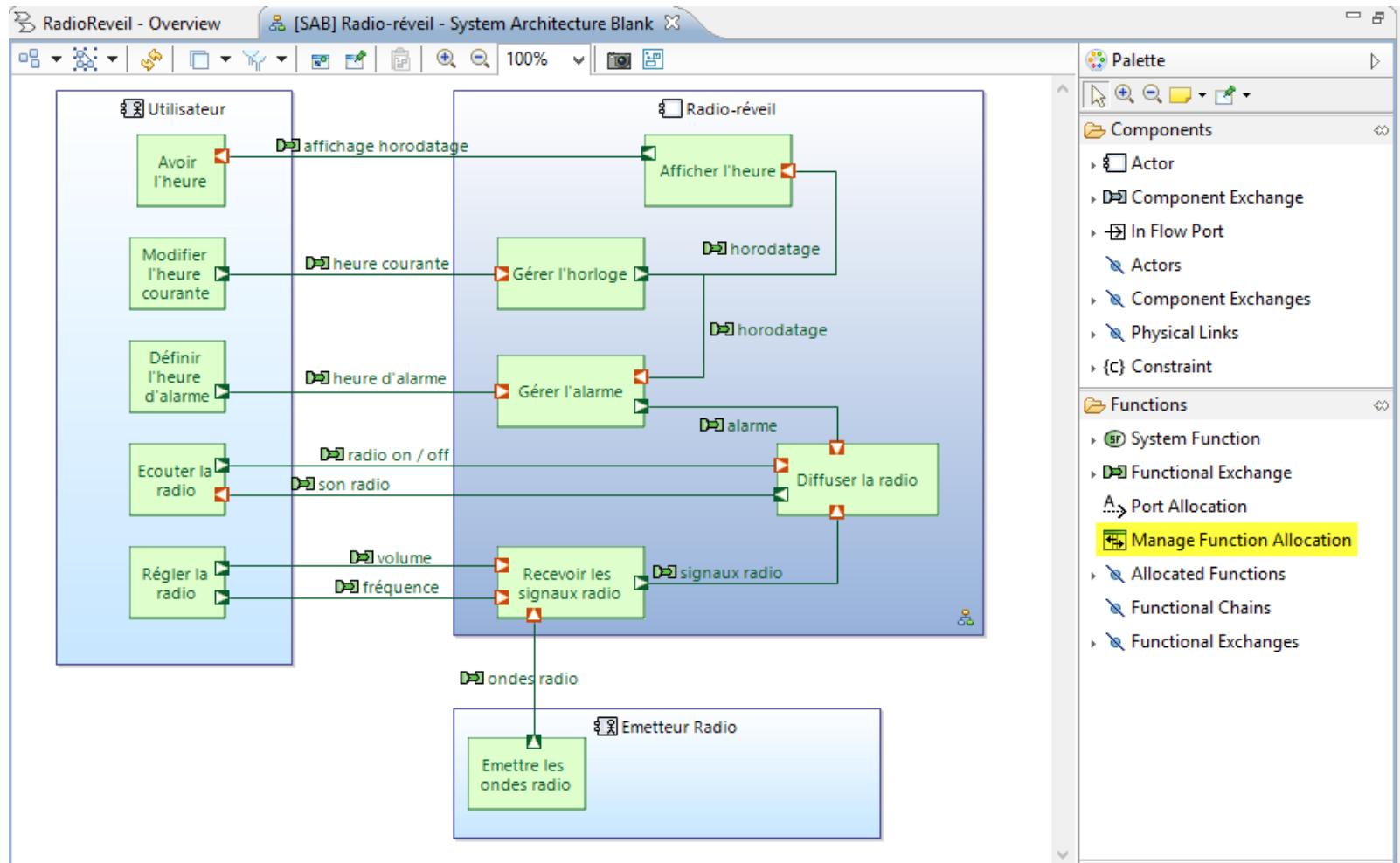
SAB : création des acteurs



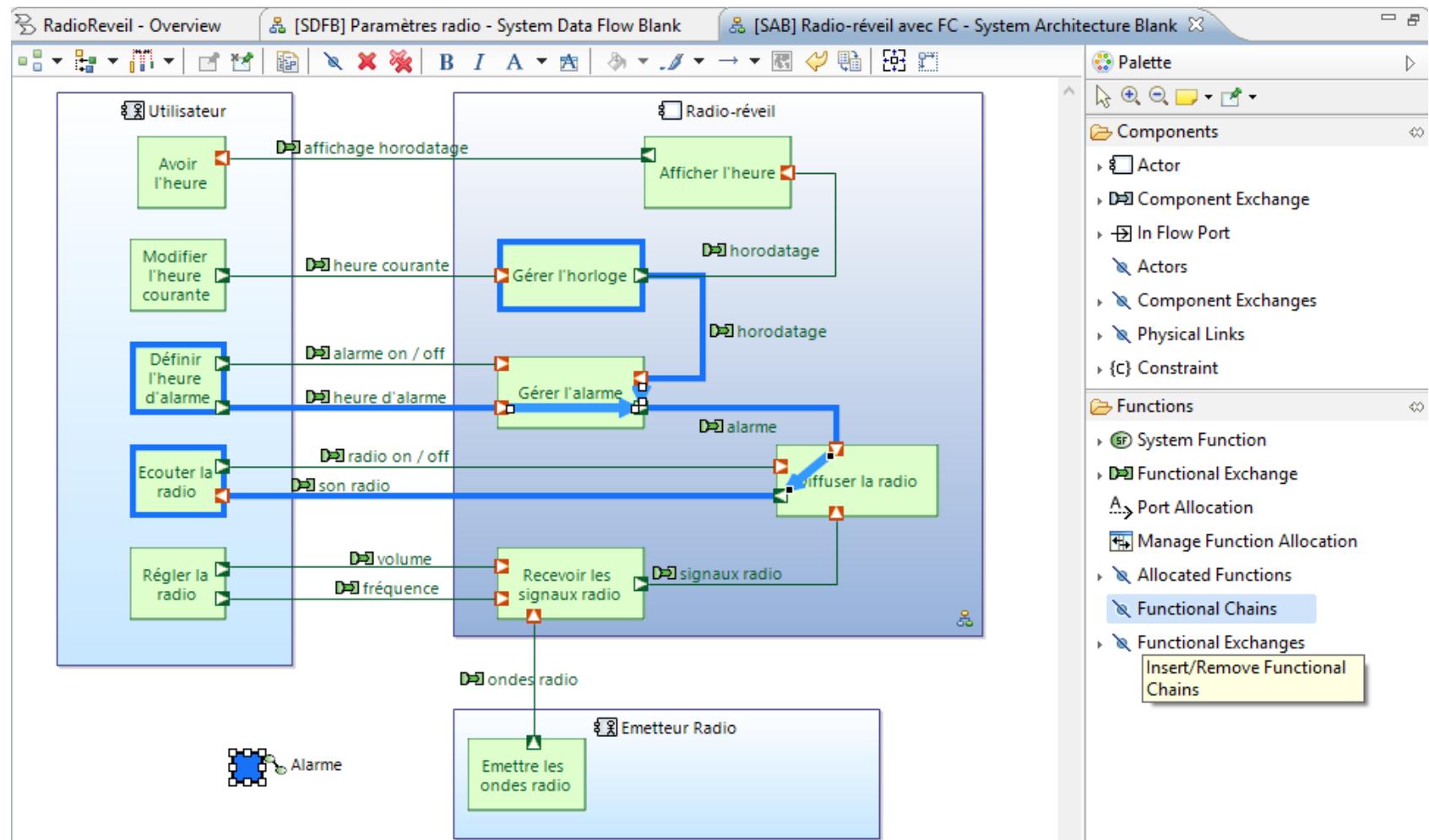
SAB : allocation des fonctions



SAB : allocation des fonctions (fin)



SAB + FC

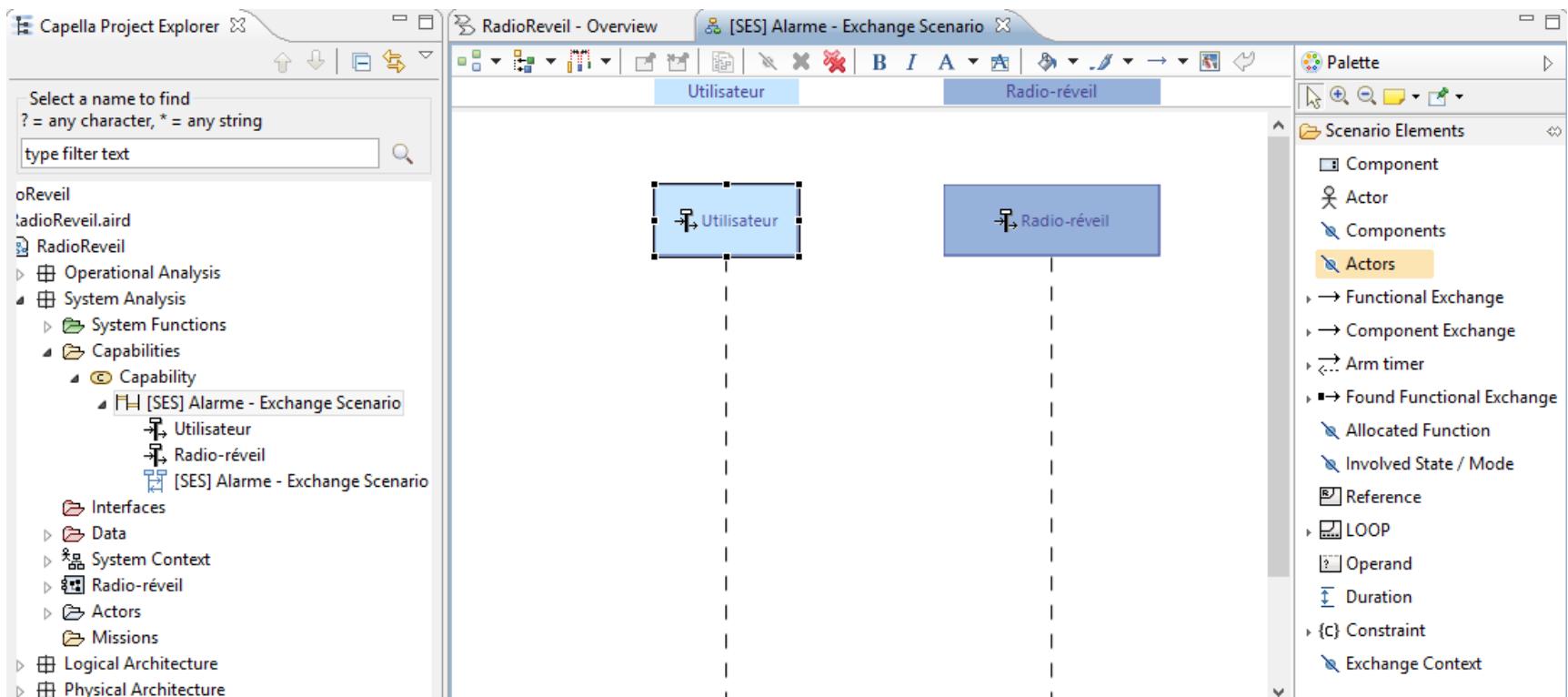


Semantic Browser

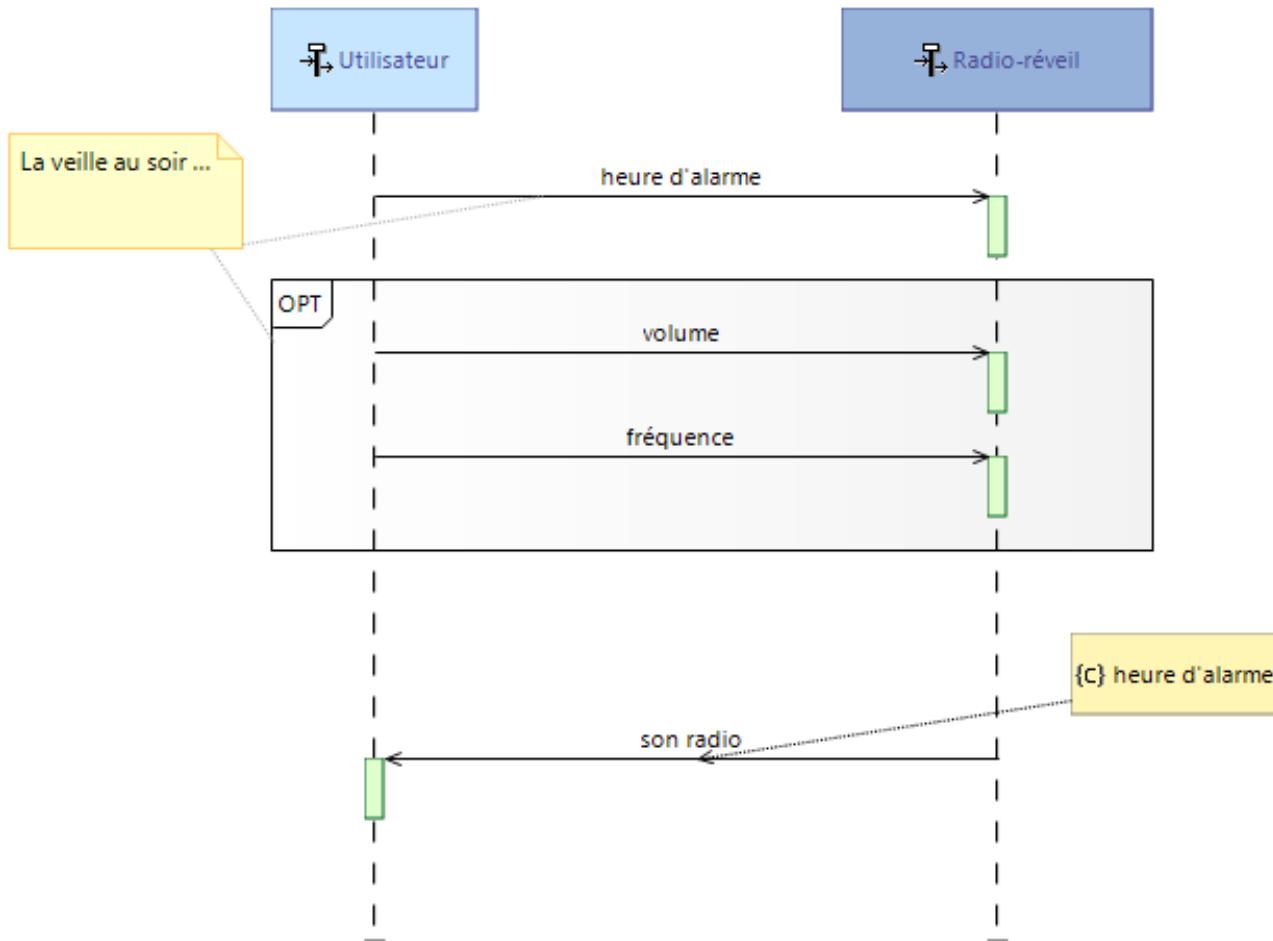
[Functional Chain] Alarme

Referencing Elements	Current Element	Referenced Elements
	Alarme ▲ Owner Root System Function ▲ All Related Diagrams [SDFB] Alarme - System Data Flow Blank [SFCD] Alarme - System Functional Chain Description	<ul style="list-style-type: none"> ▲ Involved Components <ul style="list-style-type: none"> ⌚ Radio-réveil 👤 Utilisateur ▲ Involved Functional Exchanges <ul style="list-style-type: none"> ➡ alarme ➡ heure d'alarme ➡ horodatage ➡ son radio ▲ Involved System Functions <ul style="list-style-type: none"> ⌚ Définir l'heure d'alarme ⌚ Diffuser la radio ⌚ Ecouter la radio ⌚ Gérer l'alarme ⌚ Gérer l'horloge

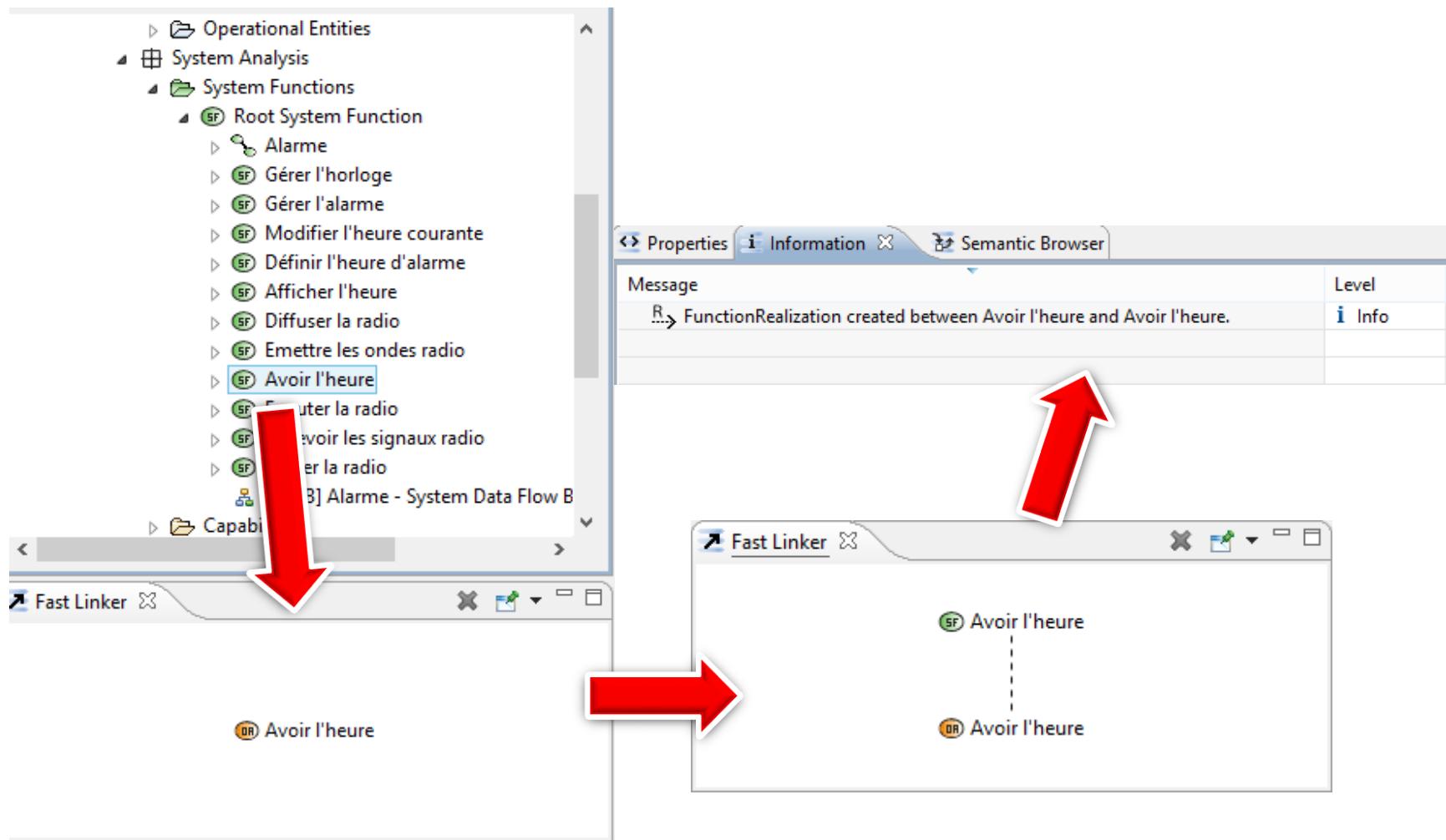
System Exchange Scenario (début)



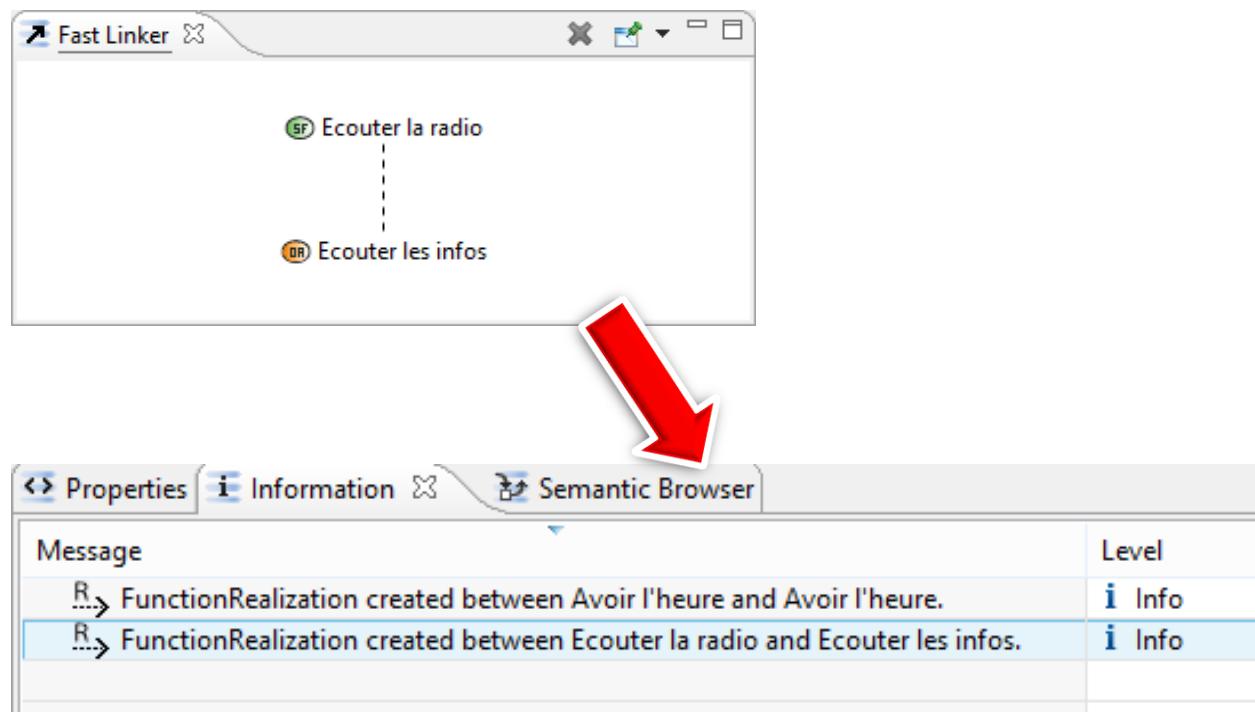
System Exchange Scenario (suite)



Liens Operational – System Analysis



Liens Operational – System Analysis



System Functions / Op. Activities Matrix

RadioReveil - Overview

System Analysis ▾

- Operational Analysis
- System Analysis** *Formalize System Requirements*
- Logical Architecture

Transition From Operational Activities

-  [Perform an automated transition of Operational Activities](#)
-  [Create a System Functions / Operational Activities Traceability Matrix](#)
- ▶ Define Actors, Missions and Capabilities
- ▶ Refine System Functions, describe Functional Exchanges
- ▶ Allocate System Functions to System and Actors

Diagrams Viewer

Select a name to find
? = any character, * = any string

type filter text

Common

Exchange Scenario

New System Functions - Operational Activities

Type representation name

OK Cancel



System Functions / Op. Activities Matrix

RadioReveil - Overview Radio Réveil System Functions - Operational Activities

	Se réveiller à l'heure souhaitée	Avoir l'heure	Ecouter les infos
Gérer l'horloge			
Gérer l'alarme			
Modifier l'heure courante			
Définir l'heure d'alarme			
Afficher l'heure			
Diffuser la radio			
Emettre les ondes radio			
Avoir l'heure		X	
Ecouter la radio			X
Recevoir les signaux radio			
Régler la radio			

SA – OA Matrices

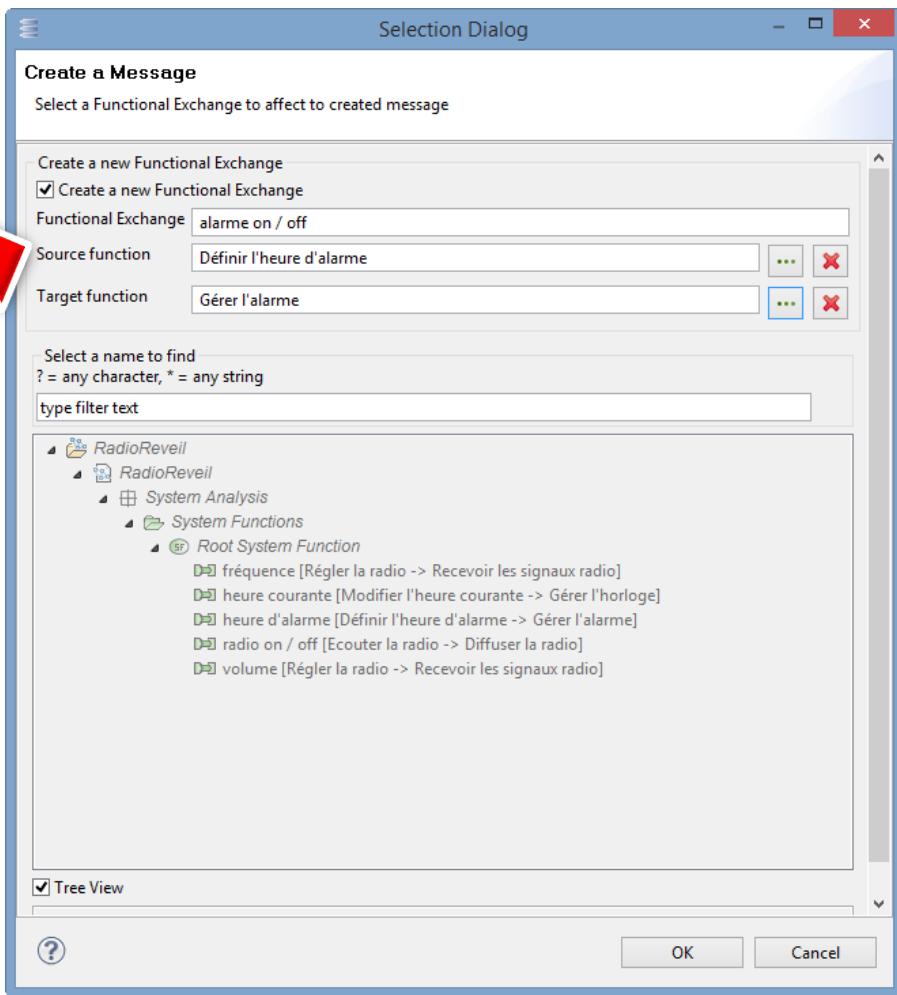
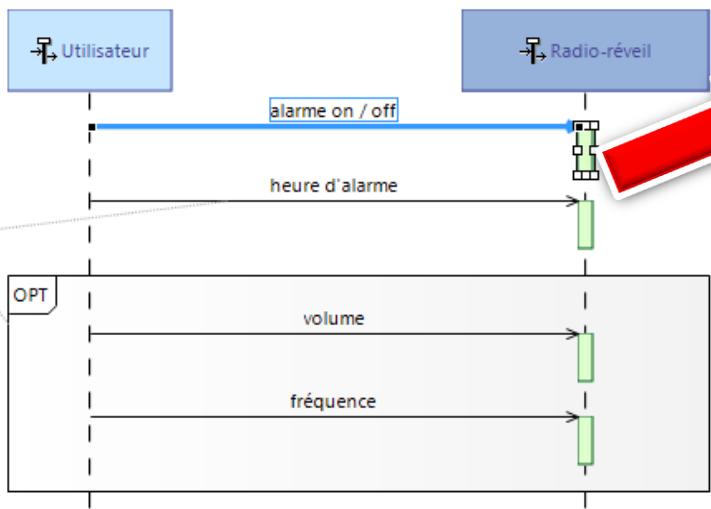
RadioReveil - Overview Radio Réveil System Functions - Operational Activities

	OR Se réveiller à l'heure souhaitée	OR Avoir l'heure	OR Ecouter les infos
Gérer l'horloge			
Gérer l'alarme	X		
Modifier l'heure courante		X	
Définir l'heure d'alarme	X		
Afficher l'heure		X	
Diffuser la radio	X		X
Emettre les ondes radio			
Avoir l'heure		X	
Ecouter la radio			X
Recevoir les signaux radio	X		X
Régler la radio	X		X

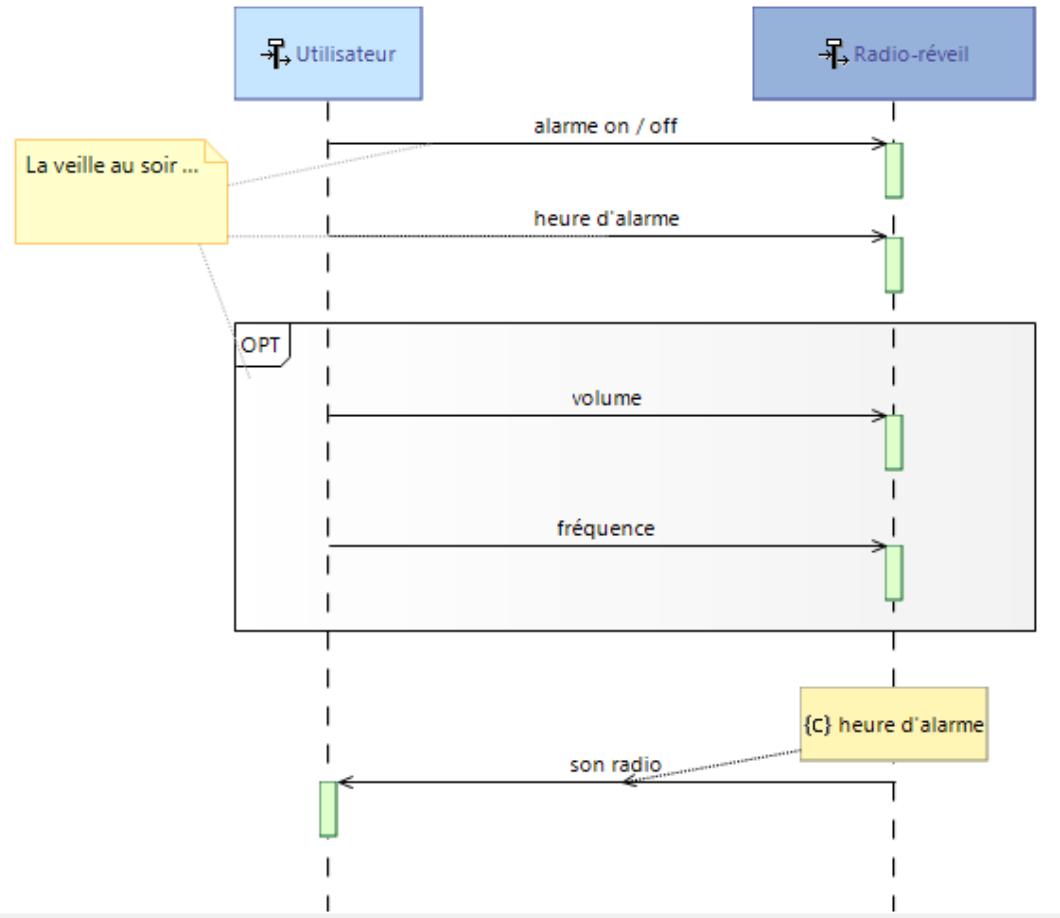
RadioReveil - Overview System Actors - Operational Actors/Operational Entities

	OE Maison	OE Chambre	OE Personne
Utilisateur			X
Emetteur Radio			

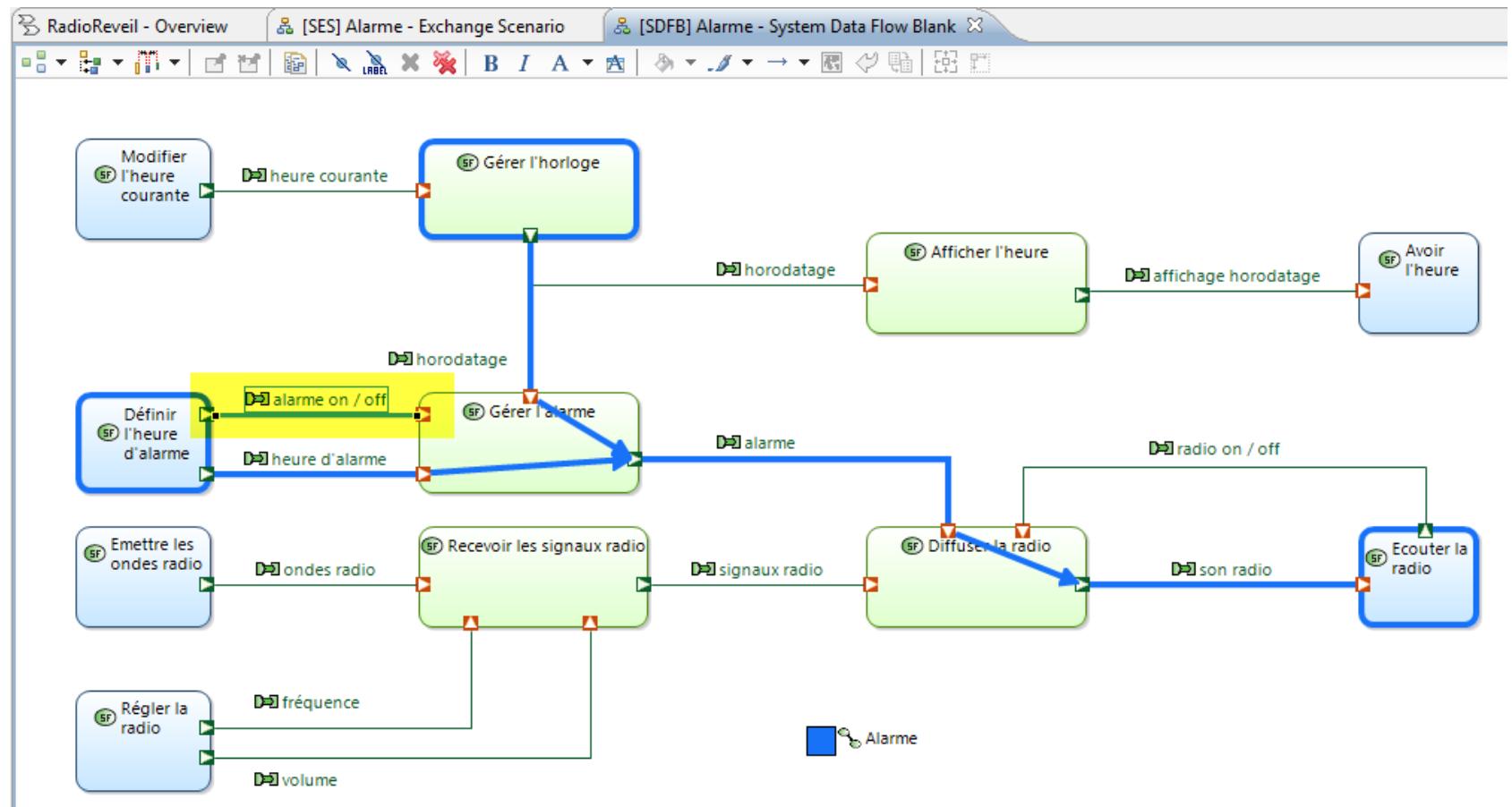
SES : création de message



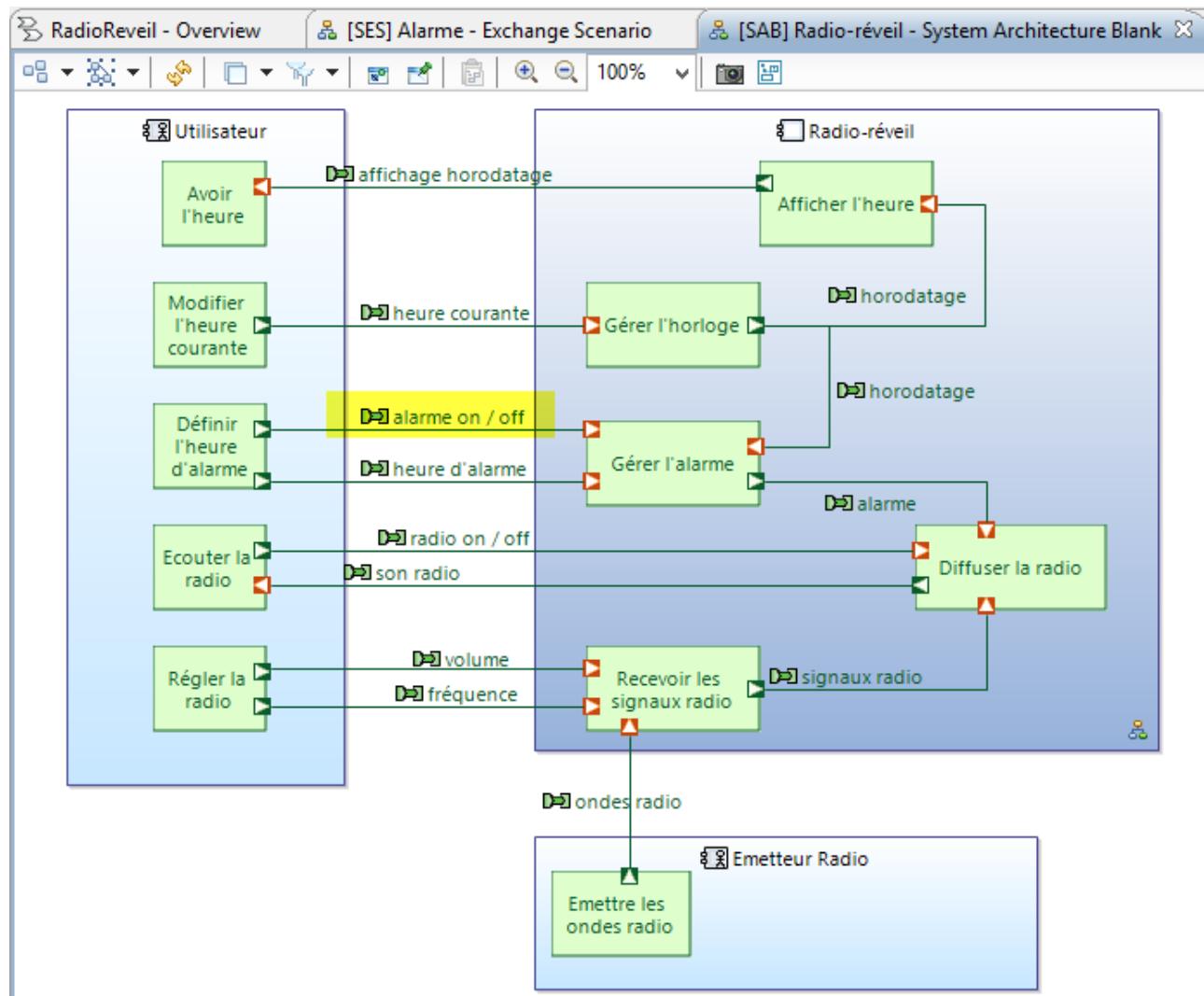
SES (fin)



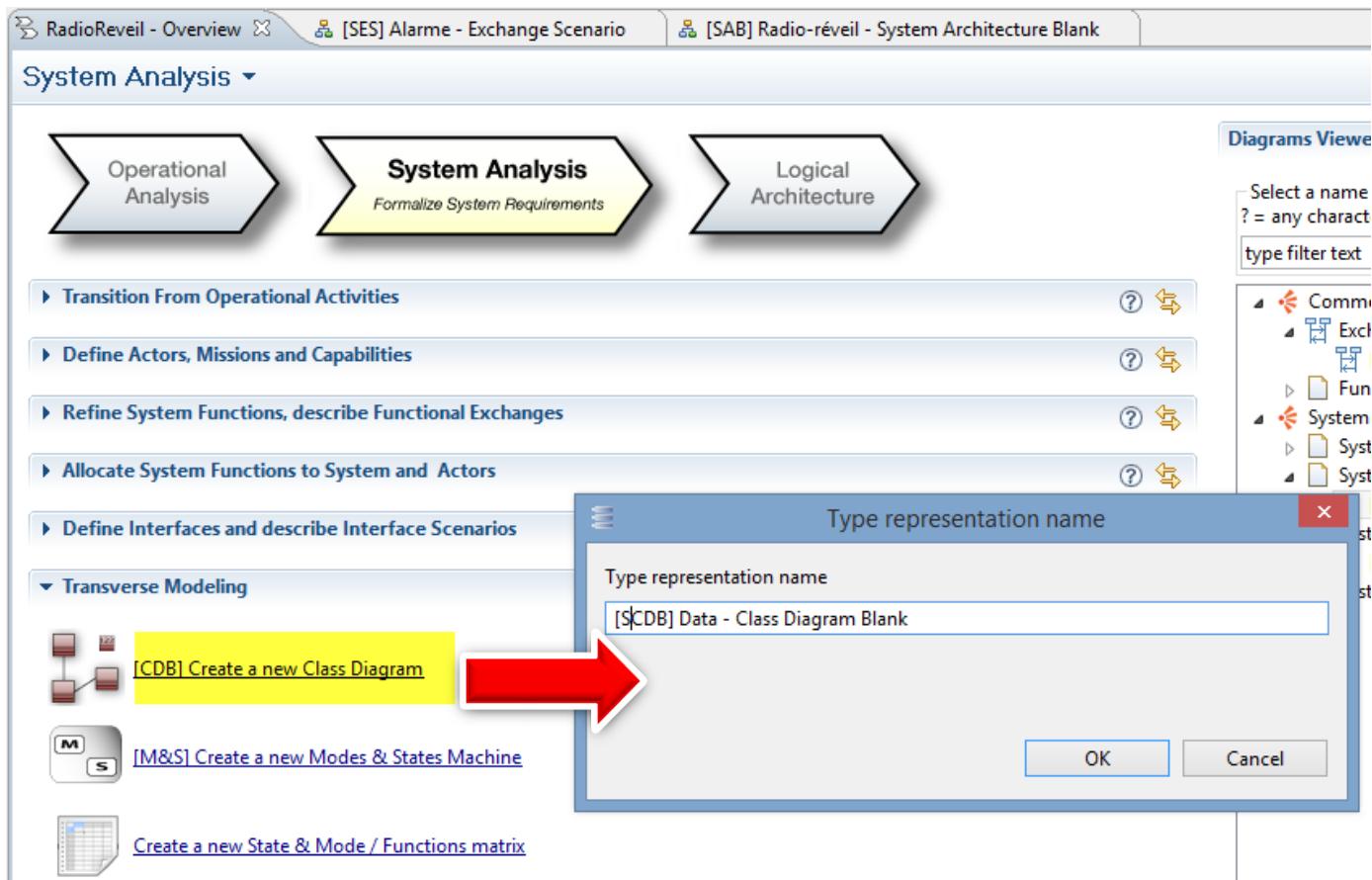
SDFB mis à jour



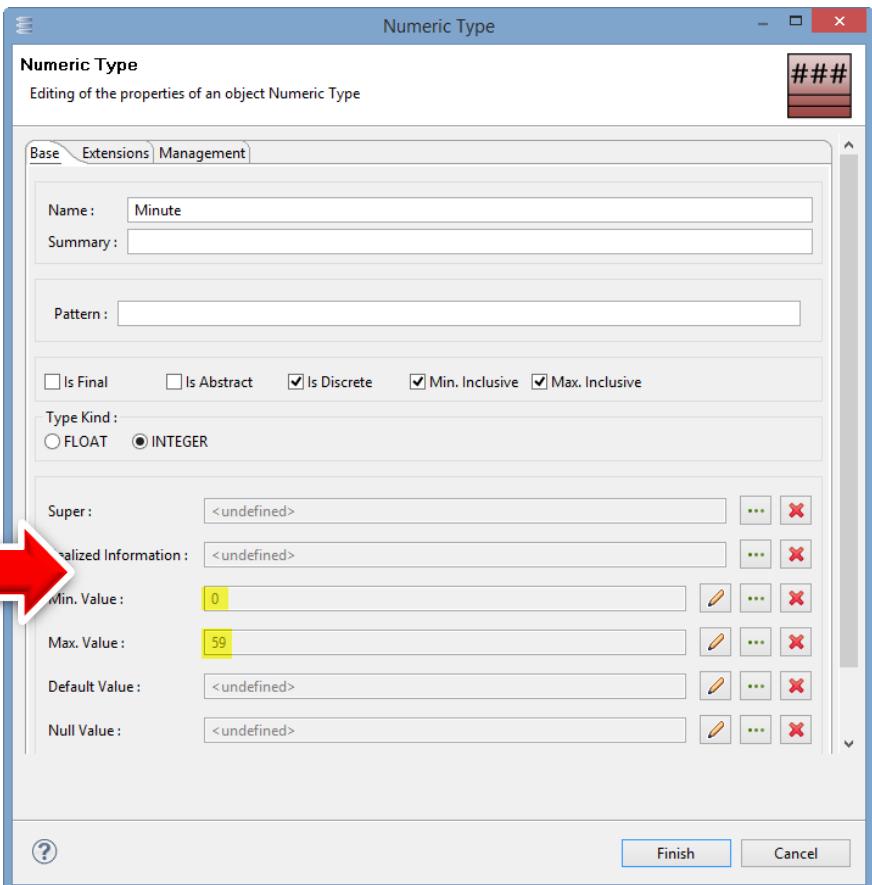
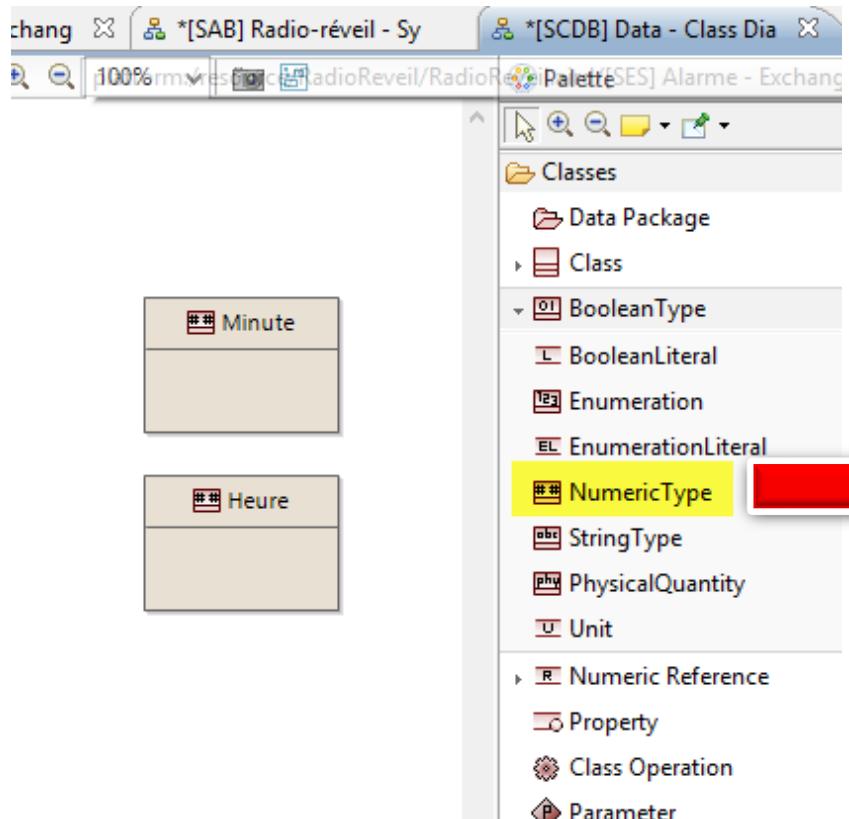
SAB mis à jour



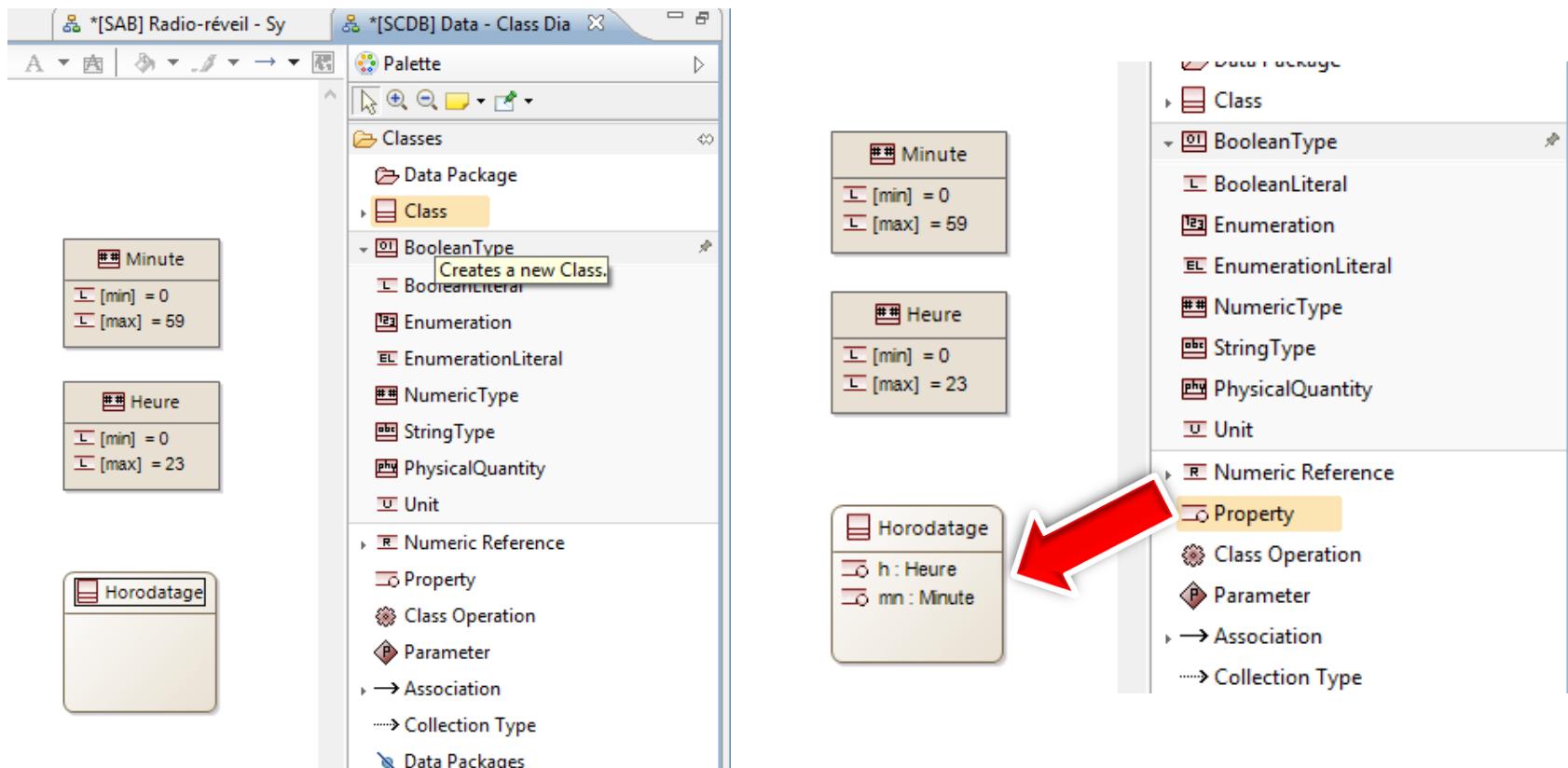
Class Diagram Blank



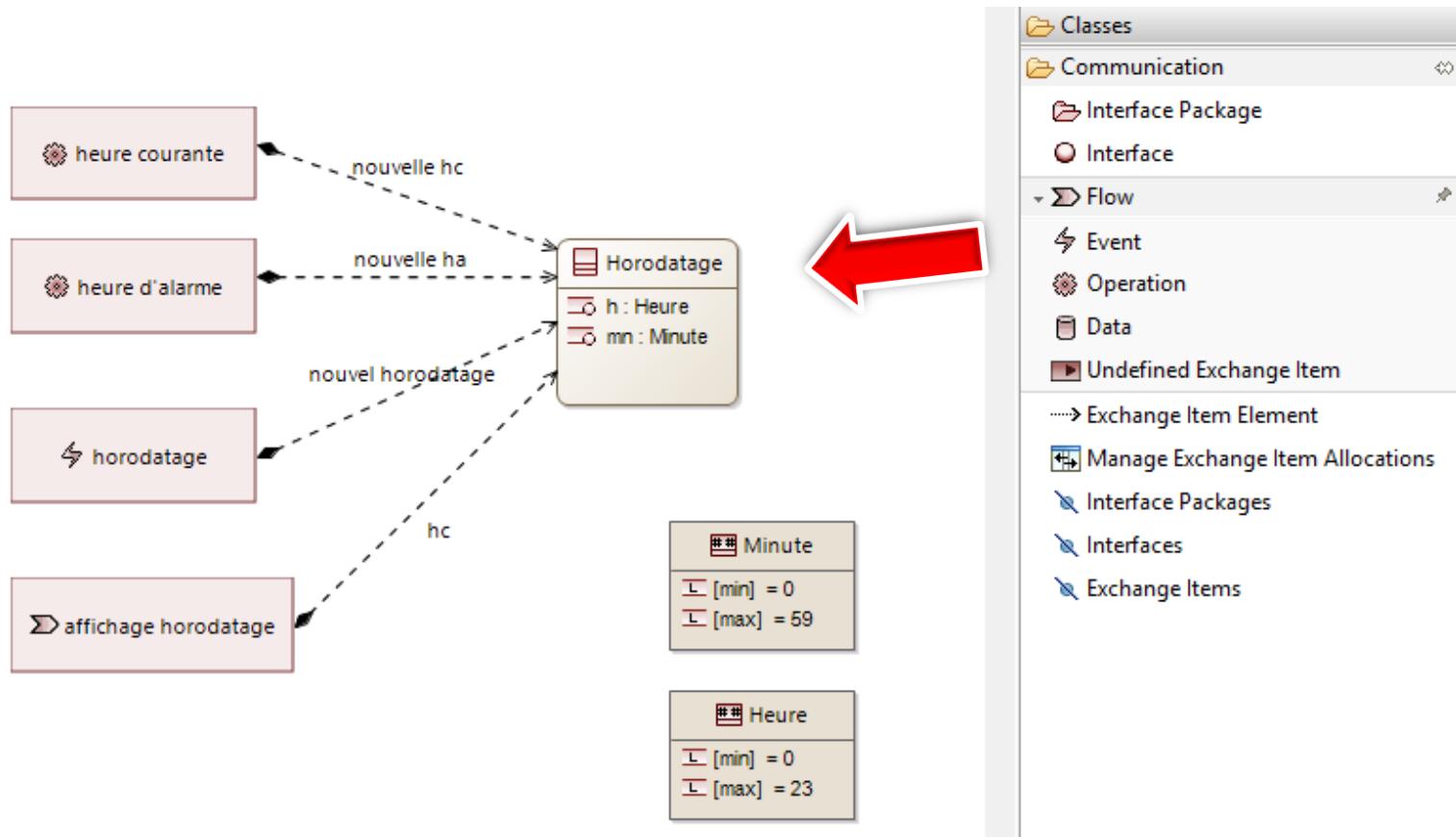
SCDB : Types de base



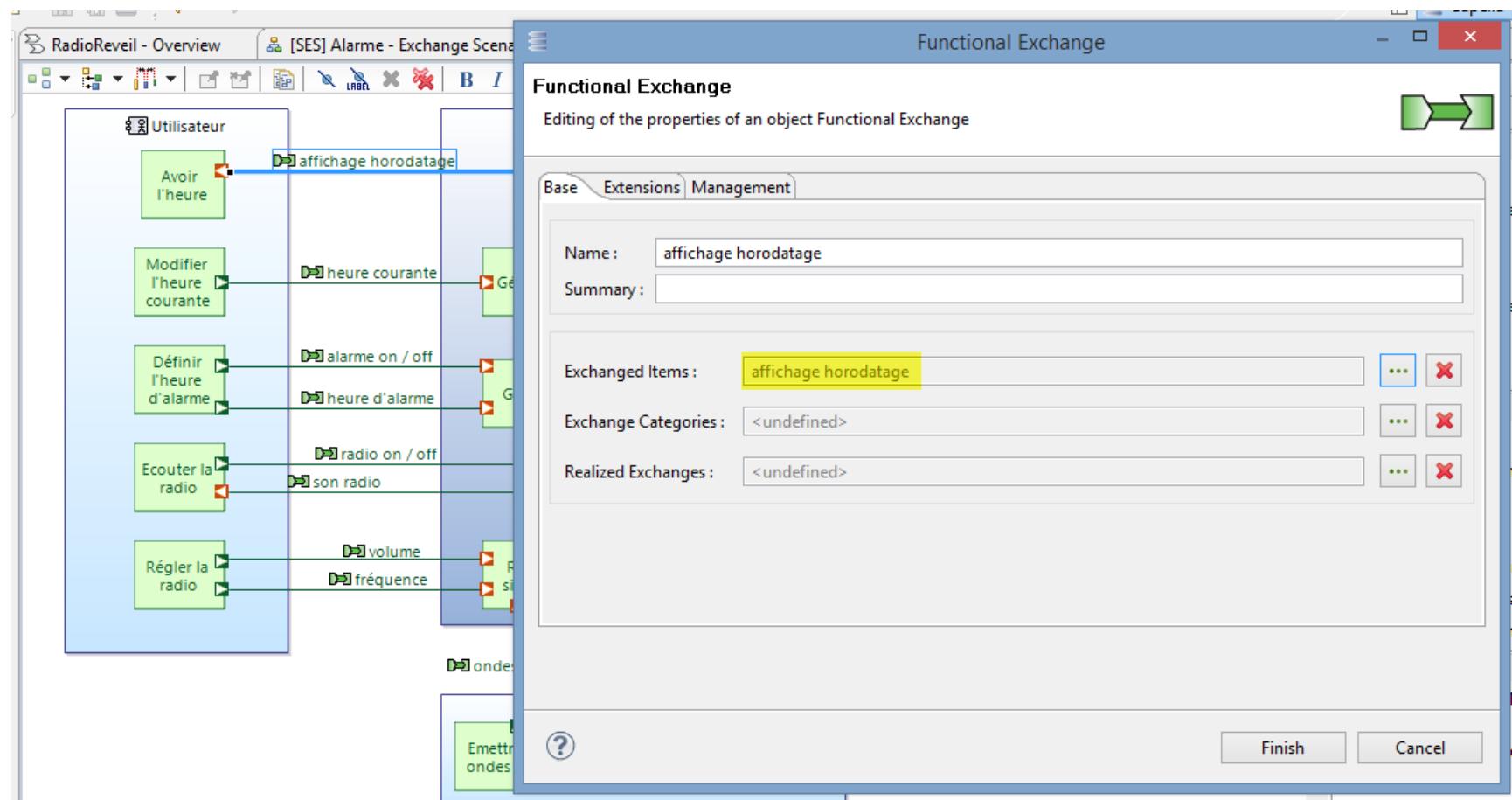
SCDB : types structurés



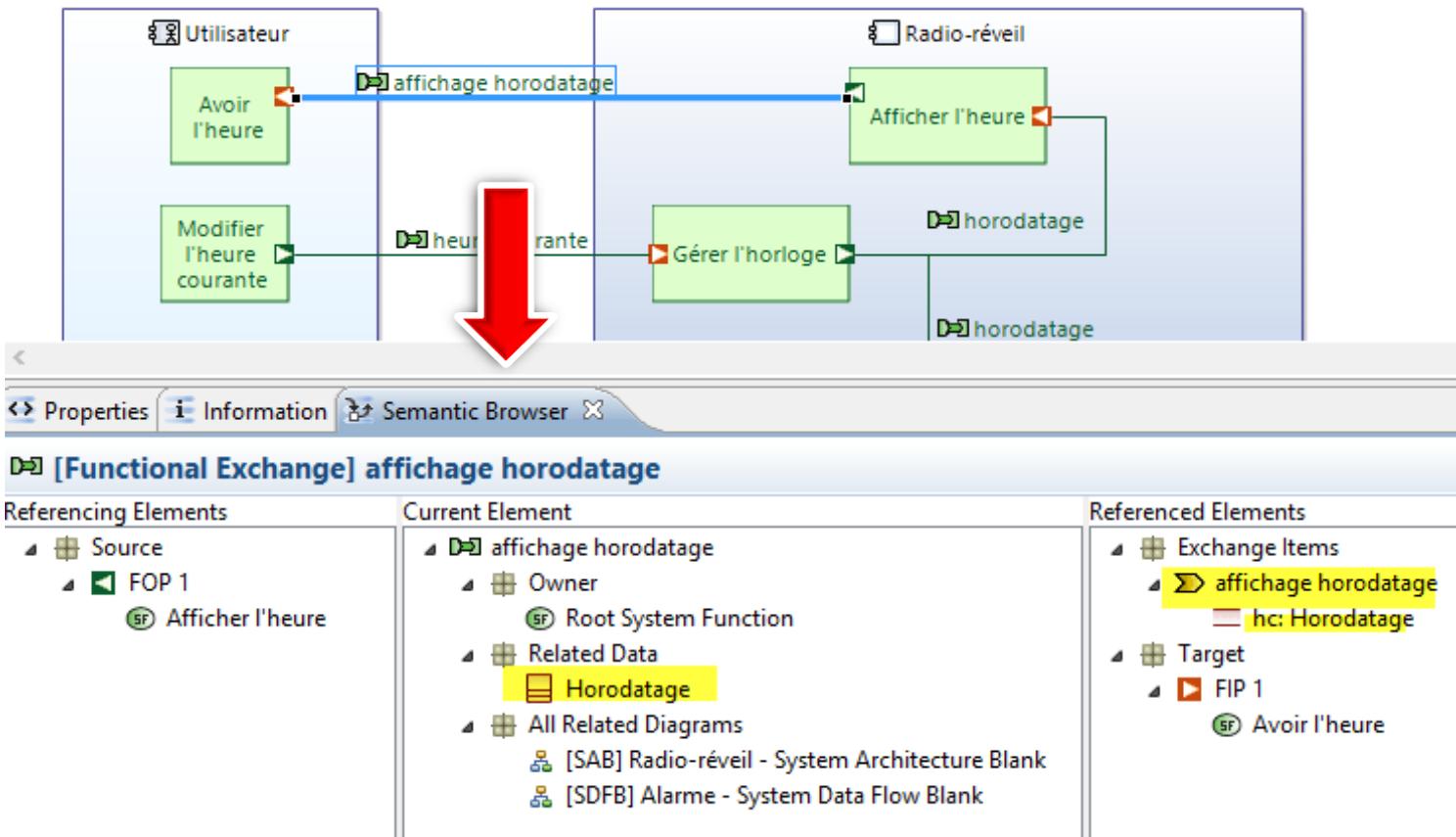
SCDB : Exchange Items



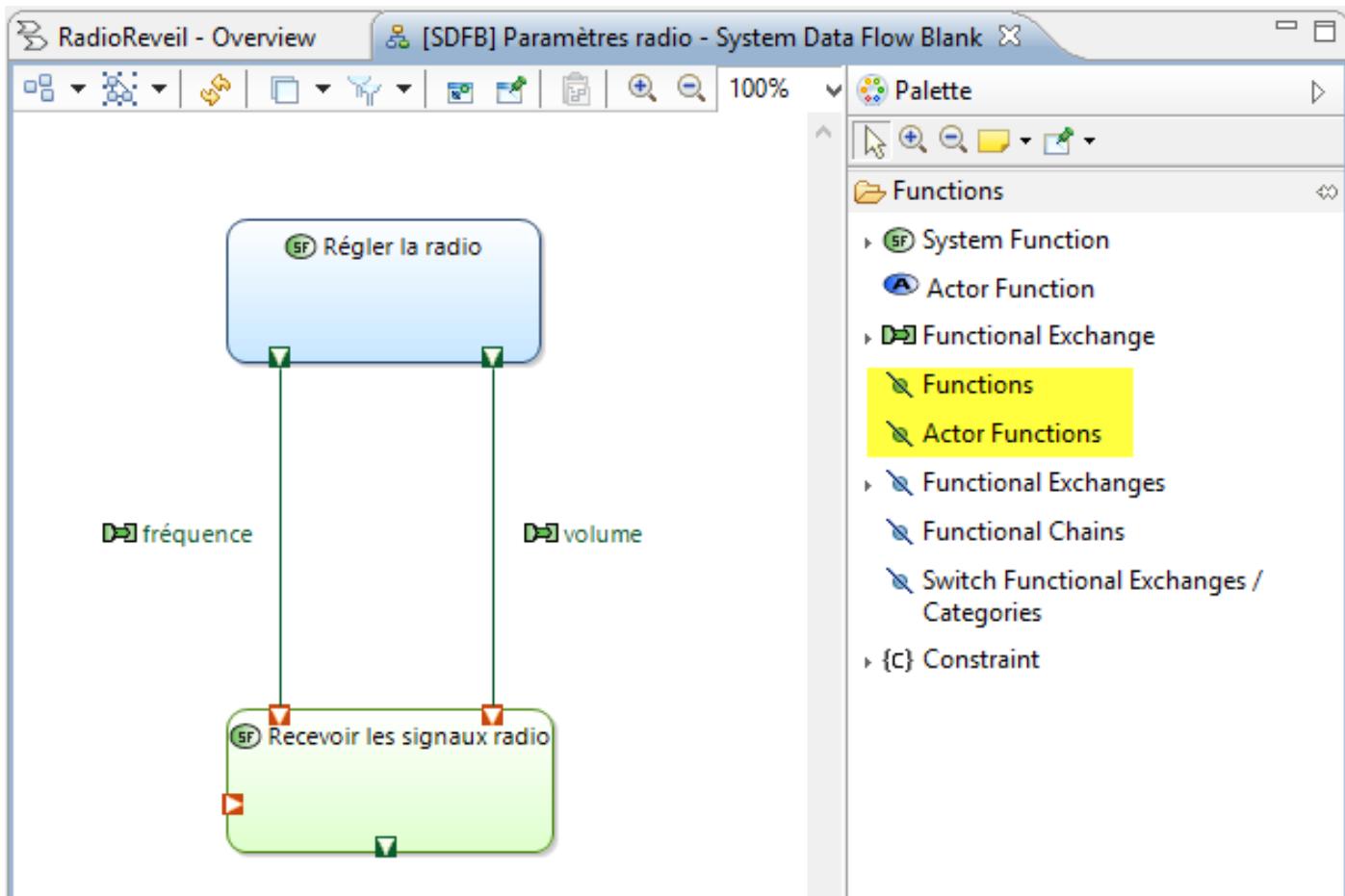
SAB : Exchange Item et FE



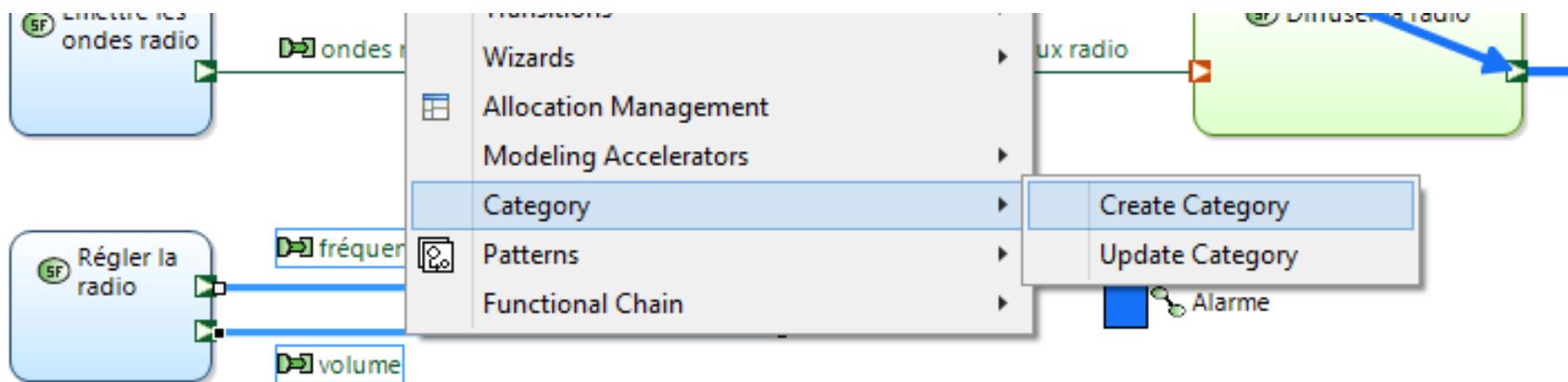
Semantic Browser



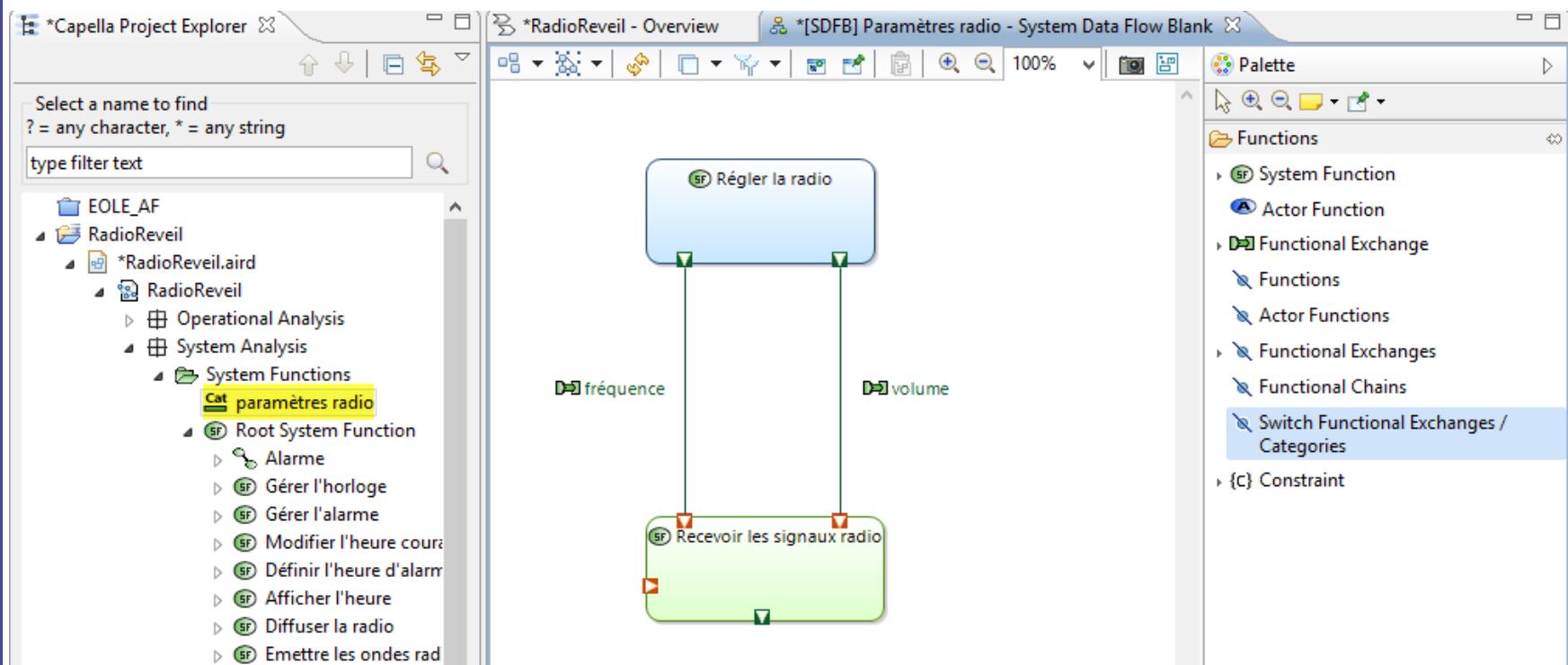
SDFB partiel



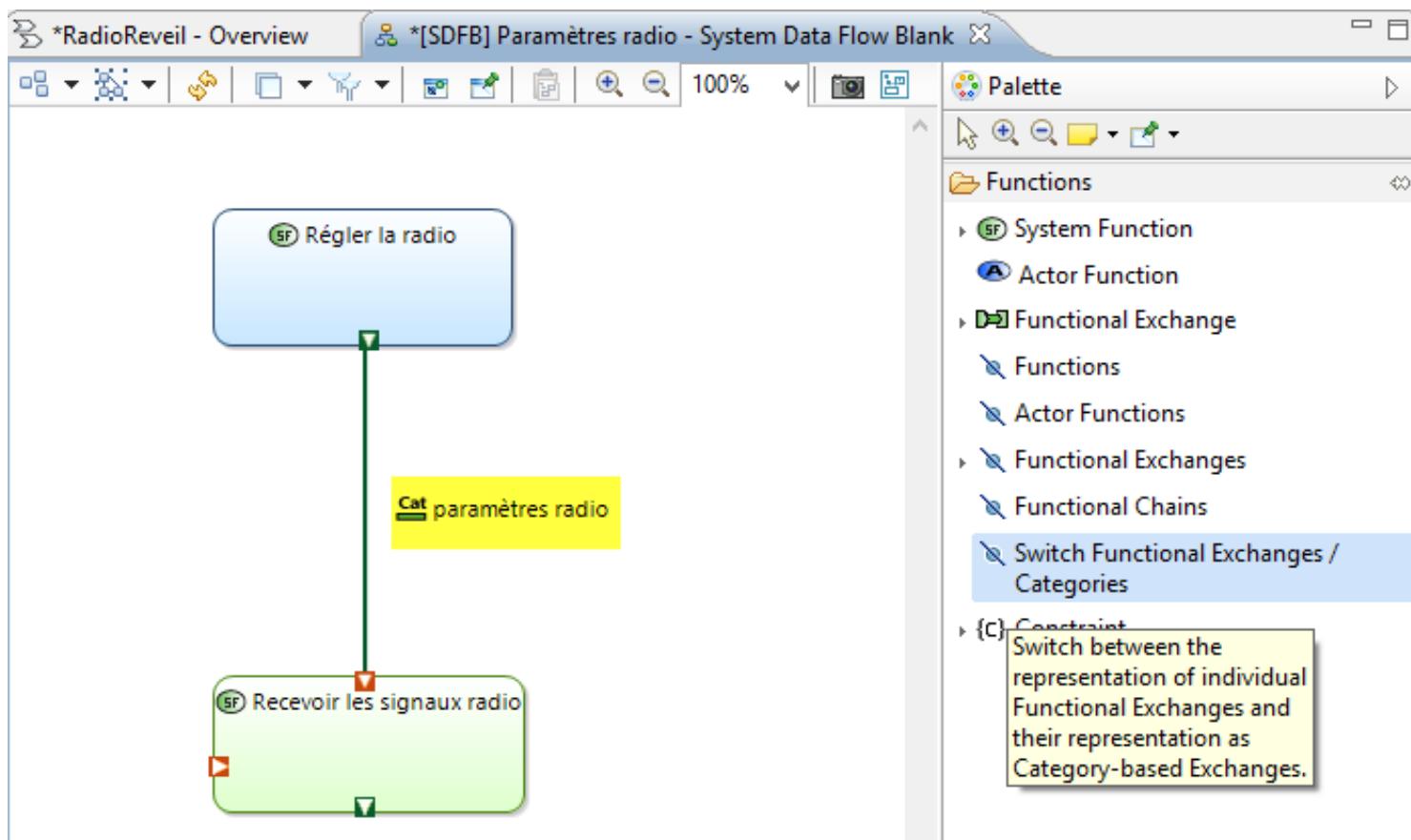
Création d'une Category



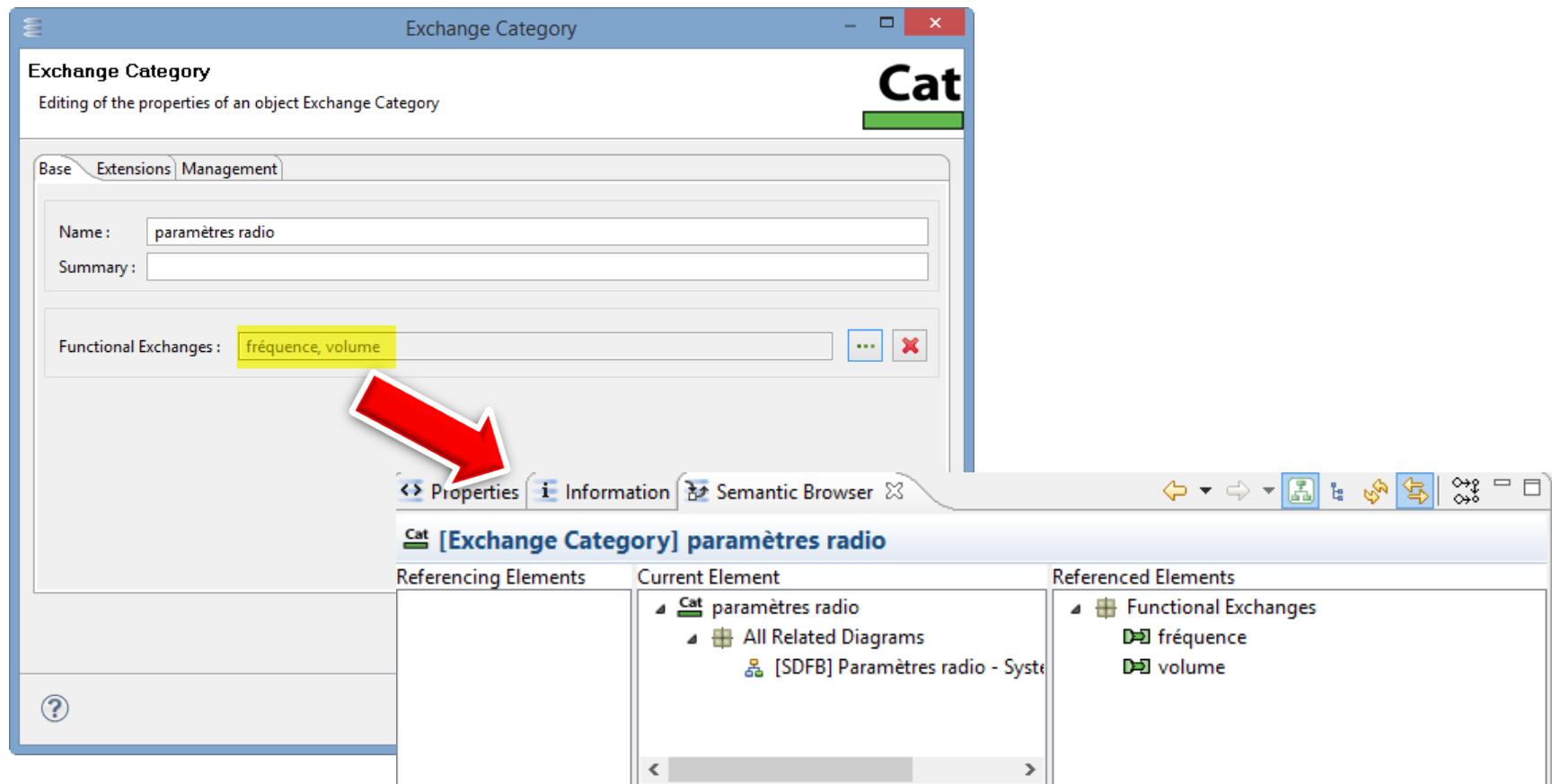
SDFB sans Category



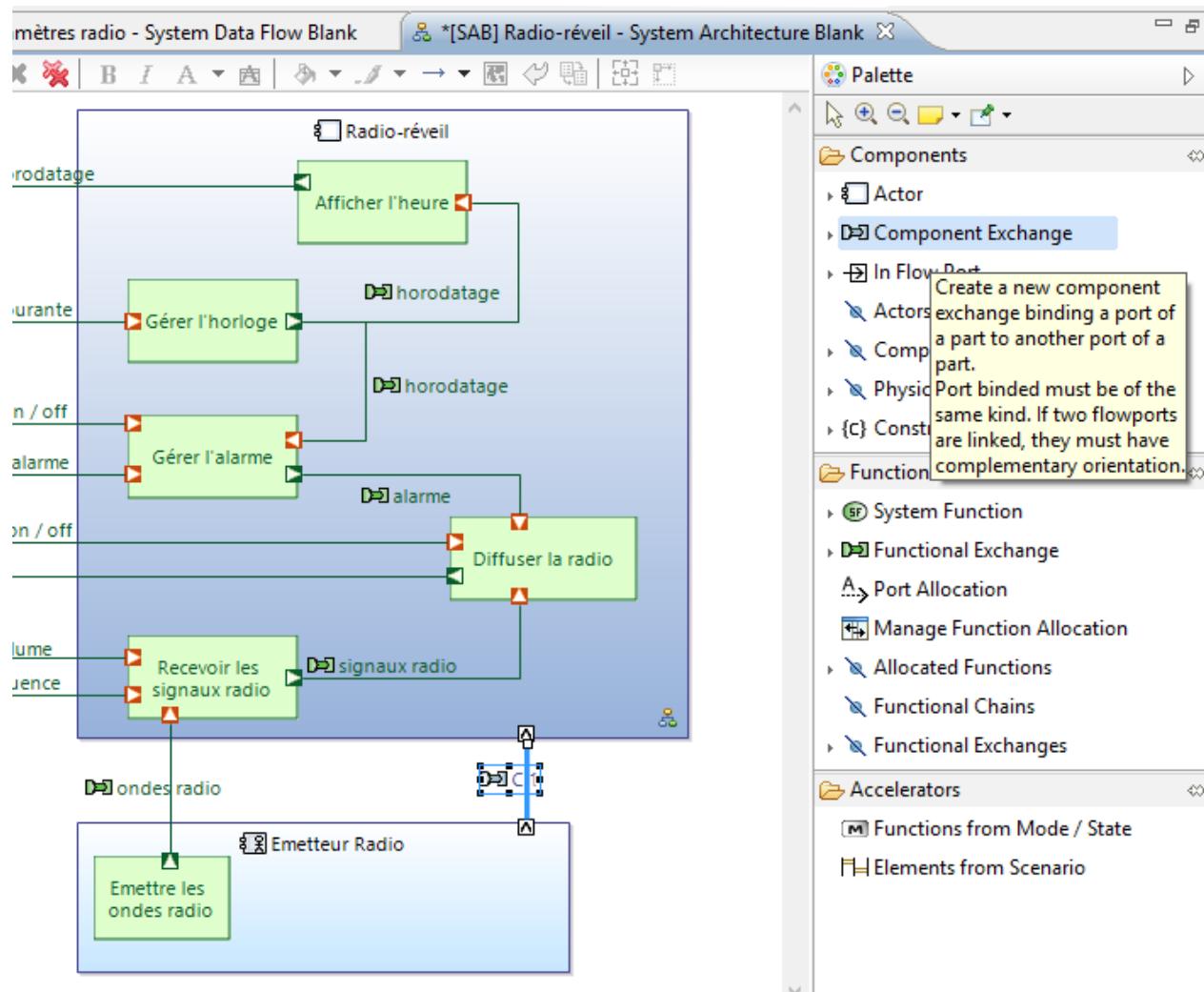
SDFB avec Category



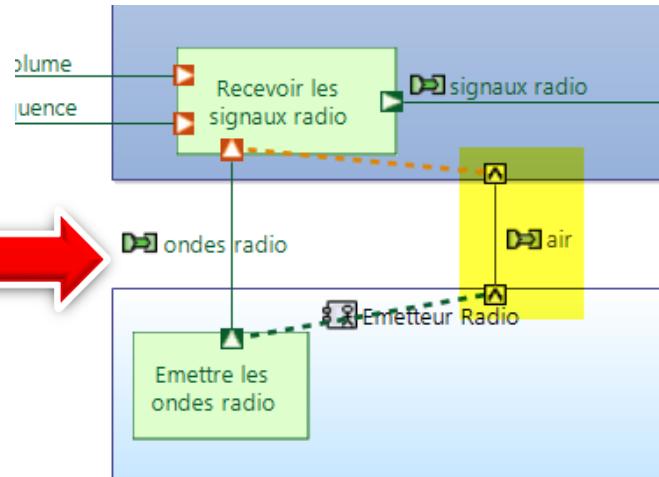
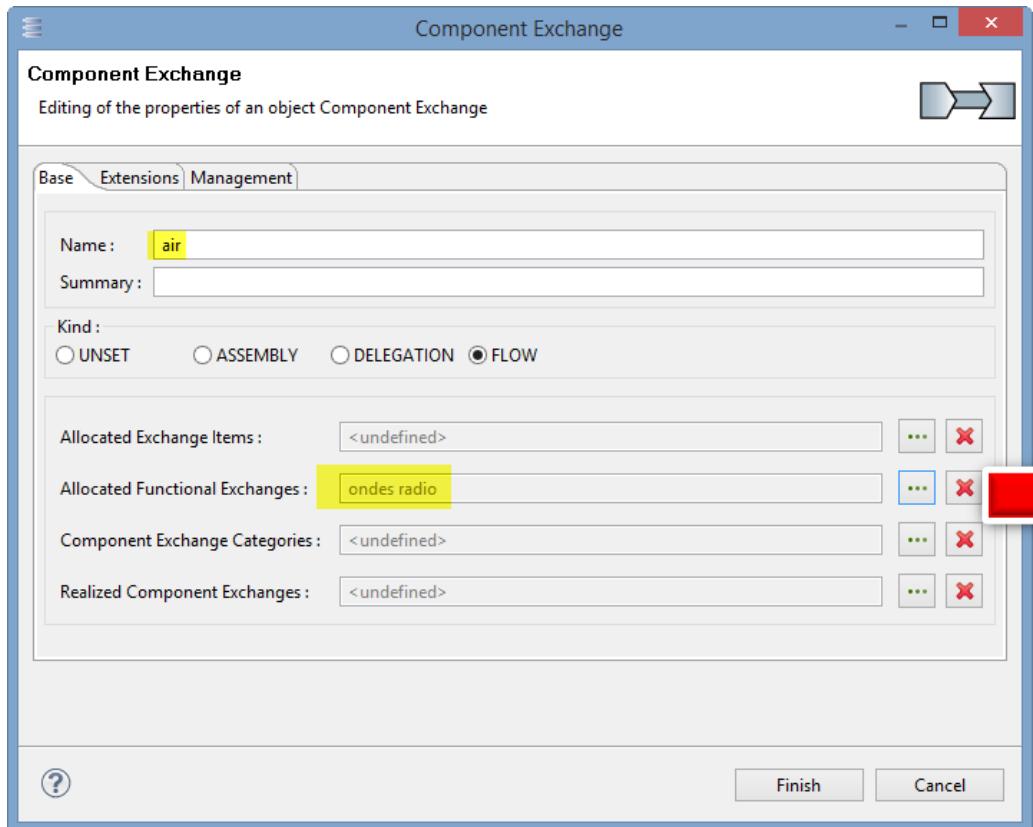
Category (propriétés)



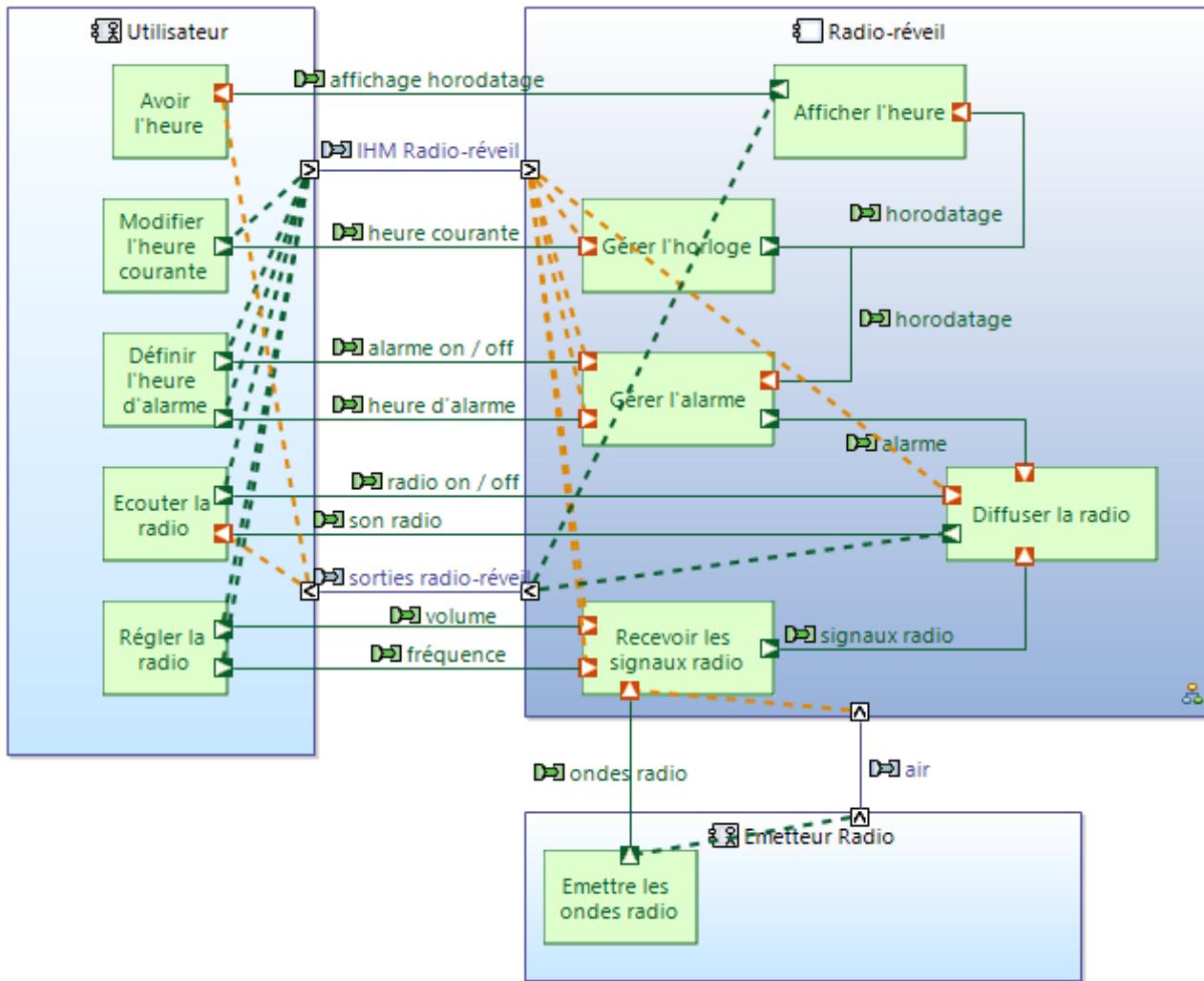
SAB : Component Exchanges



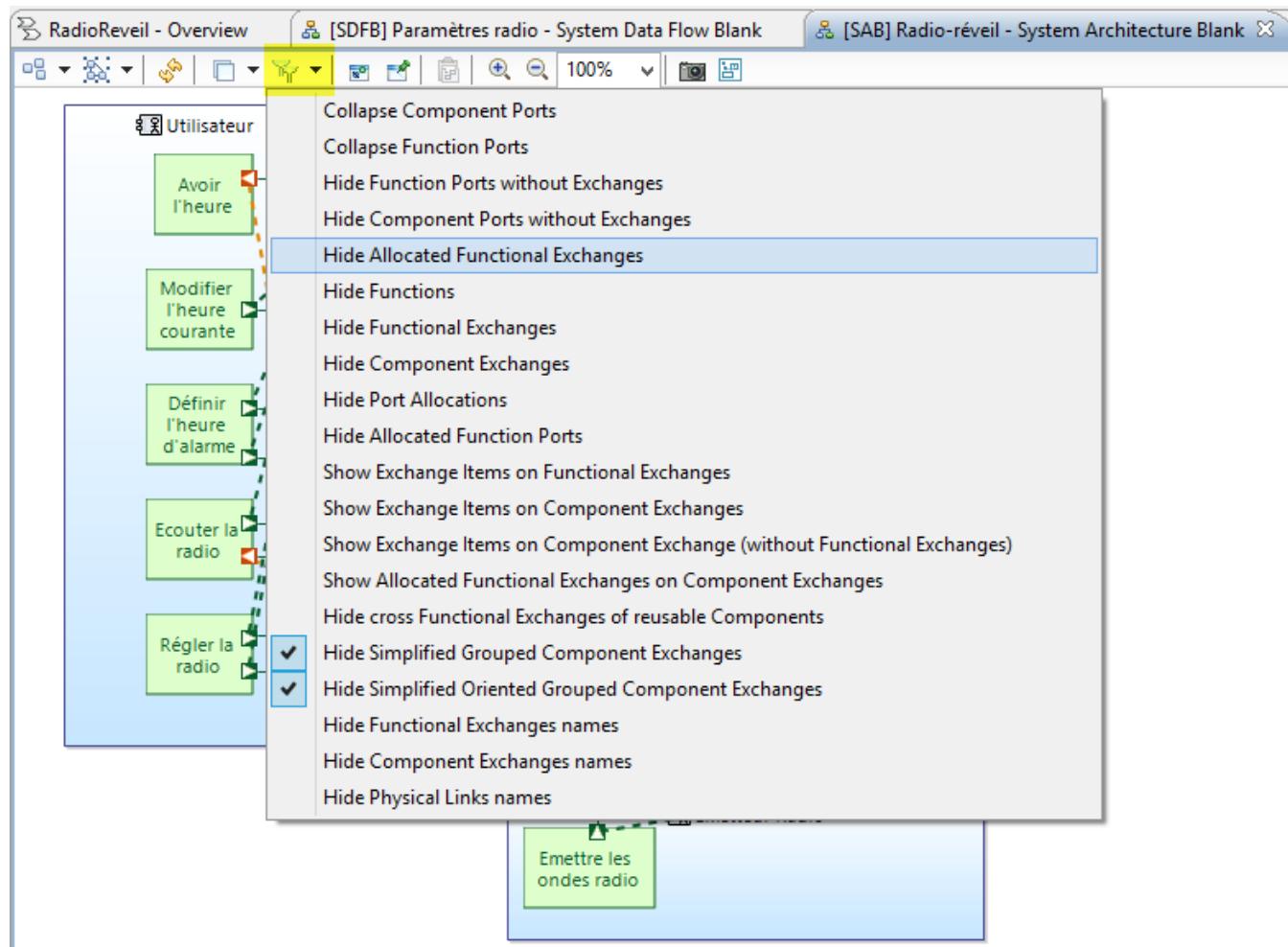
SAB : allocation de FE à CE



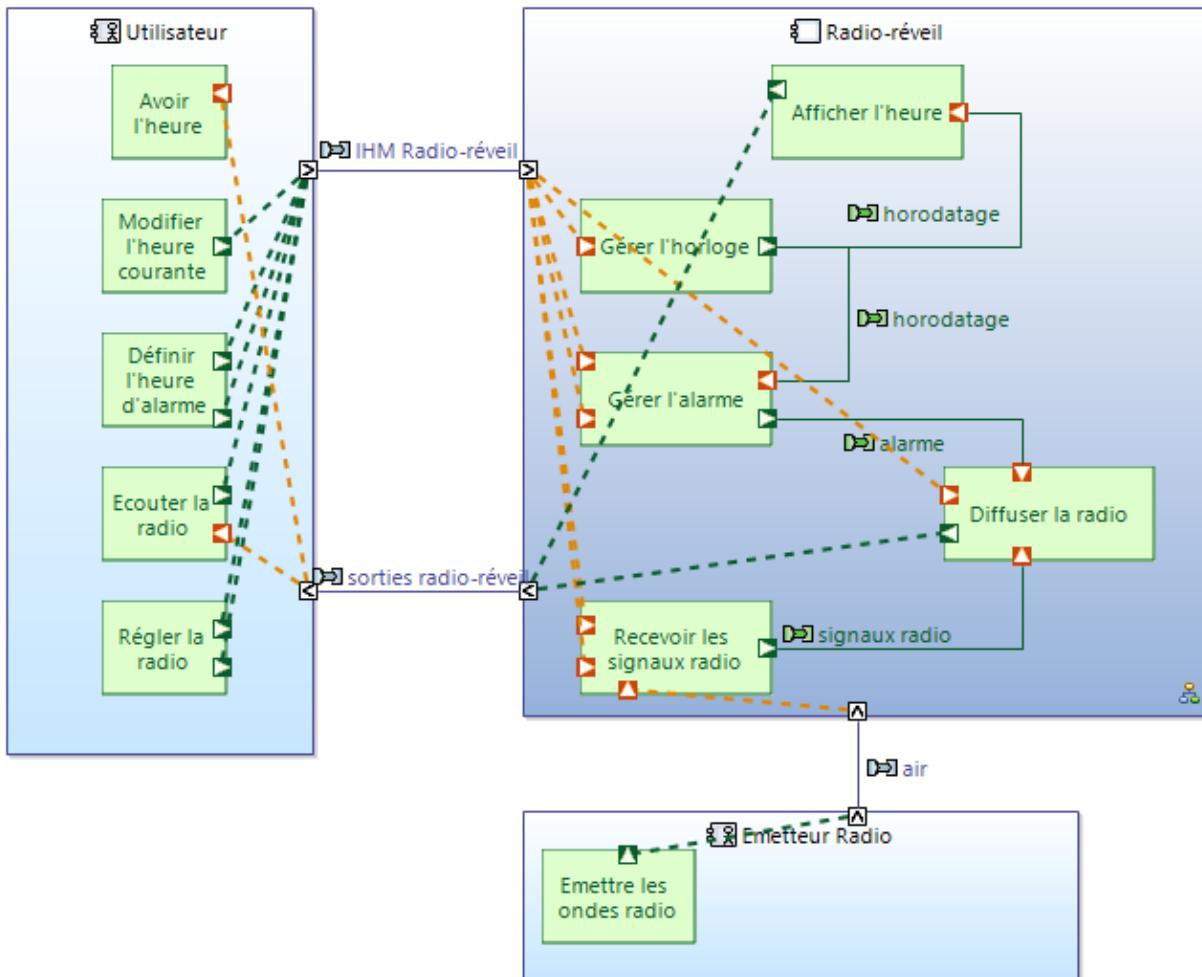
SAB complété avec les CEs et allocations



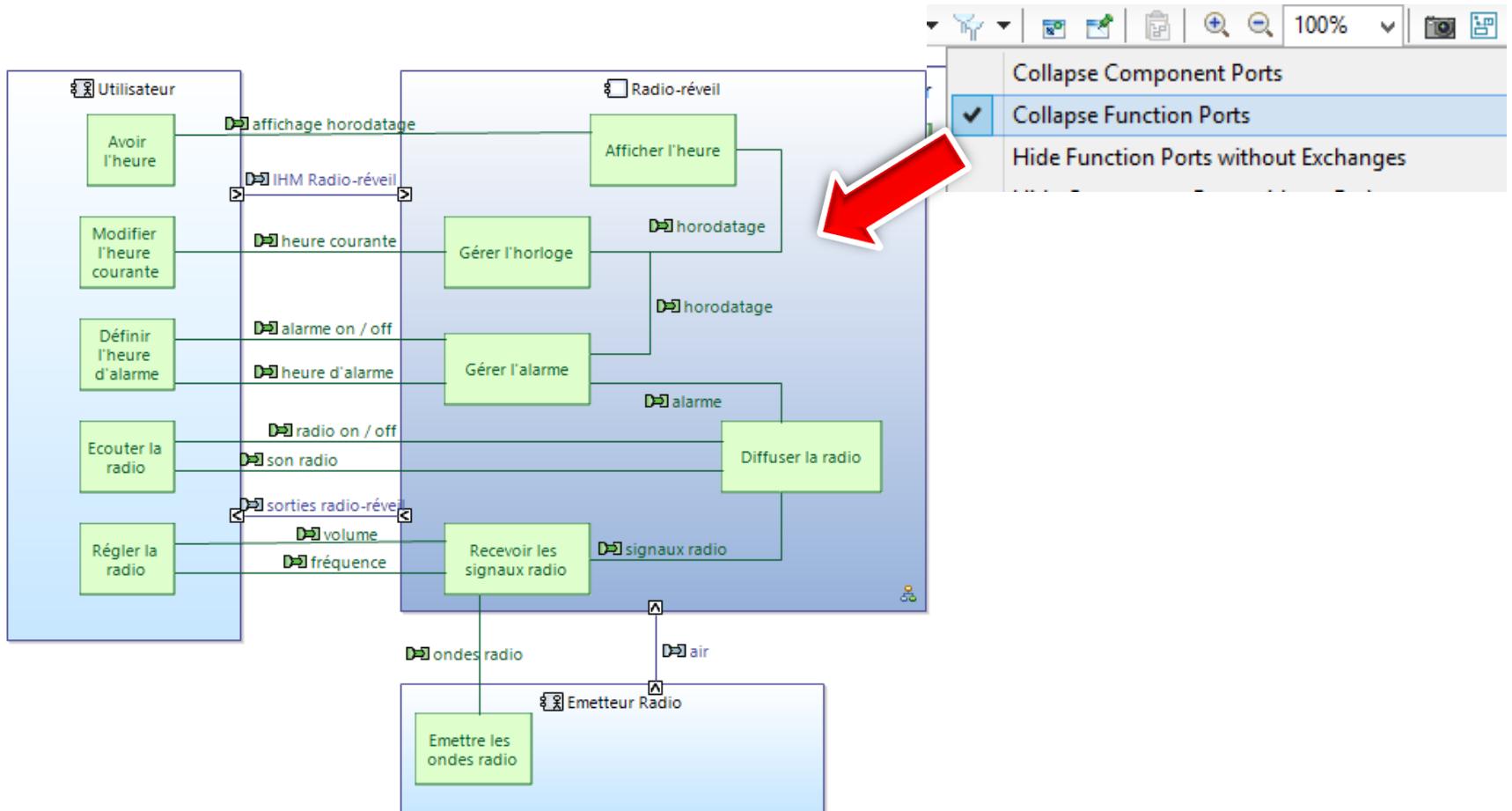
SAB : filtres possibles



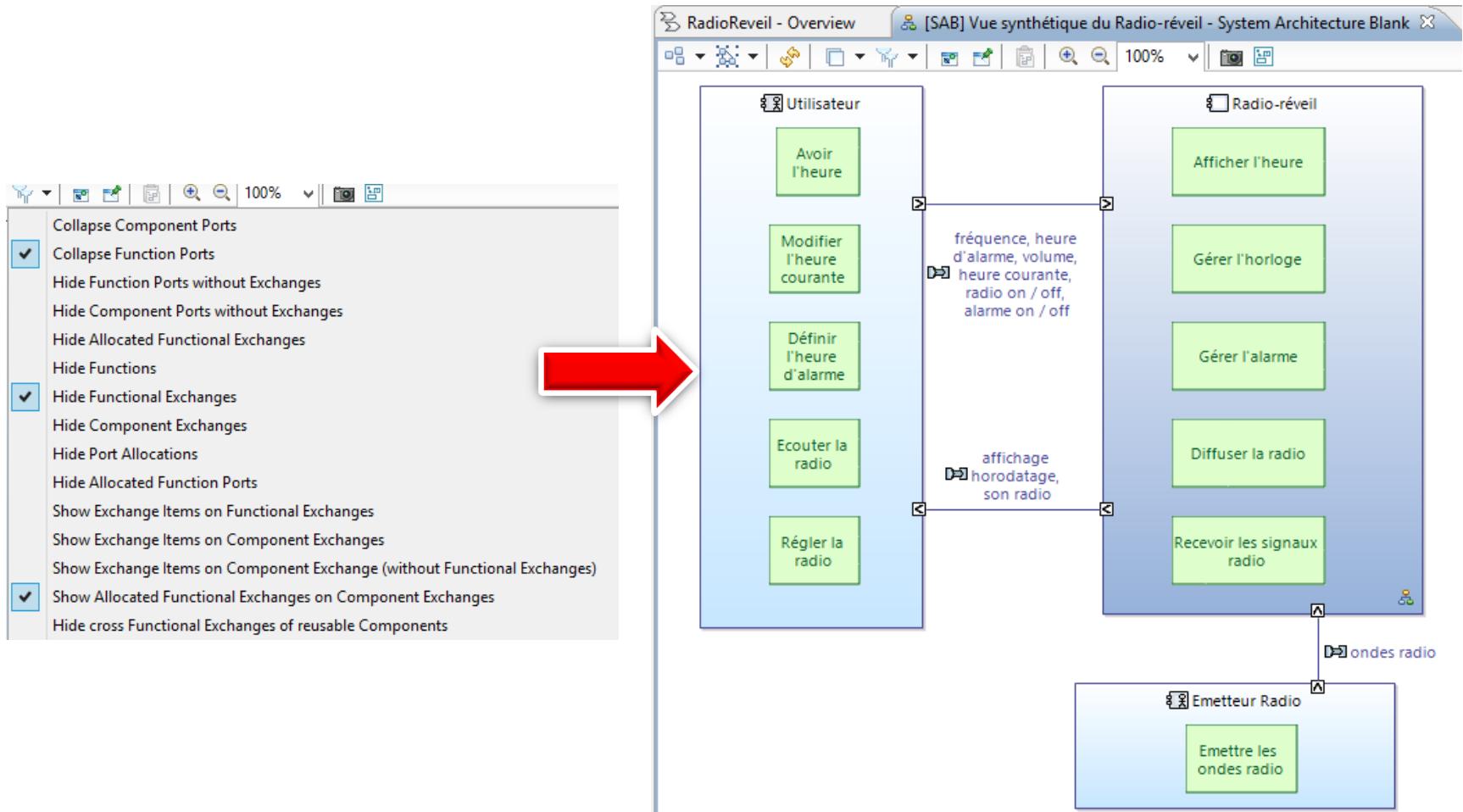
SAB : filtrage des FE alloués



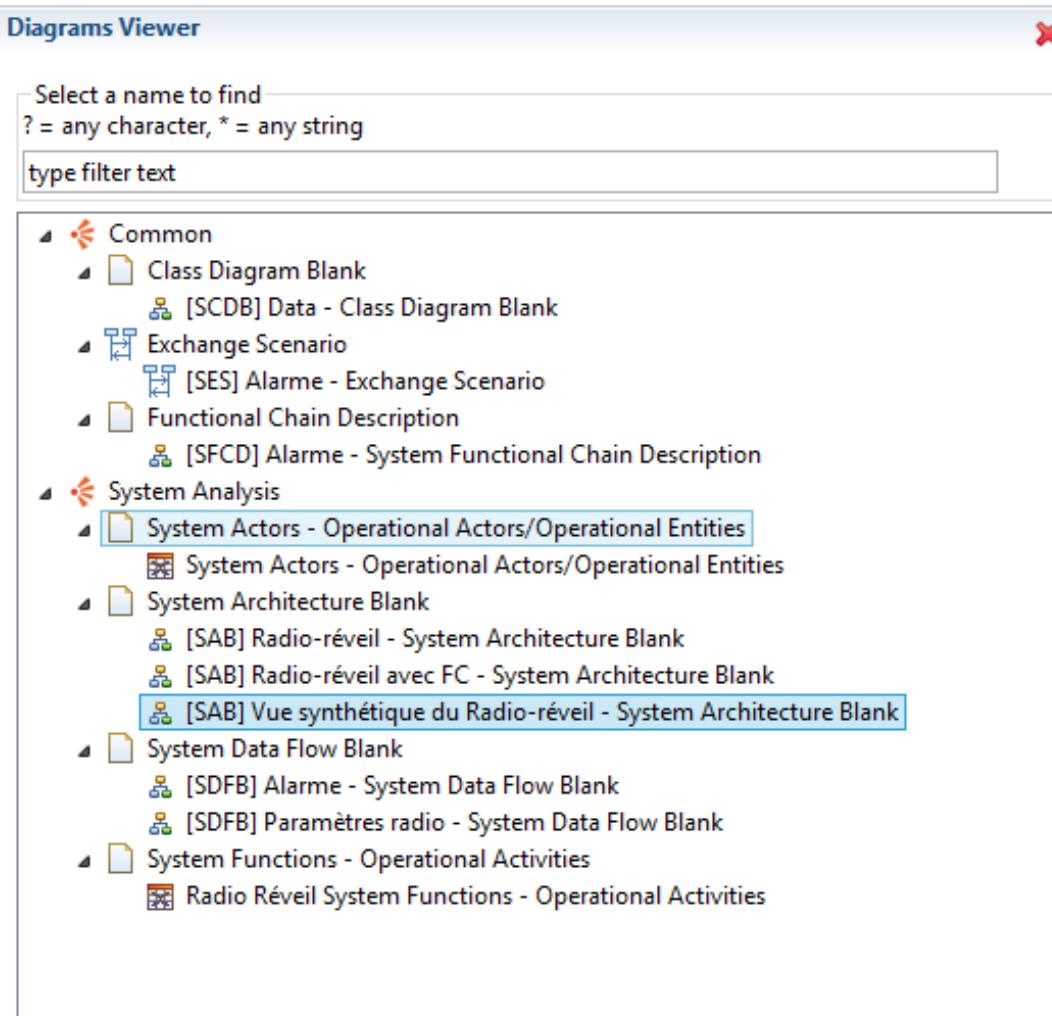
SAB : filtrage des ports fonctionnels



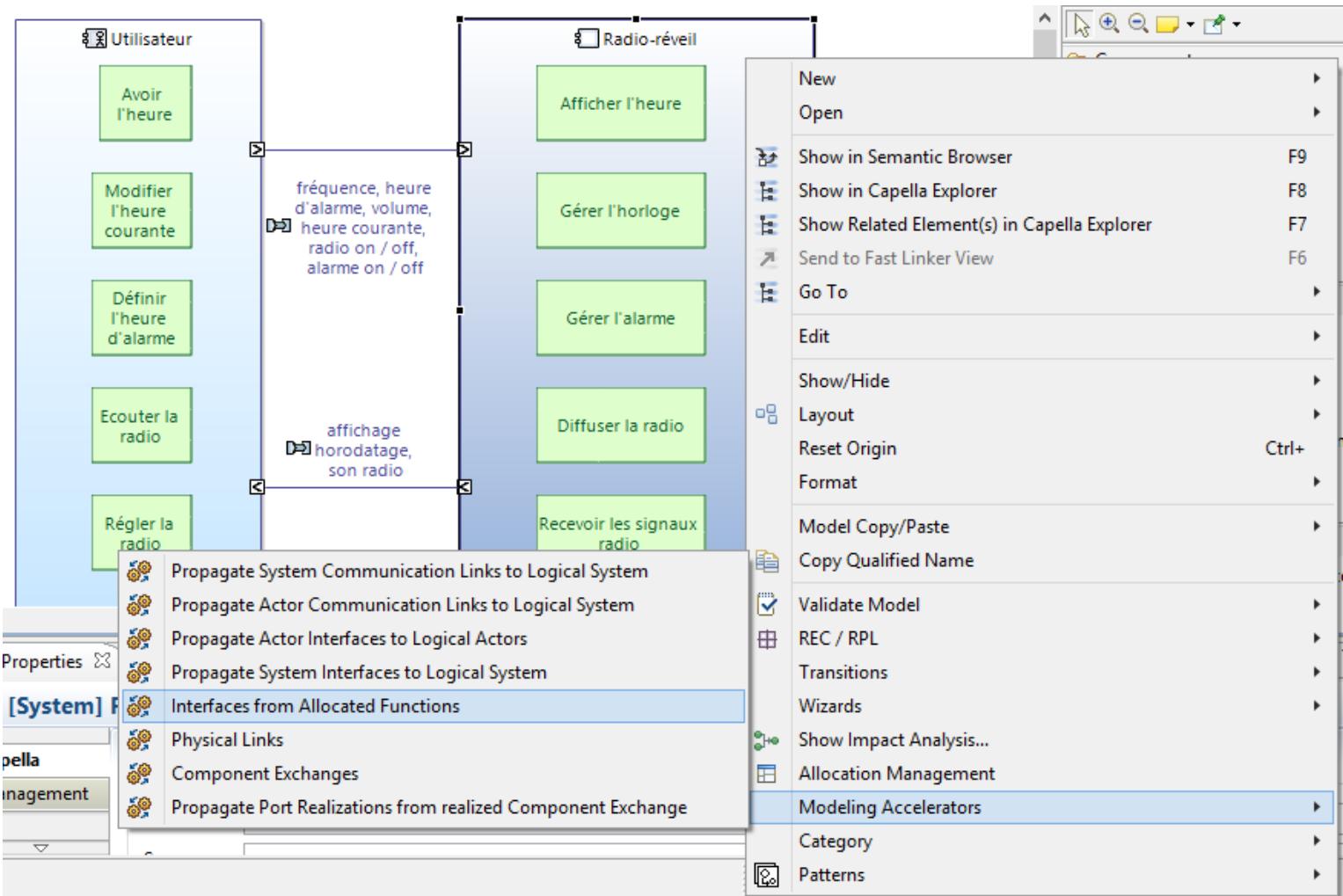
SAB : combinaison de filtres



Analyse Système : Diagrams Viewer

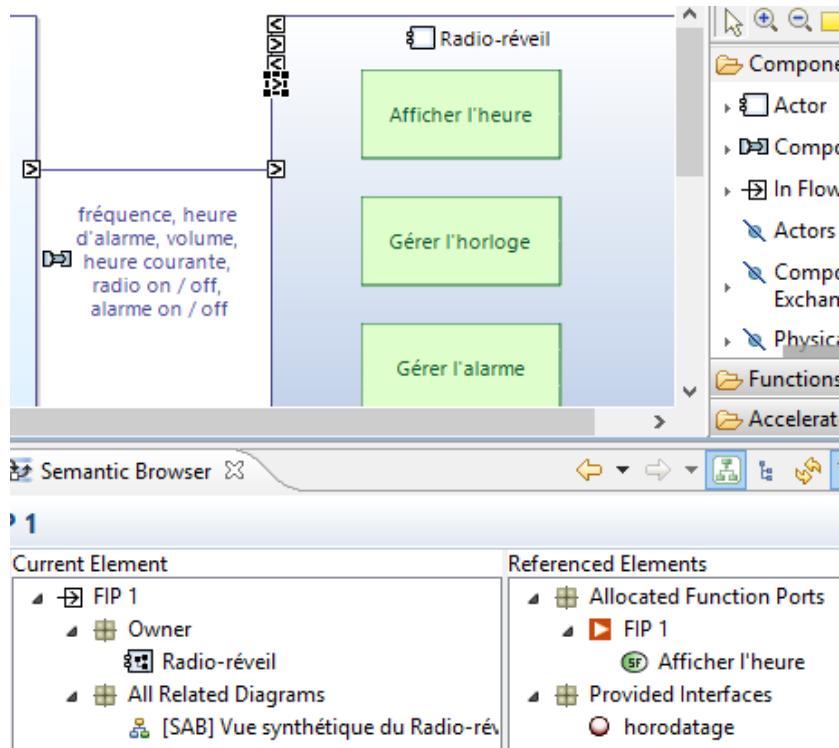


Modeling Accelerators : exemple

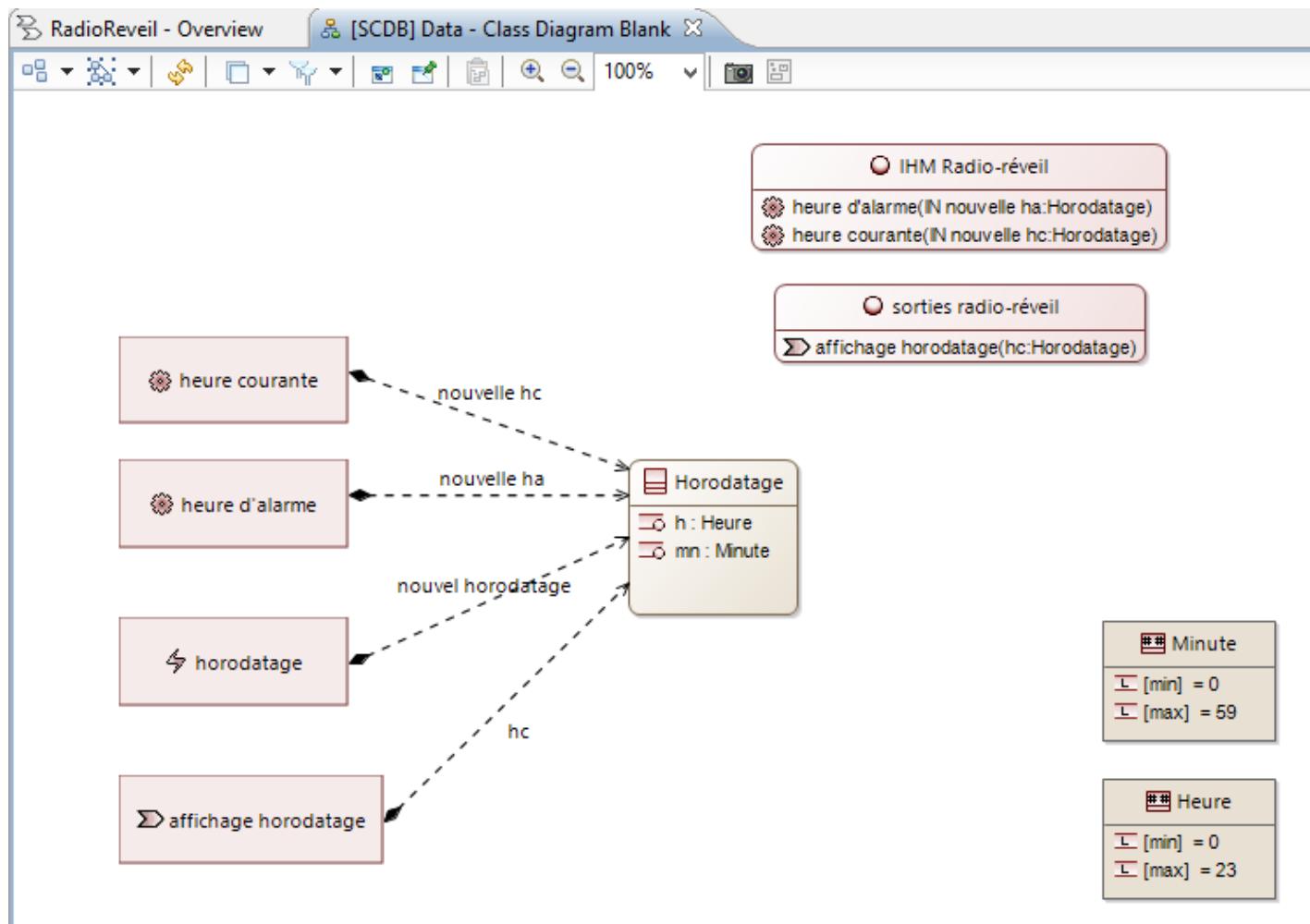


Génération d'interfaces

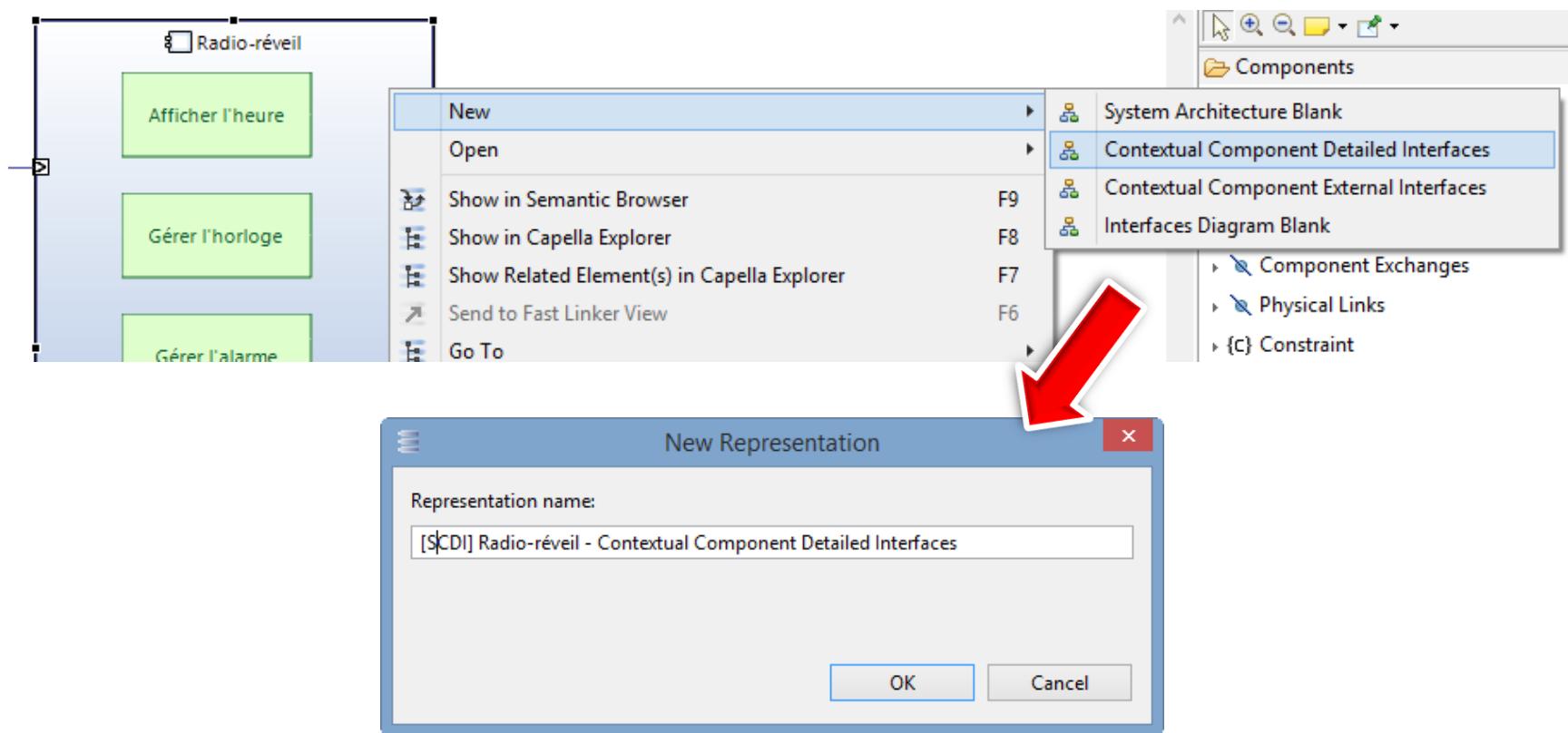
- ▶ **Interfaces**
 - IHM Radio-réveil
 - ❖ --> heure d'alarme
 - ❖ --> heure courante
 - sorties radio-réveil
 - --> affichage horodatage
 - horodatage
 - ↳ --> horodatage
 - horodatage
 - ↳ --> horodatage
- ▶ **Data**
 - ▷ ❖ heure courante
 - ▷ ❖ heure d'alarme
 - ▷ ➤ affichage horodatage
 - ▷ ↳ horodatage
 - ▷ **Predefined Types**
 - ▷ **Horodatage**
 - ▷ **Minute**
 - ▷ **Heure**
 - ▷ [SCDB] Data - Class Diagram Blank



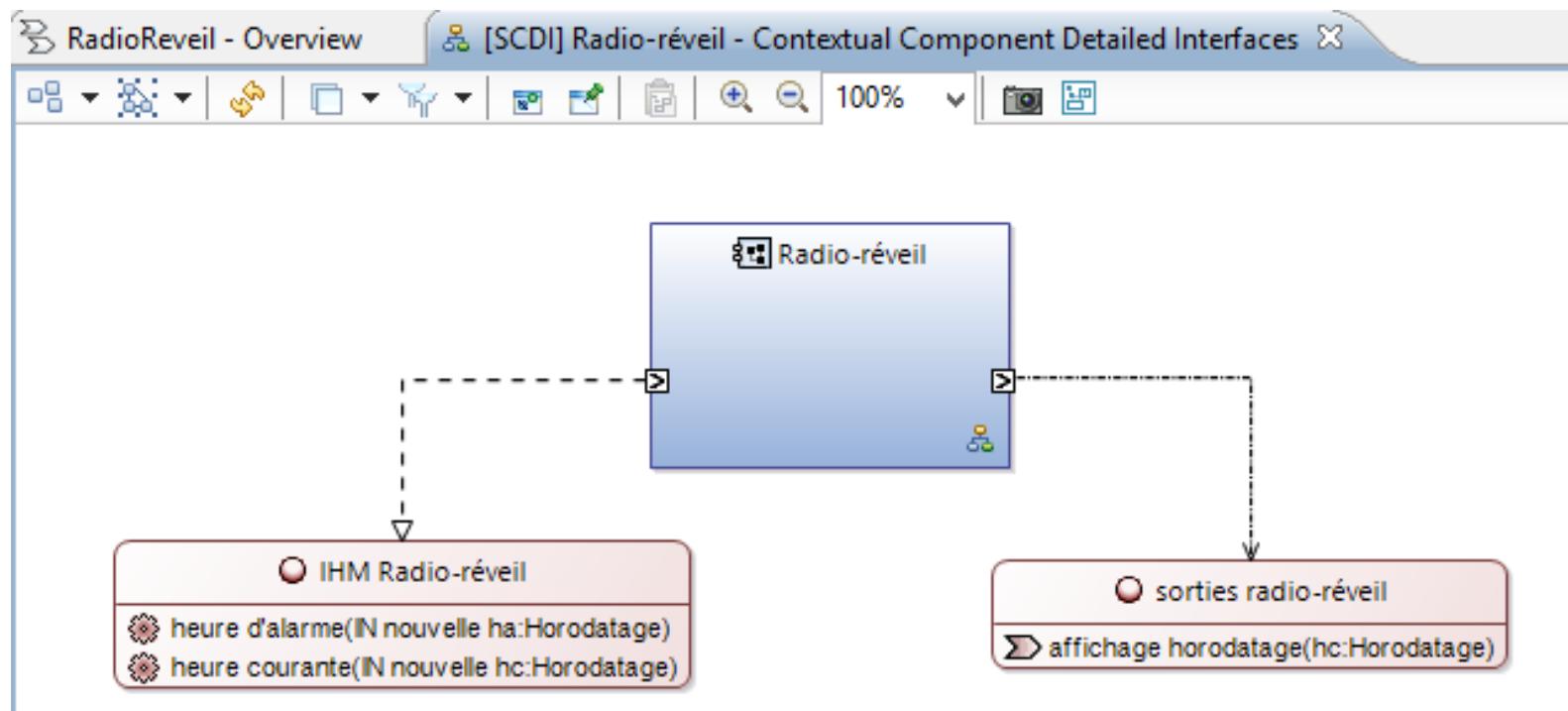
SCDB mis à jour



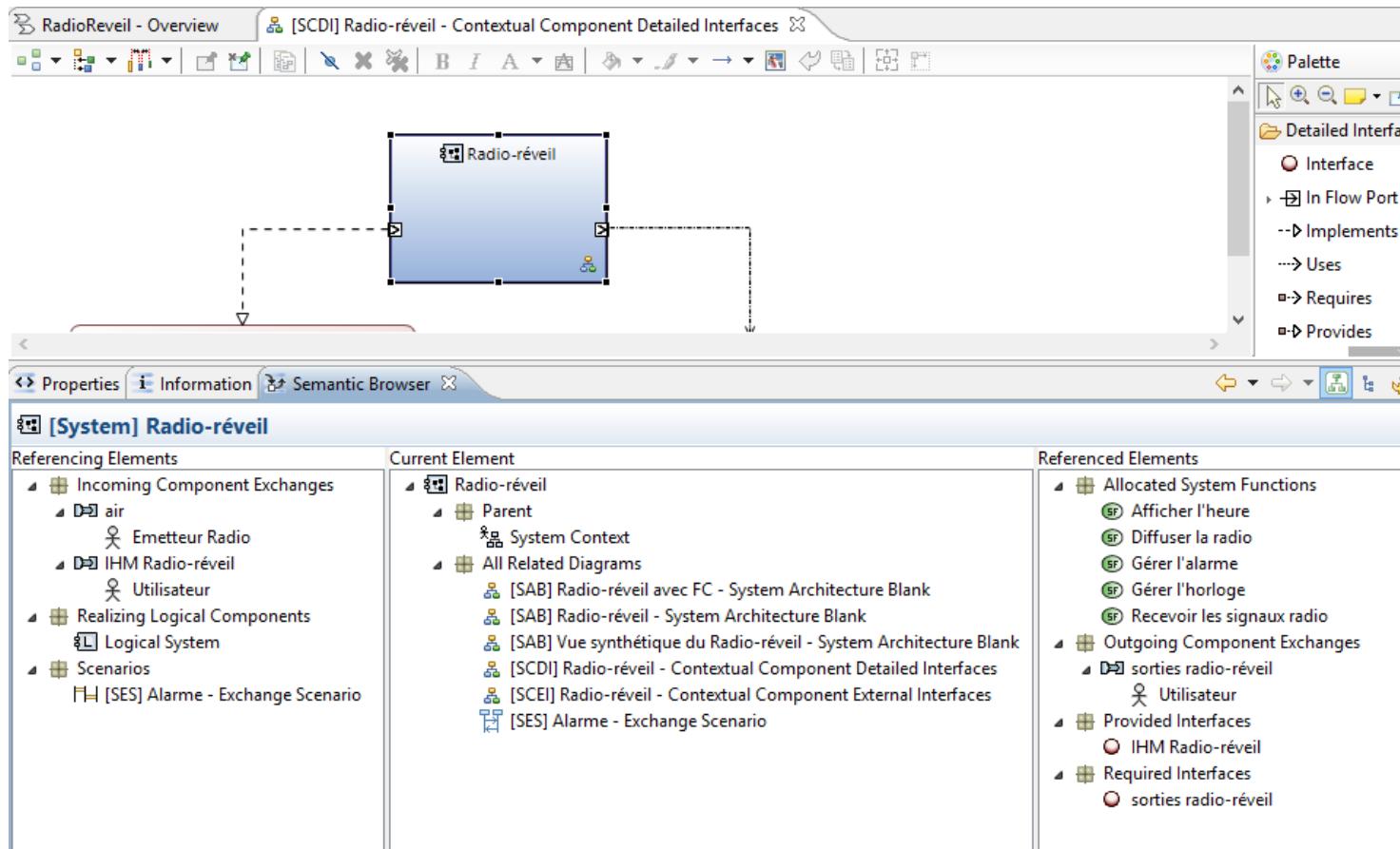
Contextual Component Detailed Interfaces



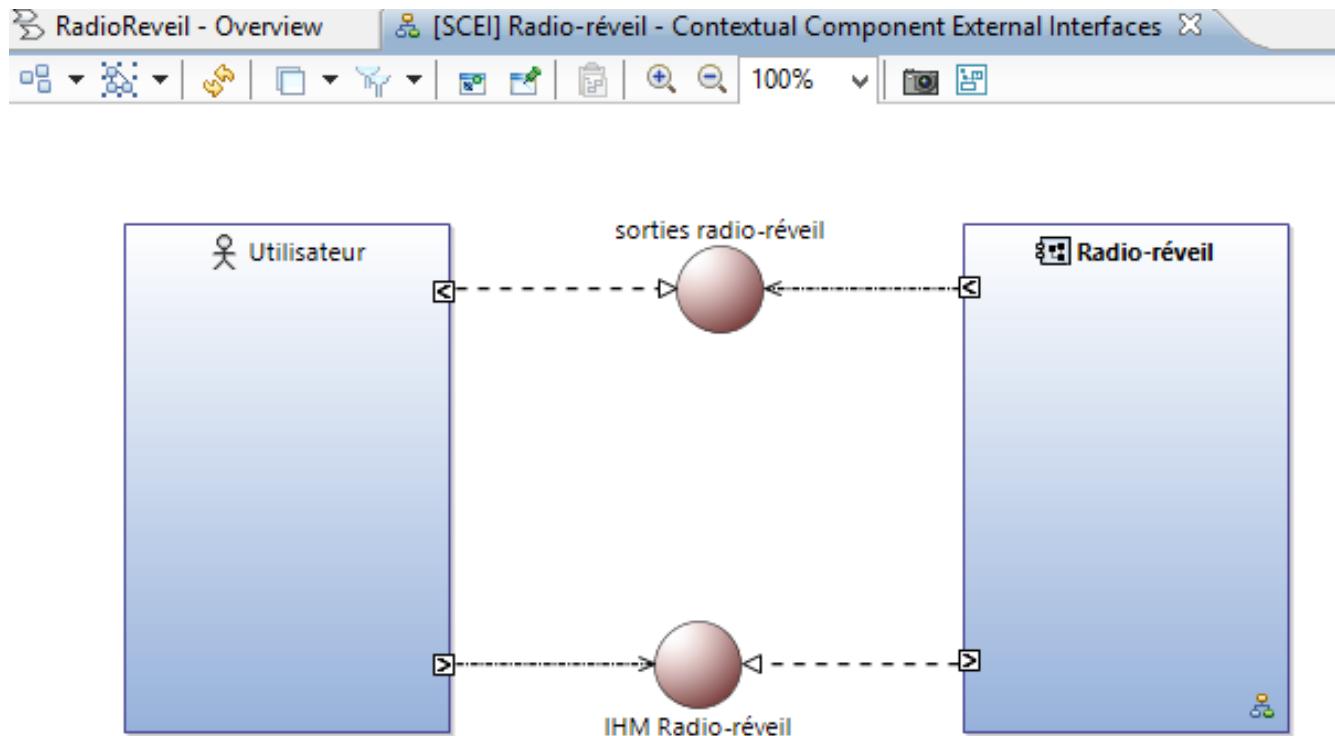
Contextual Component Detailed Interfaces



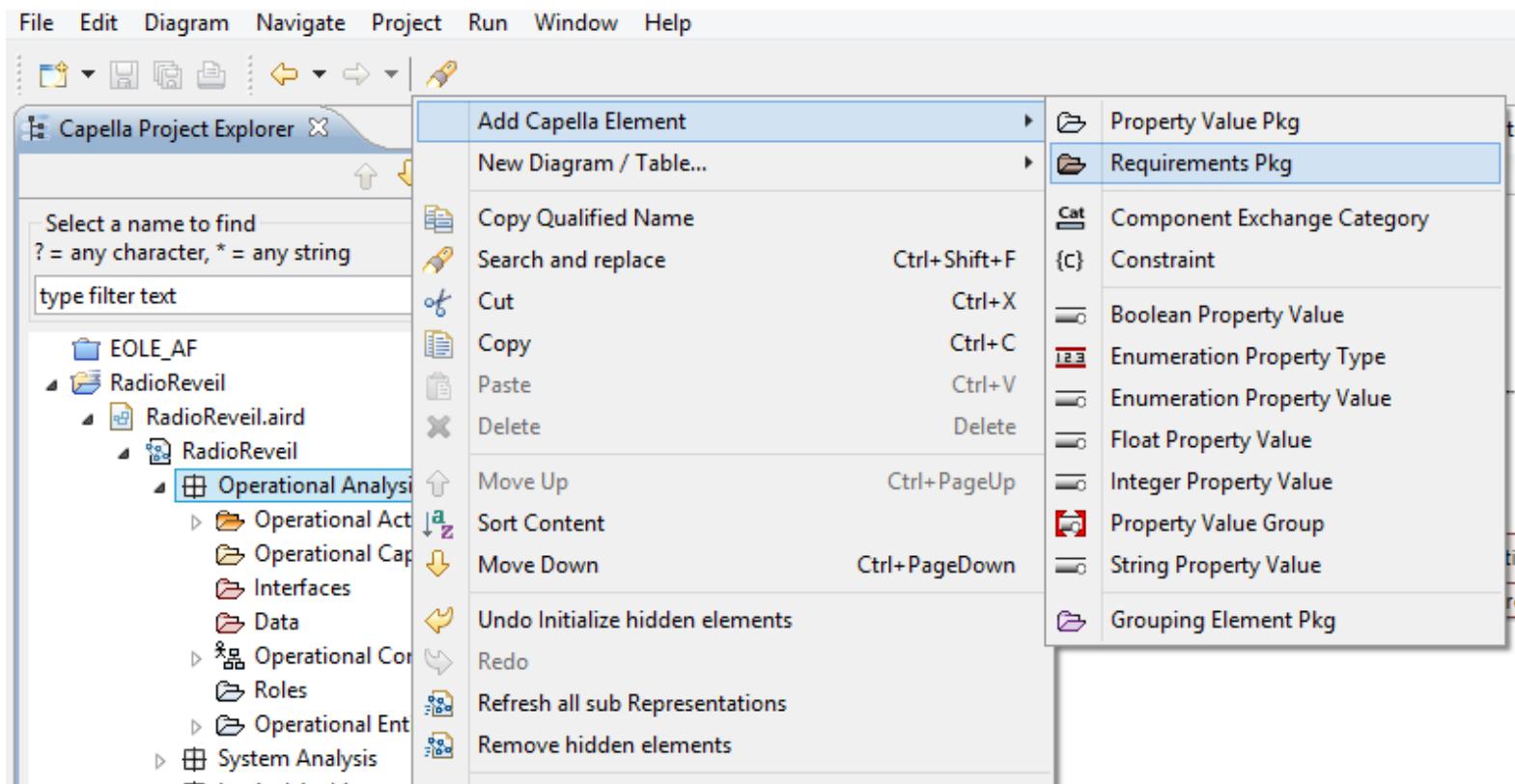
SCDI : Semantic Browser



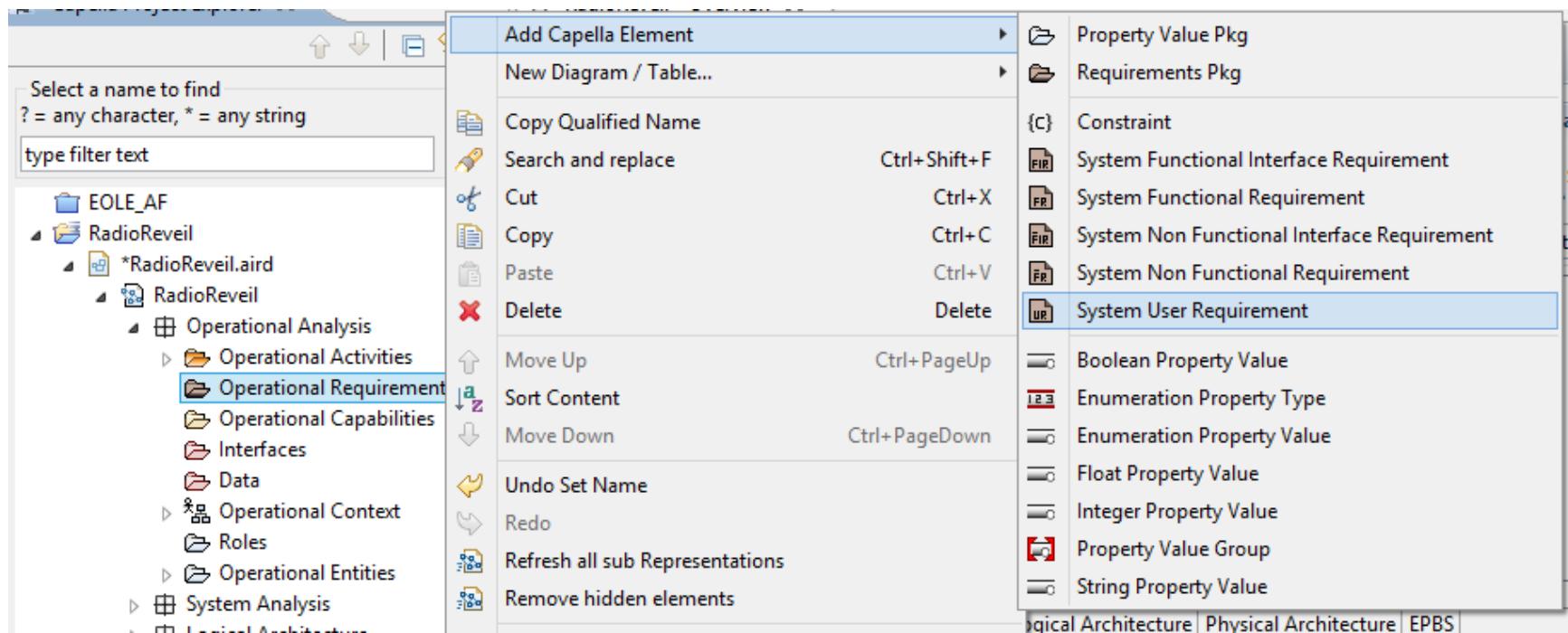
Contextual Component External Interfaces



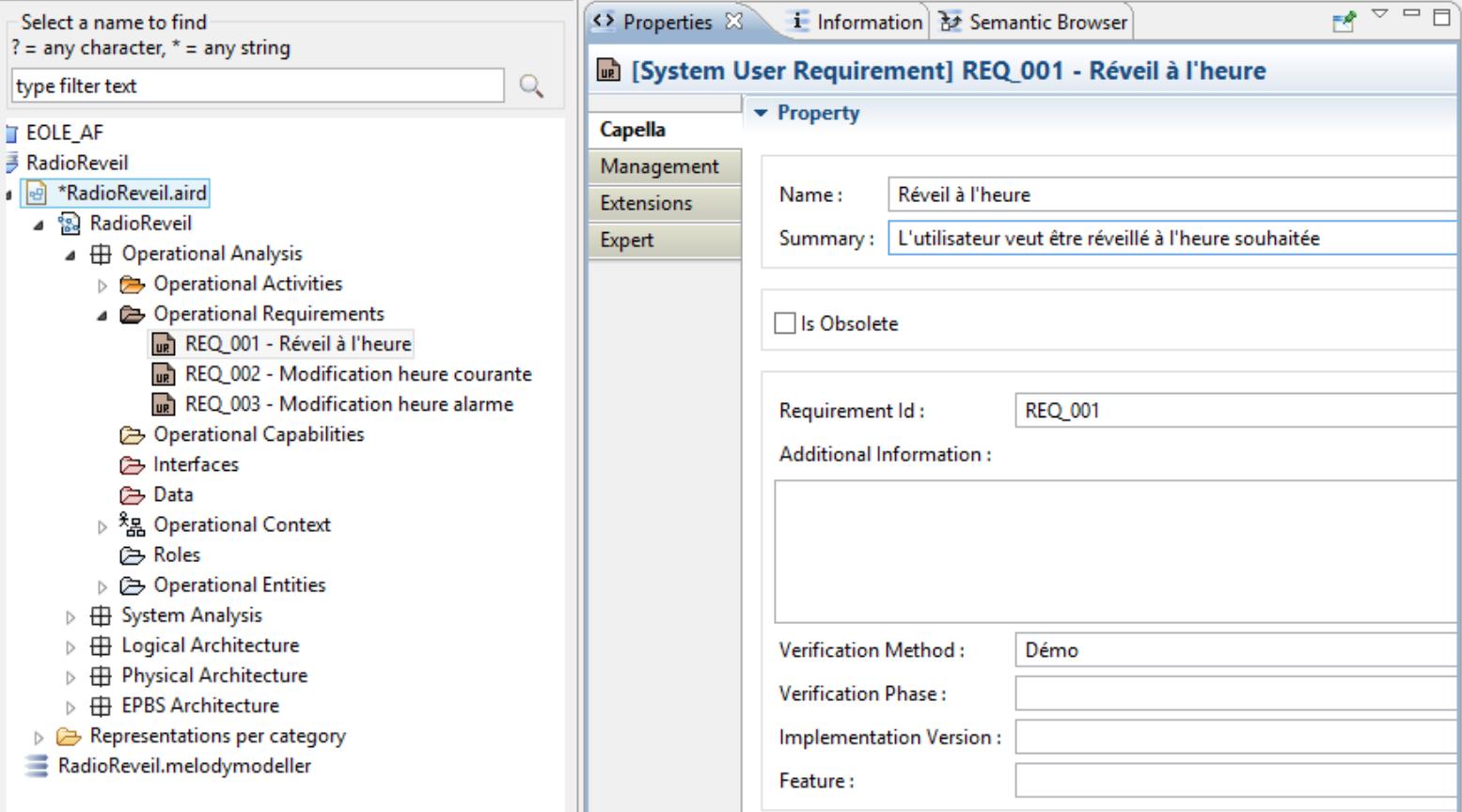
Exigences : Operational Analysis



Exigences : Operational Analysis



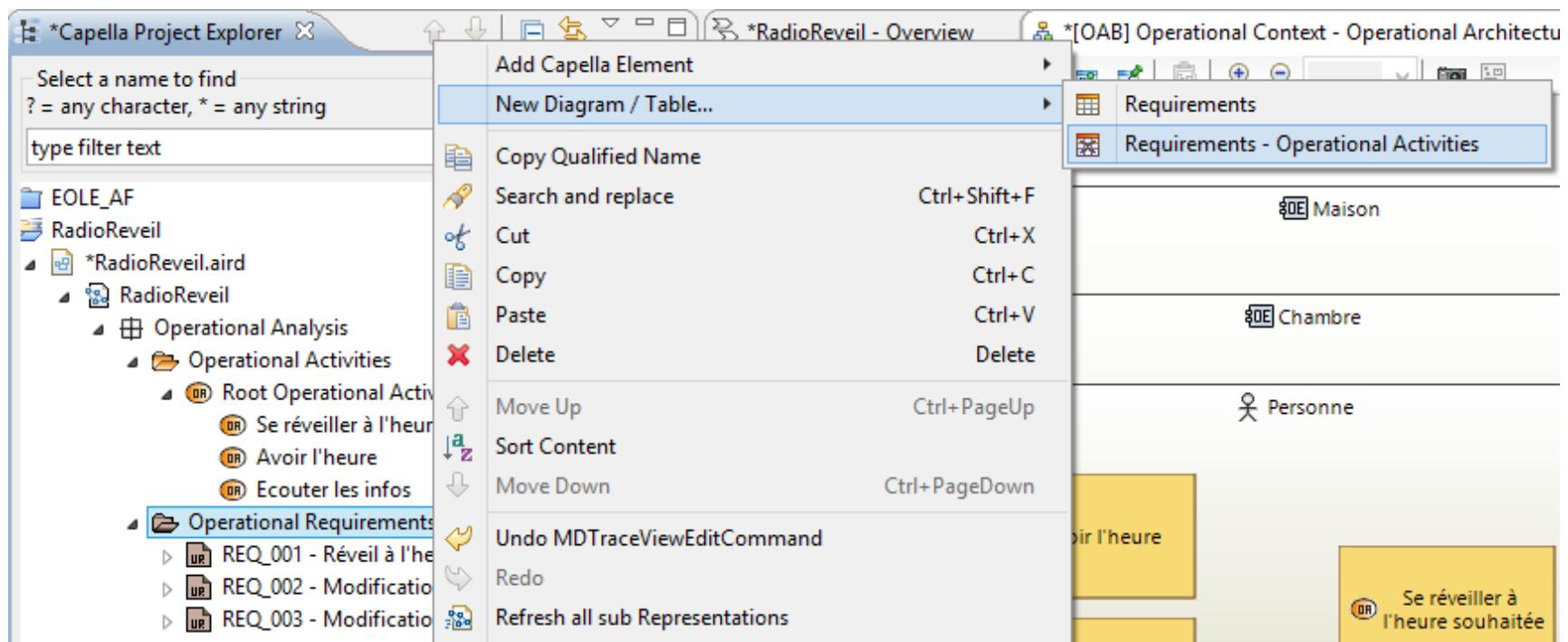
Exigences : Properties



The screenshot shows the Capella tool interface for managing system requirements. On the left, there is a navigation tree for a project named "RadioReveil". The tree includes categories like Operational Analysis, Operational Requirements, System Analysis, and Logical Architecture. Under "Operational Requirements", three specific requirements are listed: REQ_001 - Réveil à l'heure, REQ_002 - Modification heure courante, and REQ_003 - Modification heure alarme. The right side of the interface is a "Properties" view for "REQ_001 - Réveil à l'heure". The "Property" tab is selected, displaying the following details:

- Name :** Réveil à l'heure
- Summary :** L'utilisateur veut être réveillé à l'heure souhaitée
- Is Obsolete :** (checkbox)
- Requirement Id :** REQ_001
- Additional Information :** (empty text area)
- Verification Method :** Démo
- Verification Phase :** (empty text area)
- Implementation Version :** (empty text area)
- Feature :** (empty text area)

Exigences : liens avec les Op. Activities



Exigences : Matrice

	 Se réveiller à l'heure souhaitée	 Avoir l'heure	 Ecouter les infos
 Operational Requirements			
 REQ_001 : Réveil à l'heure			
 REQ_002 : Modification heure courante			
 REQ_003 : Modification heure alarme			

	 Se réveiller à l'heure souhaitée	 Avoir l'heure	 Ecouter les infos
 Operational Requirements			
 REQ_001 : Réveil à l'heure	X		
 REQ_002 : Modification heure courante	X		
 REQ_003 : Modification heure alarme	X		

Exigences : Semantic Browser

Screenshot of the Semantic Browser interface showing the details of a System User Requirement (REQ_002).

Properties | **Information** | **Semantic Browser**

[System User Requirement] REQ_002 - Modification heure courante

Referencing Elements	Current Element	Referenced Elements
<ul style="list-style-type: none"> Traced Elements <ul style="list-style-type: none"> Avoir l'heure Se réveiller à l'heure souhaitée 	<ul style="list-style-type: none"> REQ_002 - Modification heure courante <ul style="list-style-type: none"> All Related Tables <ul style="list-style-type: none"> Requirements - Operational Activities 	

Screenshot of the Semantic Browser interface showing the details of an Operational Activity (Se réveiller à l'heure souhaitée).

Properties | **Information** | **Semantic Browser**

[Operational Activity] Se réveiller à l'heure souhaitée

Referencing Elements	Current Element	Referenced Elements
<ul style="list-style-type: none"> Allocating Operational Actor <ul style="list-style-type: none"> Personne Realizing System Functions <ul style="list-style-type: none"> Définir l'heure d'alarme Diffuser la radio Gérer l'alarme Recevoir les signaux radio Régler la radio 	<ul style="list-style-type: none"> Se réveiller à l'heure souhaitée <ul style="list-style-type: none"> Parent Root Operational Activity All Related Tables <ul style="list-style-type: none"> Radio Réveil System Functions - Operational Activities Requirements - Operational Activities All Related Diagrams <ul style="list-style-type: none"> [OAB] Operational Context - Operational Architecture Blank 	<ul style="list-style-type: none"> Requirements <ul style="list-style-type: none"> REQ_001 - Réveil à l'heure REQ_002 - Modification heure courante REQ_003 - Modification heure alarme

Exigences : System Analysis

Capella Project Explorer RadioReveil - Overview System Requirements - System Functions

Select a name to find
? = any character, * = any string
type filter text

System Analysis

- System Functions
 - paramètres radio
 - Root System Function
 - Alarme
 - Gérer l'horloge
 - Gérer l'alarme
 - Modifier l'heure courante
 - Définir l'heure d'alarme
 - Afficher l'heure
 - Diffuser la radio
 - Emettre les ondes radio
 - Avoir l'heure
 - Ecouter la radio
 - Recevoir les signaux radio
 - Régler la radio
 - [SDFB] Alarme - System Data Flow Blank
 - [SDFB] Paramètres radio - System Data Flow Blank
- System Requirements
 - REQ_101 - Modification heure courante
 - REQ_102 - Modification heure alarme
 - REQ_103 - Gestion station radio
 - REQ_104 - Gestion volume radio
 - System Requirements - System Functions

System Requirements

	Gérer l'alarme	Modifier l'heure courante	Définir l'heure d'alarme	Régler la radio
REQ_101 : Modification heure courante	X			
REQ_102 : Modification heure alarme		X		
REQ_103 : Gestion station radio			X	
REQ_104 : Gestion volume radio				X

[System Function] Régler la radio

Referencing Elements Current Element Referenced Elements

Allocating Actor: Utilisateur

Régler la radio

- Parent: Root System Function
- All Related Tables: Radio Réveil System Functions - Operational Activities, System Requirements - System Functions
- All Related Diagrams: [SAB] Radio-réveil avec FC - System Architecture Blank, [SAB] Radio-réveil - System Architecture Blank, [SAB] Vue synthétique du Radio-réveil - System Architecture Blank, [SDFB] Alarme - System Data Flow Blank, [SDFB] Paramètres radio - System Data Flow Blank

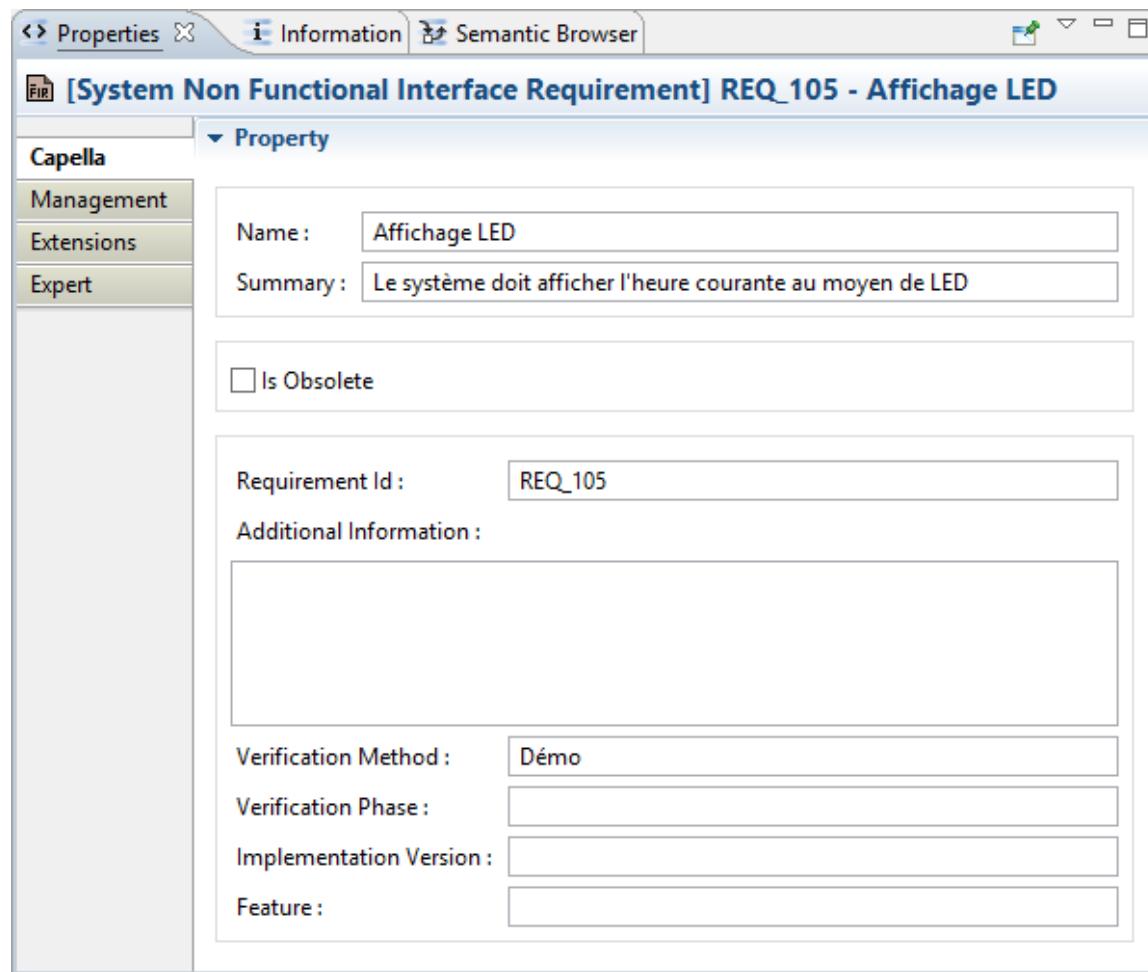
Out Flow Ports: FOP 1, FOP 2

Outgoing Functional Exchanges: fréquence

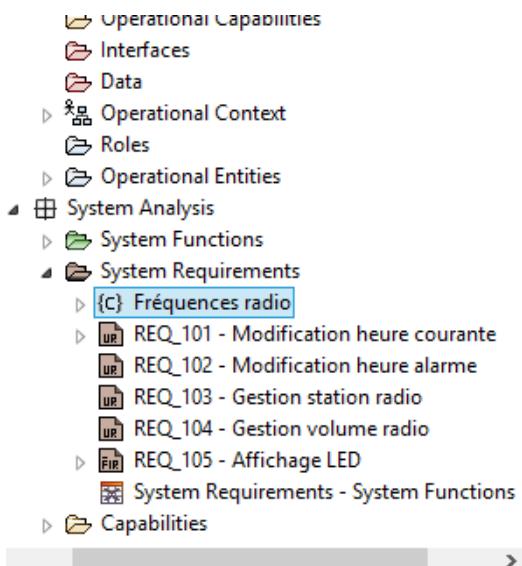
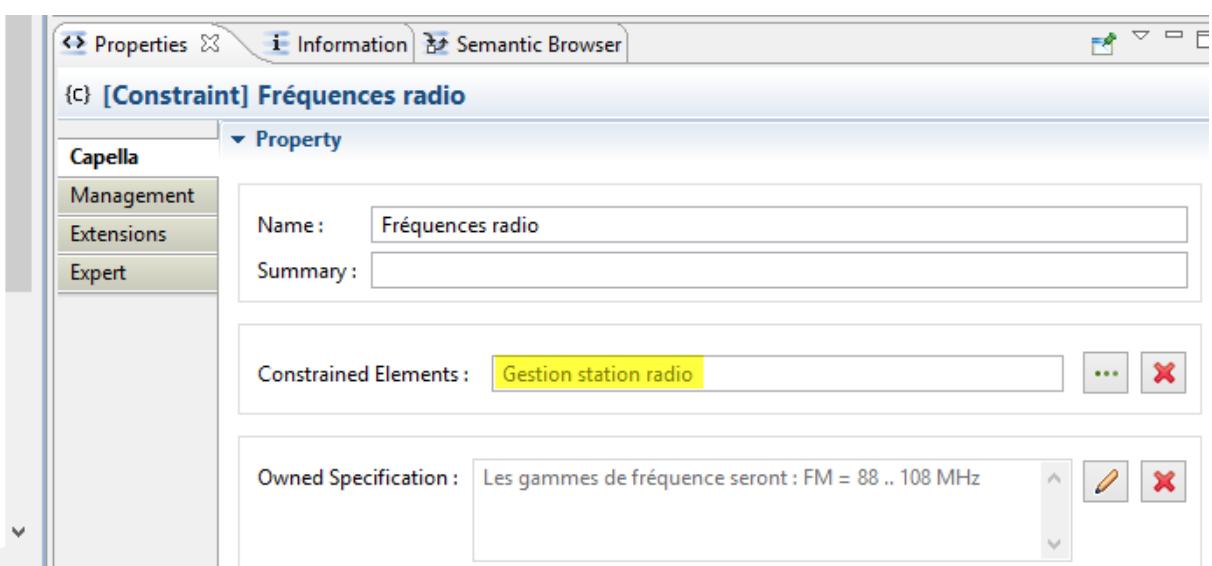
Realized Operational Activities: Recevoir les signaux radio, volume, Ecouter les infos, Se réveiller à l'heure souhaitée

Requirements: REQ_103 - Gestion station radio, REQ_104 - Gestion volume radio

Exigences : Propriétés



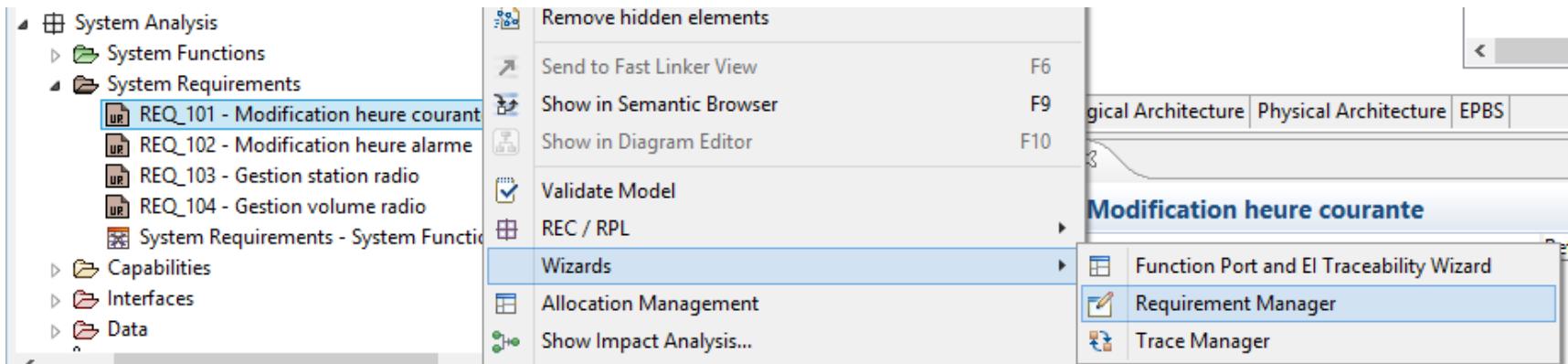
Contrainte

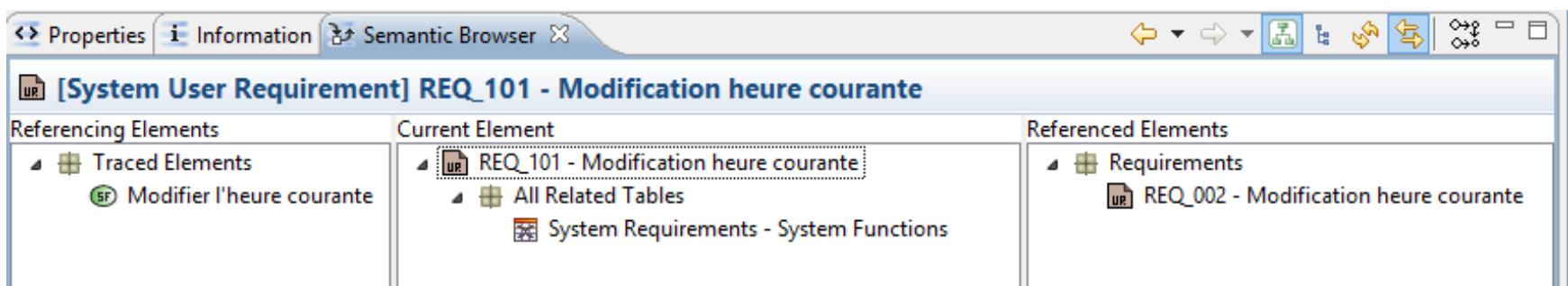
The properties view for the constraint '{c} [Constraint] Fréquences radio' is shown. The 'Property' tab is selected.

- Name:** Fréquences radio
- Summary:** (empty)
- Constrained Elements:** Gestion station radio
- Owned Specification:** Les gammes de fréquence seront : FM = 88 .. 108 MHz

Requirement Manager



Exigences : liens dans le Semantic Browser



The screenshot shows a Semantic Browser window with the following details:

- Toolbar:** Properties, Information, Semantic Browser, and various navigation icons.
- Title Bar:** [System User Requirement] REQ_101 - Modification heure courante
- Referencing Elements:**
 - Traced Elements
 - Modifier l'heure courante
- Current Element:**
 - REQ_101 - Modification heure courante
 - All Related Tables
 - System Requirements - System Functions
- Referenced Elements:**
 - Requirements
 - REQ_002 - Modification heure courante

Exigences : lien SA-Op. A

Traceability Management Wizard

Traceability links for : Affichage LED

NFIR

Source elements Incoming traceability link Current element Outgoing traceability link Target elements

Incoming traceability links

Outgoing traceability links

- Requirement trace
 - Avoir l'heure

Trace types: All traces

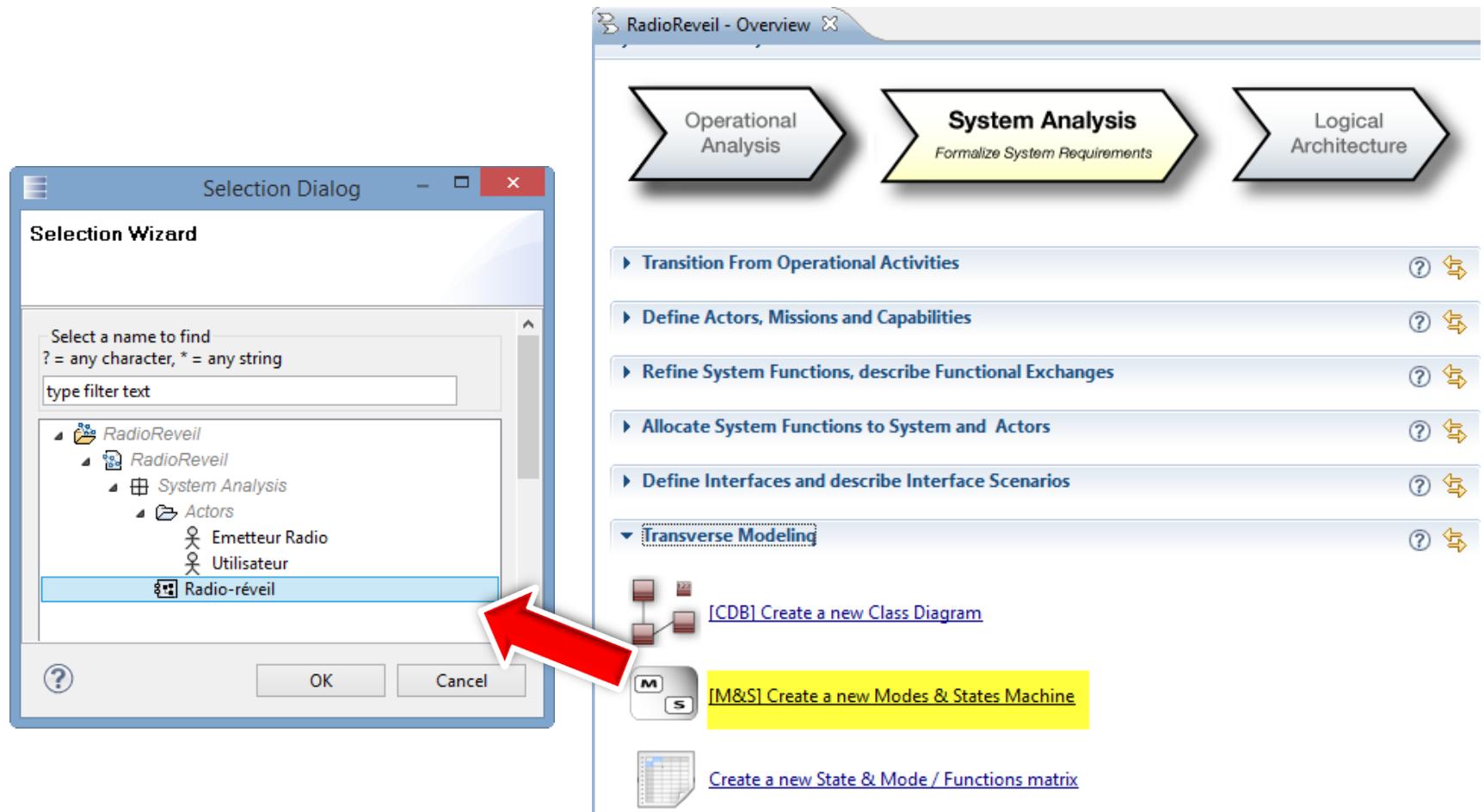
Trace types: All traces

Finish Cancel

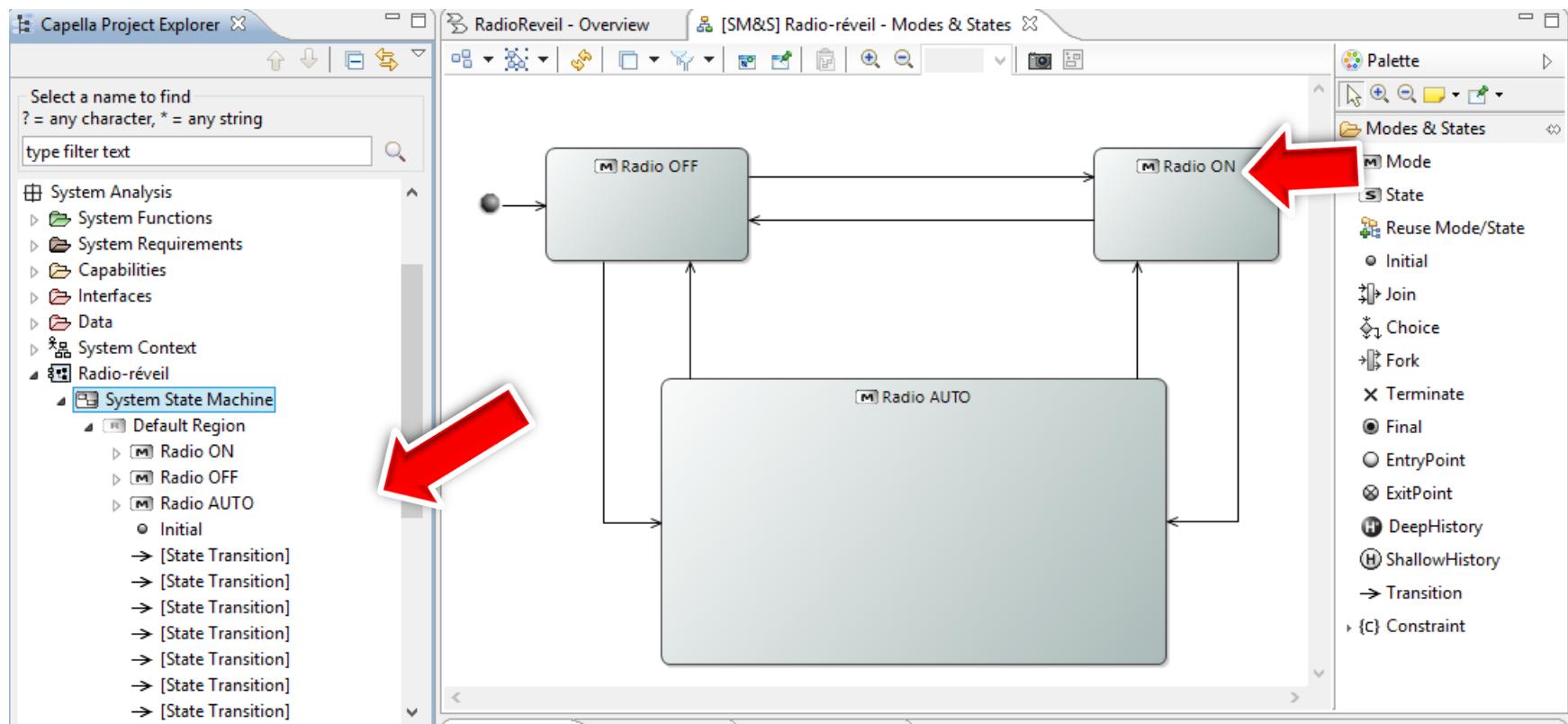
Operational Analysis

- Operational Activities
 - Root Operational Activity
 - Se réveiller à l'heure souhaitée
 - Avoir l'heure
 - Ecouter les infos
- Operational Requirements
- Operational Capabilities
- Interfaces
- Data
- Operational Context
- Roles
- Operational Entities
- System Analysis
- System Functions
- System Requirements
 - REQ_101 - Modification heure courante
 - REQ_102 - Modification heure alarme
 - REQ_103 - Gestion station radio
 - REQ_104 - Gestion volume radio
 - REQ_105 - Affichage LED
- System Requirements - System Functions
- Capabilities
- Interfaces
- Data
- System Context

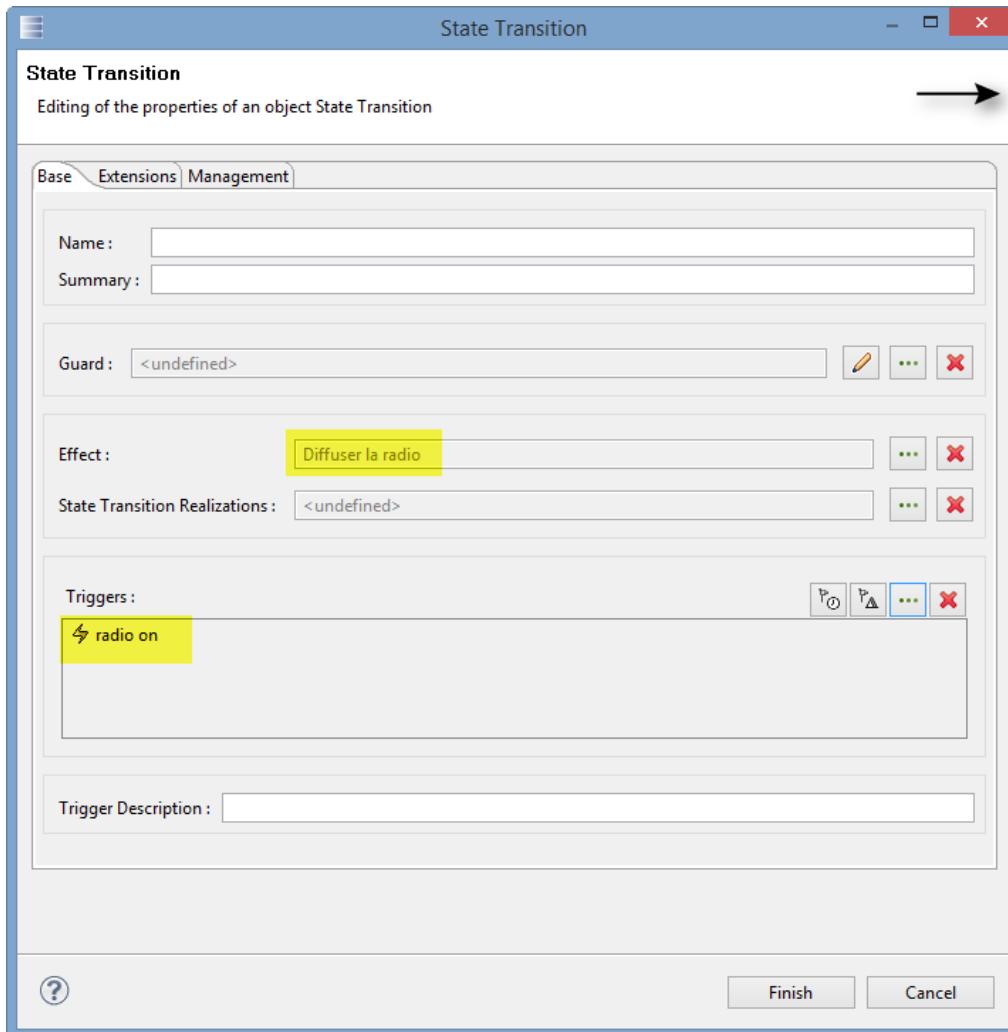
SA : Modes & States Machine



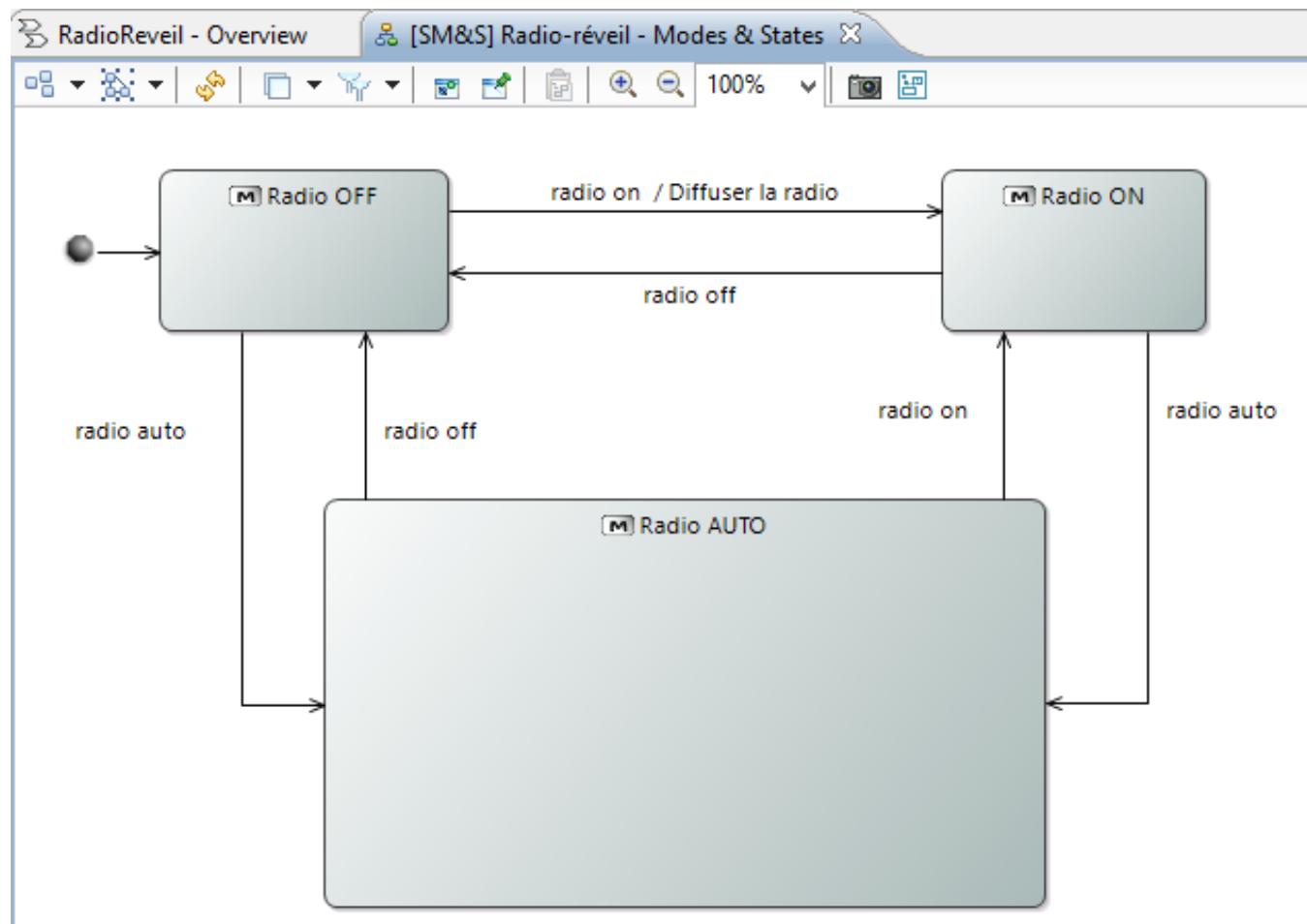
SA : Modes & States Diagram (début)



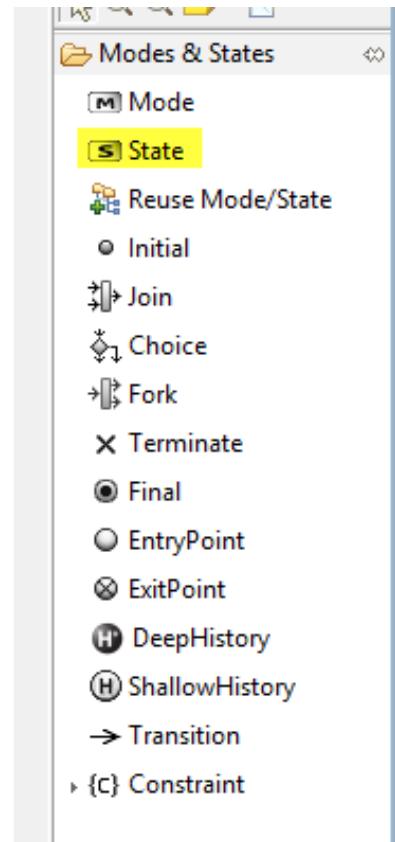
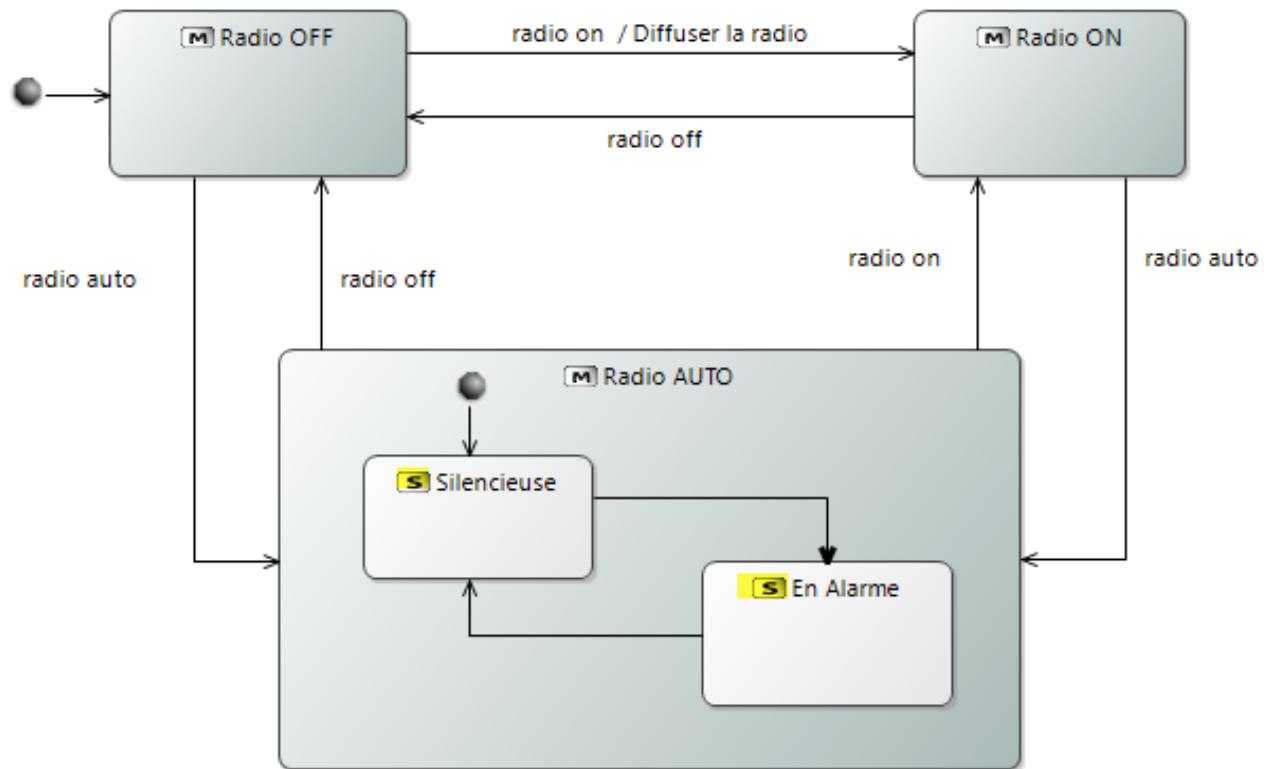
SA : Transition



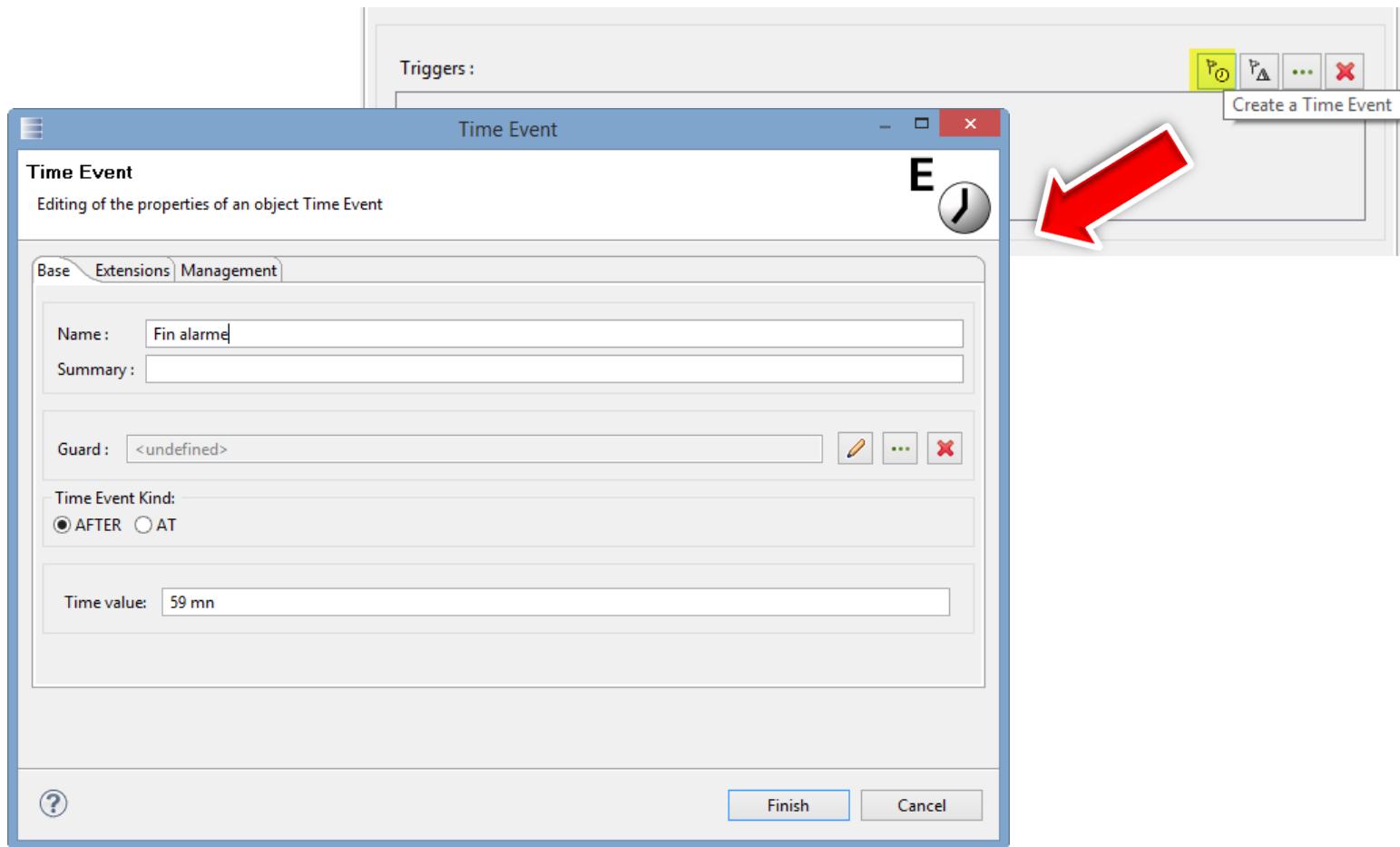
SA : S&M Diagram (suite)



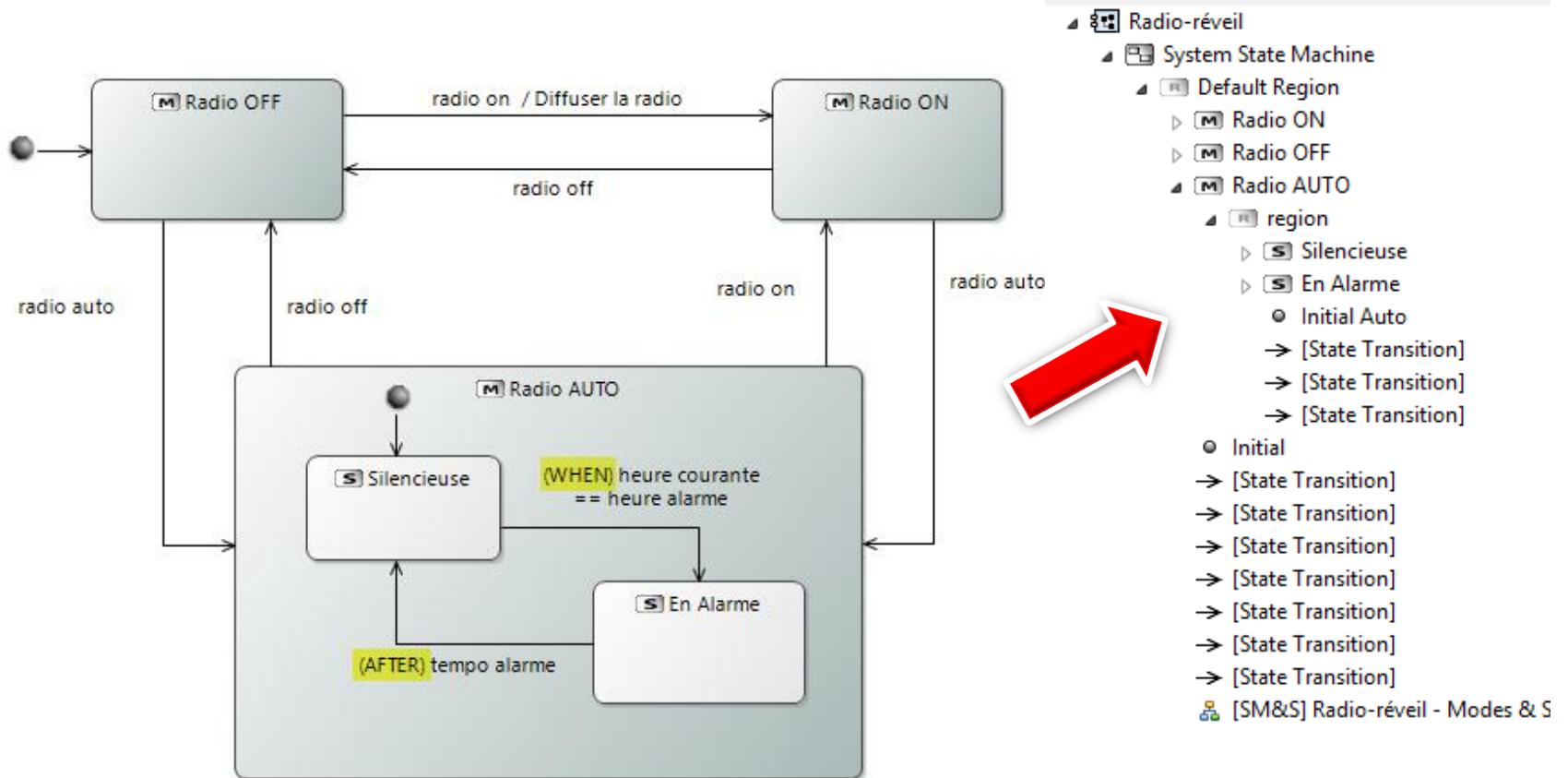
SA : Sous états



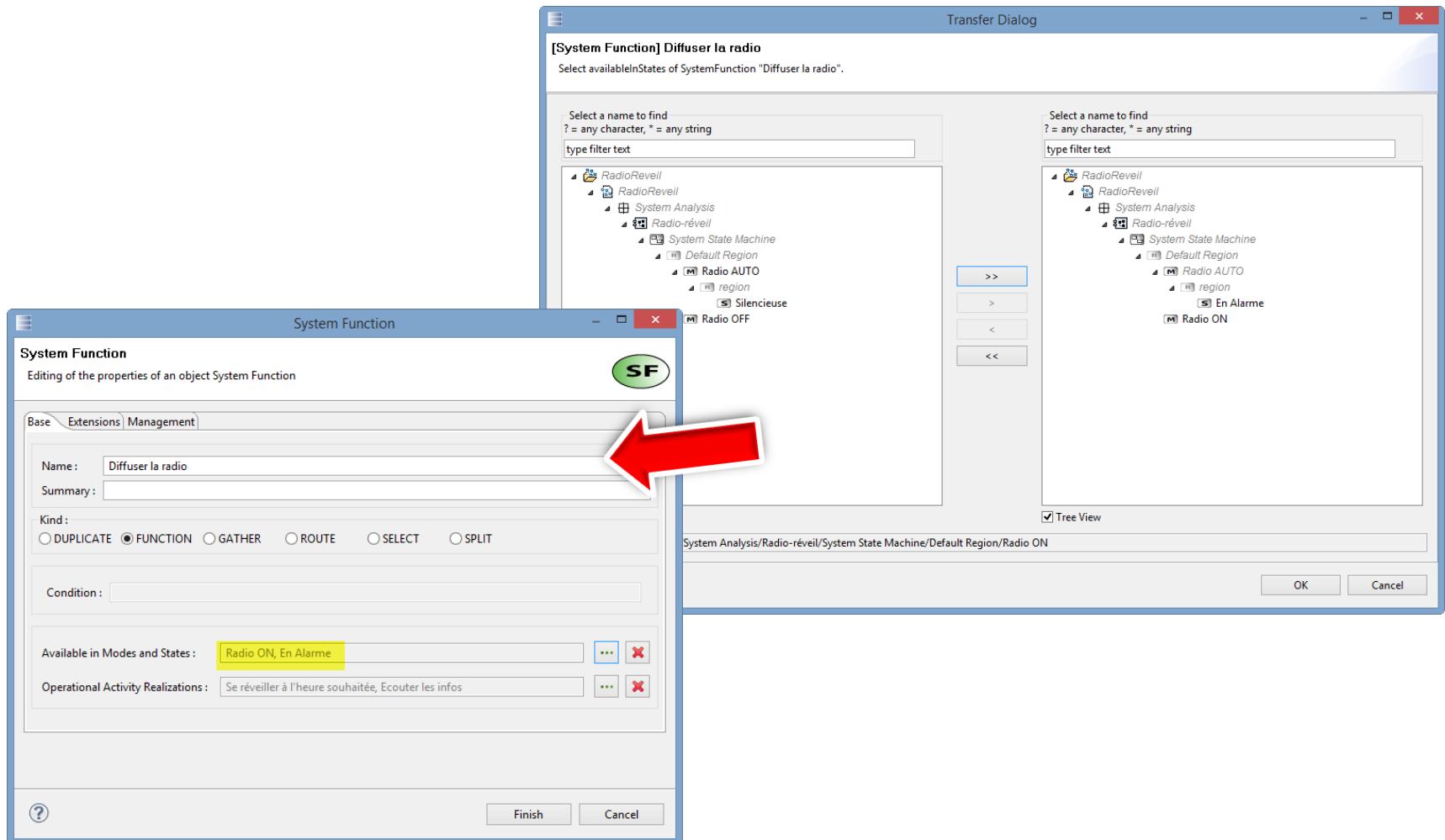
SA : Time Event



SA : S&M Diagram (fin)



SA : Liens entre Functions et States



SA : S&M Matrix



► Transition From Operational Activities

► Define Actors, Missions and Capabilities

► Refine System Functions, describe Functional Exchanges

► Allocate System Functions to System and Actors

► Define Interfaces and describe Interface Scenarios

▼ Transverse Modeling



[\[CDB\] Create a new Class Diagram](#)



[\[M&S\] Create a new Modes & States Machine](#)



[Create a new State & Mode / Functions matrix](#)

Describe the State

SA : S&M Matrix

Screenshot of a System State Machine and Function Matrix tool interface for a "RadioRéveil" system.

The matrix shows the relationship between system states and operational activities/functions.

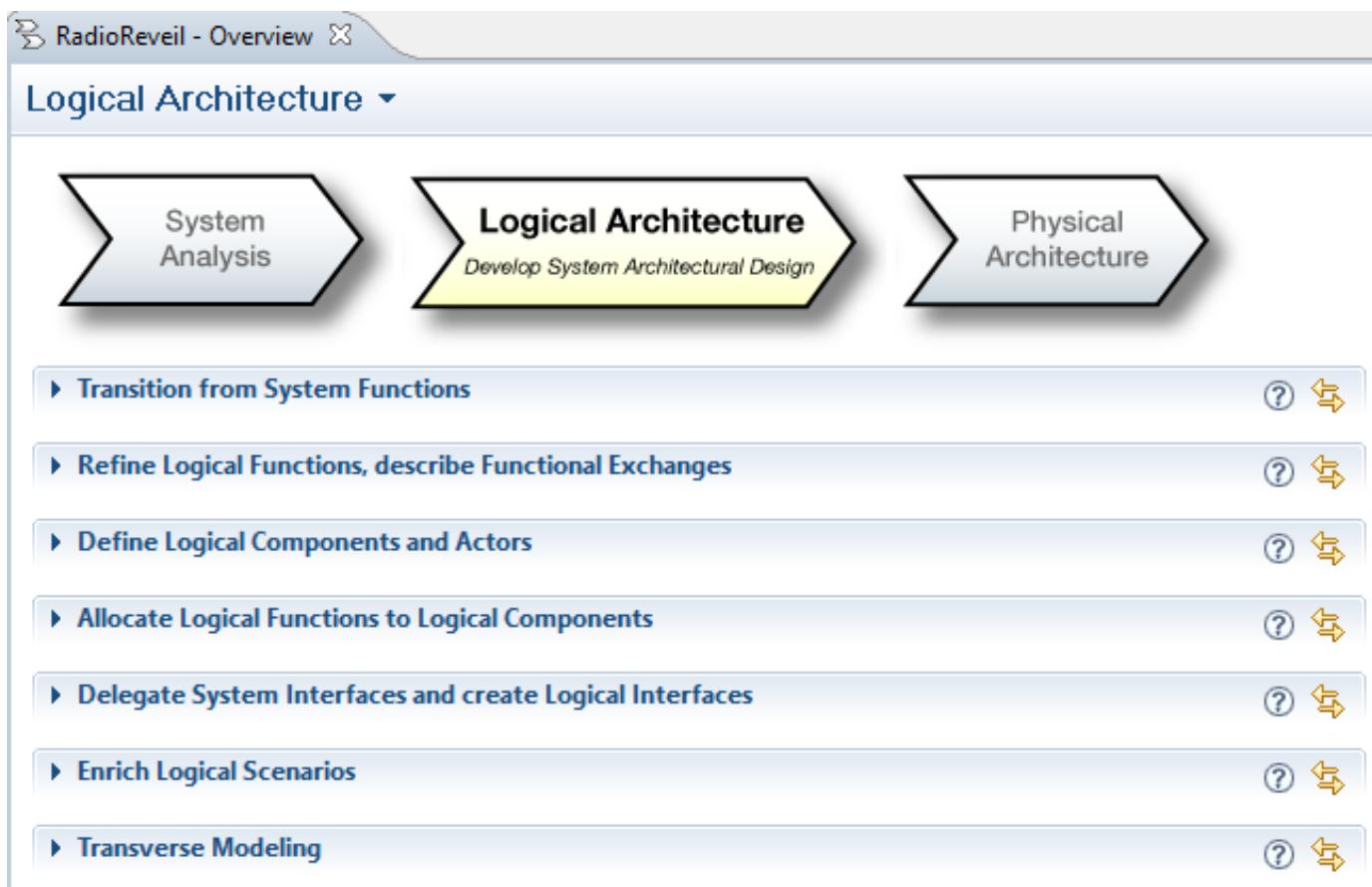
	Alarme	Recevoir les signaux radio	Gérer l'alarme	Gérer l'horloge	Afficher l'heure	Diffuser la radio
Radio-réveil						
System State Machine						
Radio ON	X		X	X		X
Radio OFF			X	X	X	
Radio AUTO	X		X	X	X	
Silencieuse						
En Alarme		X				X

Below the matrix, details for the "Radio ON" state are shown:

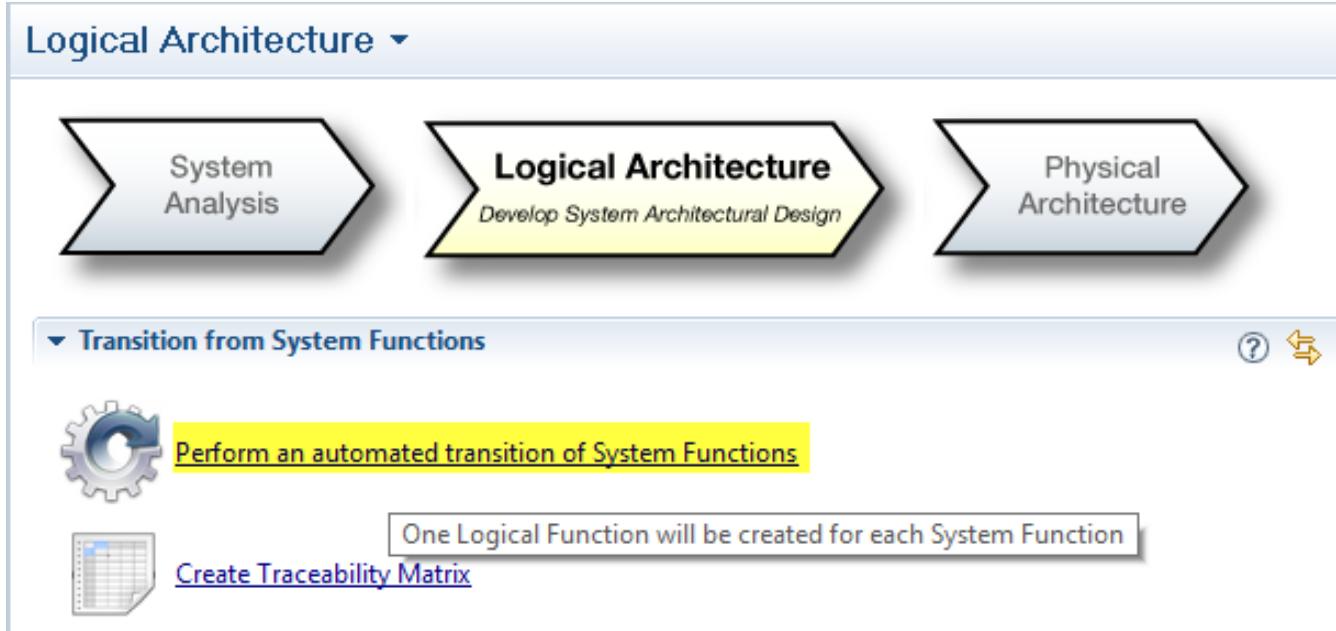
- Name: Radio ON
- Summary: (empty)
- State Realizations: <undefined>
- Do activity: <undefined>
- Entry: <undefined>
- Exit: <undefined>
- Operational Activities / Functions: Diffuser la radio, Recevoir les signaux radio, Gérer l'horloge, Afficher l'heure

A large red arrow points downwards from the matrix towards the "Operational Activities / Functions" field.

Architecture Logique (LA)



Transition SA -> LA



Transition SA -> LA

Differences Display

Kind	Type	T	Scope	Differences	Action
CPort	Element	1-1	Source	Presence of 'CP 2' [Component Port] into 'Utilisateur' [Logical Actor]	<input checked="" type="checkbox"/> Propagation
CPort	Element	1-1	Source	Presence of 'CP 1' [Component Port] into 'Emetteur Radio' [Logical Actor]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'heure d'alarme' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'heure courante' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'alarme' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'horodatage' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'horodatage' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'affichage horodatage' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'son radio' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'ondes radio' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'signaux radio' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'fréquence' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'volume' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'radio on / off' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FE	Element	1-1	Source	Presence of 'alarme on / off' [Functional Exchange] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 1' [Function Input Port] into 'Gérer l'horloge' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Gérer l'horloge' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 1' [Function Input Port] into 'Gérer l'alarme' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 2' [Function Input Port] into 'Gérer l'alarme' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 3' [Function Input Port] into 'Gérer l'alarme' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Gérer l'alarme' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Modifier l'heure courante' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Définir l'heure d'alarme' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 2' [Function Output Port] into 'Définir l'heure d'alarme' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 1' [Function Input Port] into 'Afficher l'heure' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Afficher l'heure' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 1' [Function Input Port] into 'Diffuser la radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 2' [Function Input Port] into 'Diffuser la radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 3' [Function Input Port] into 'Diffuser la radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Diffuser la radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Emettre les ondes radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 1' [Function Input Port] into 'Avoir l'heure' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 1' [Function Input Port] into 'Ecouter la radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Ecouter la radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 1' [Function Input Port] into 'Recevoir les signaux radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 2' [Function Input Port] into 'Recevoir les signaux radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FIP 3' [Function Input Port] into 'Recevoir les signaux radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Recevoir les signaux radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 1' [Function Output Port] into 'Régler la radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
FPort	Element	1-1	Source	Presence of 'FOP 2' [Function Output Port] into 'Régler la radio' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Gérer l'horloge' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Gérer l'alarme' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Modifier l'heure courante' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Définir l'heure d'alarme' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Afficher l'heure' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Diffuser la radio' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Emettre les ondes radio' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Avoir l'heure' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Ecouter la radio' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Recevoir les signaux radio' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation
Fct	Element	1-1	Source	Presence of 'Régler la radio' [Logical Function] into 'Root Logical Function' [Logical Function]	<input checked="" type="checkbox"/> Propagation

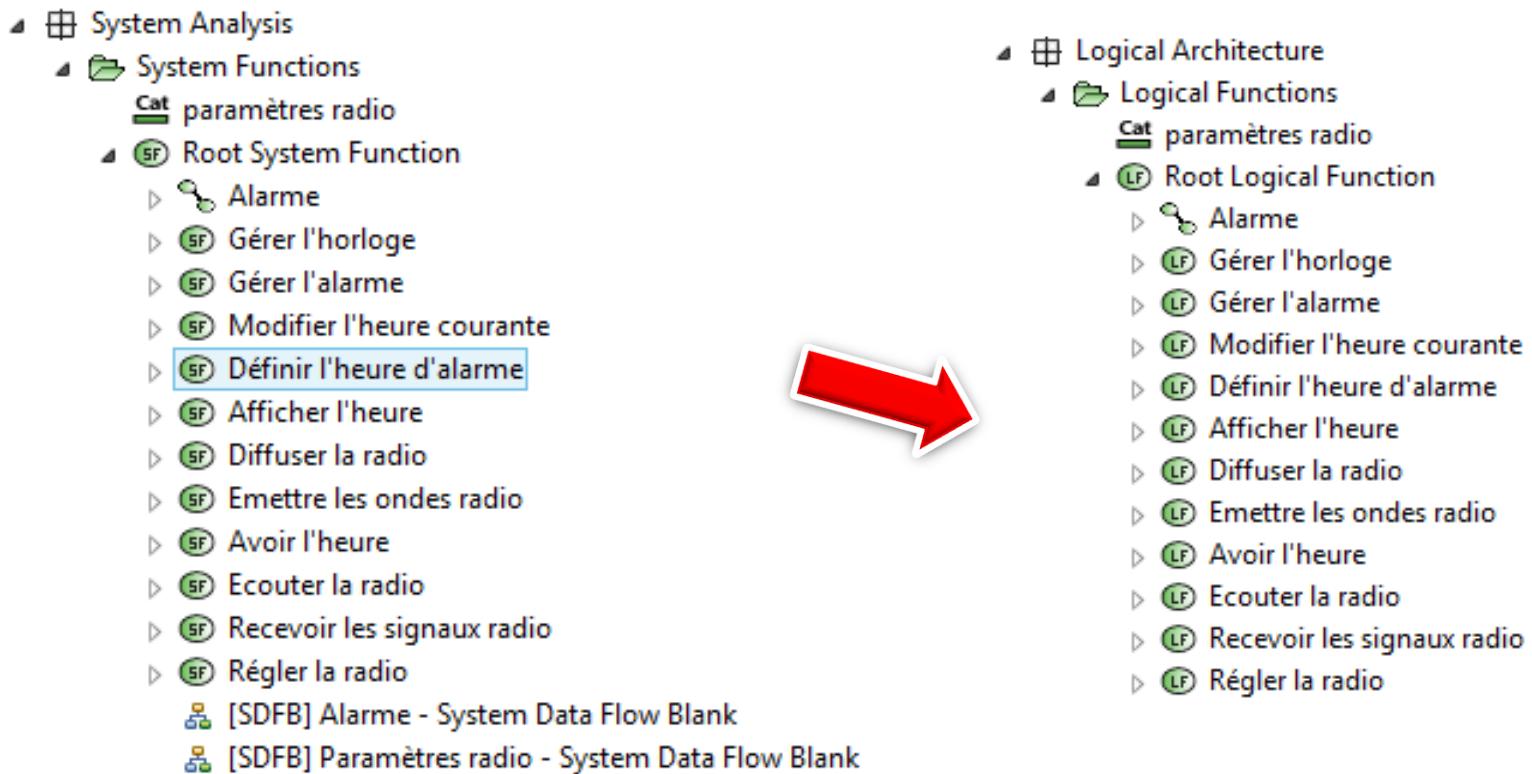
Save as CSV

Apply

Cancel



Transition SA -> LA



Transition SA -> LA



Transition SA -> LA

Differences Display

Kind	Type	T	Scope	Differences	Action
⇒ CE	Element	1-1	Source	Presence of 'air' [Component Exchange] into 'Logical Context' [Logical Context]	<input checked="" type="checkbox"/> Propagation
⇒ CE	Element	1-1	Source	Presence of 'IHM Radio-réveil' [Component Exchange] into 'Logical Context' [Logical Context]	<input checked="" type="checkbox"/> Propagation
⇒ CE	Element	1-1	Source	Presence of 'sorties radio-réveil' [Component Exchange] into 'Logical Context' [Logical Context]	<input checked="" type="checkbox"/> Propagation
⇒ FA	Element	1-1	Source	Presence of '[Component Functional Allocation] to Définir l'heure d'alarme' [Component Functional Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FA	Element	1-1	Source	Presence of '[Component Functional Allocation] to Modifier l'heure courante' [Component Functional Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FA	Element	1-1	Source	Presence of '[Component Functional Allocation] to Réglér la radio' [Component Functional Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FA	Element	1-1	Source	Presence of '[Component Functional Allocation] to Ecouter la radio' [Component Functional Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FA	Element	1-1	Source	Presence of '[Component Functional Allocation] to Avoir l'heure' [Component Functional Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FA	Element	1-1	Source	Presence of '[Component Functional Allocation] to Emettre les ondes radio' [Component Functional Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FEA	Element	1-1	Source	Presence of '[Component Exchange Functional Exchange Allocation] to ondes radio' [Component Exchange Functional Exchange Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FEA	Element	1-1	Source	Presence of '[Component Exchange Functional Exchange Allocation] to fréquence' [Component Exchange Functional Exchange Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FEA	Element	1-1	Source	Presence of '[Component Exchange Functional Exchange Allocation] to heure d'alarme' [Component Exchange Functional Exchange Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FEA	Element	1-1	Source	Presence of '[Component Exchange Functional Exchange Allocation] to volume' [Component Exchange Functional Exchange Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FEA	Element	1-1	Source	Presence of '[Component Exchange Functional Exchange Allocation] to heure courante' [Component Exchange Functional Exchange Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FEA	Element	1-1	Source	Presence of '[Component Exchange Functional Exchange Allocation] to radio on / off' [Component Exchange Functional Exchange Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FEA	Element	1-1	Source	Presence of '[Component Exchange Functional Exchange Allocation] to alarme on / off' [Component Exchange Functional Exchange Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FEA	Element	1-1	Source	Presence of '[Component Exchange Functional Exchange Allocation] to affichage horodatage' [Component Exchange Functional Exchange Allocation]	<input checked="" type="checkbox"/> Propagation
⇒ FEA	Element	1-1	Source	Presence of '[Component Exchange Functional Exchange Allocation] to son radio' [Component Exchange Functional Exchange Allocation]	<input checked="" type="checkbox"/> Propagation
○ Iface	Reference	1-1	Source	Add element 'IHM Radio-réveil' [Interface] on 'CP 2' [Component Port] {providedInterfaces}	<input type="checkbox"/> Propagation
○ Iface	Reference	1-1	Source	Add element 'sorties radio-réveil' [Interface] on 'CP 3' [Component Port] {requiredInterfaces}	<input type="checkbox"/> Propagation
○ Iface	Reference	1-1	Source	Add element 'IHM Radio-réveil' [Interface] on 'CP 1' [Component Port] {requiredInterfaces}	<input type="checkbox"/> Propagation
○ Iface	Reference	1-1	Source	Add element 'sorties radio-réveil' [Interface] on 'CP 2' [Component Port] {providedInterfaces}	<input type="checkbox"/> Propagation

Save as CSV Apply Cancel



Transition SA -> LA

- ▲  System Analysis
 - ▷  System Functions
 - ▷  System Requirements
 - ▷  Capabilities
 - ▷  Interfaces
 - ▷  Data
 - ▲  System Context
 - ▷  air
 - ▷  IHM Radio-réveil
 - ▷  sorties radio-réveil
 - ▷  Radio-réveil
 - ▲  Actors
 - ▷  Utilisateur
 - ▷  Emetteur Radio
 - ▷  Missions



- ▲  Logical Architecture
 - ▷  Logical Functions
 - ▷  Capabilities
 - ▷  Interfaces
 - ▷  Data
 - ▲  Logical Context
 - ▷  air
 - ▷  IHM Radio-réveil
 - ▷  sorties radio-réveil
 - ▷  Logical System
 - ▲  Logical Actors
 - ▷  Utilisateur
 - ▷  Emetteur Radio



Clarity

Logical Architecture Blank

Logical Architecture ▾



The diagram illustrates a sequential process:

- System Analysis
- Logical Architecture** (highlighted in yellow)
- Physical Architecture

Logical Architecture (highlighted in yellow) is described as "Develop System Architectural Design".

Transition from System Functions

Refine Logical Functions, describe Functional Exchanges

Define Logical Components and Actors

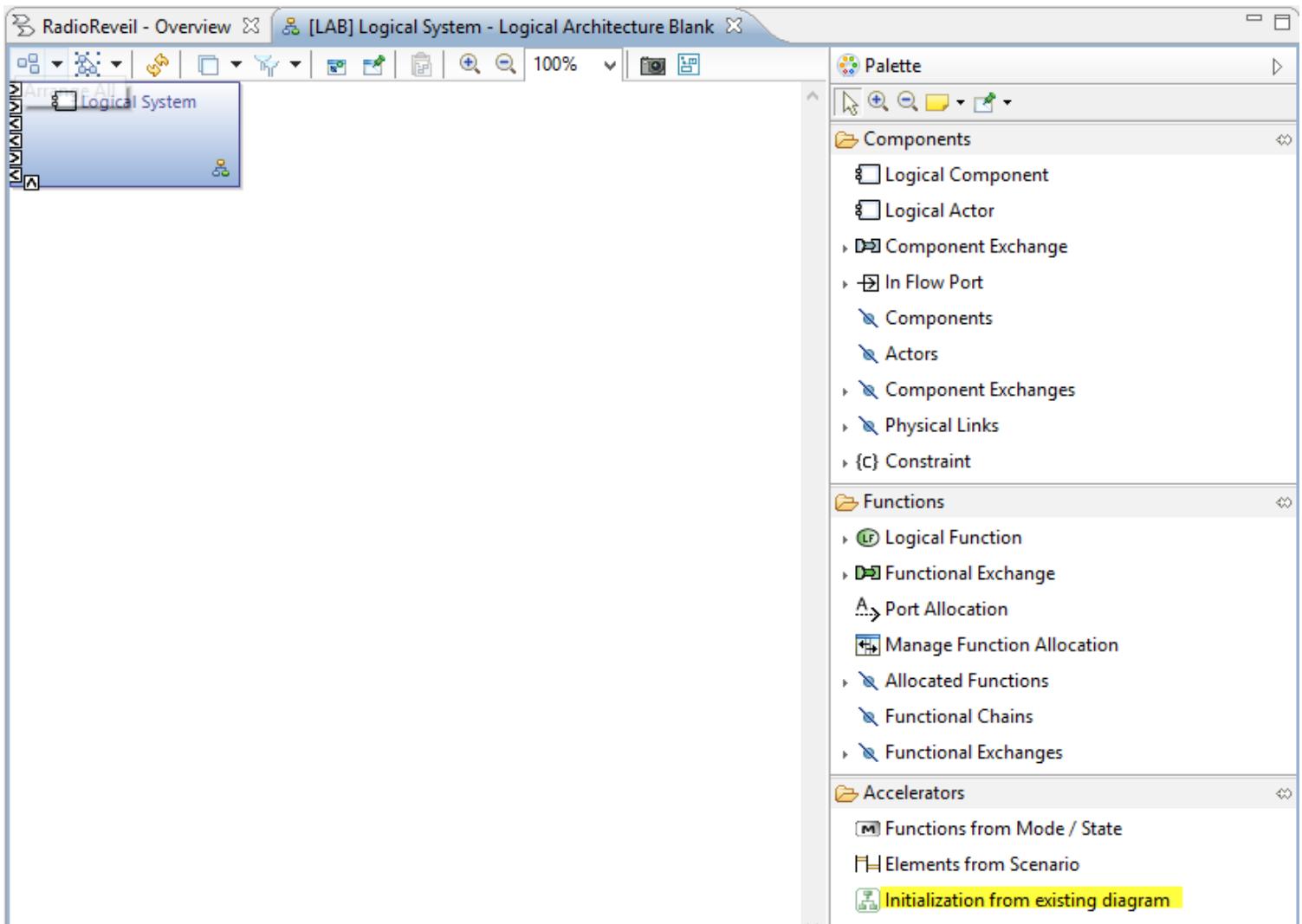
Allocate Logical Functions to Logical Components

[LAB] Create a new Logical Architecture diagram

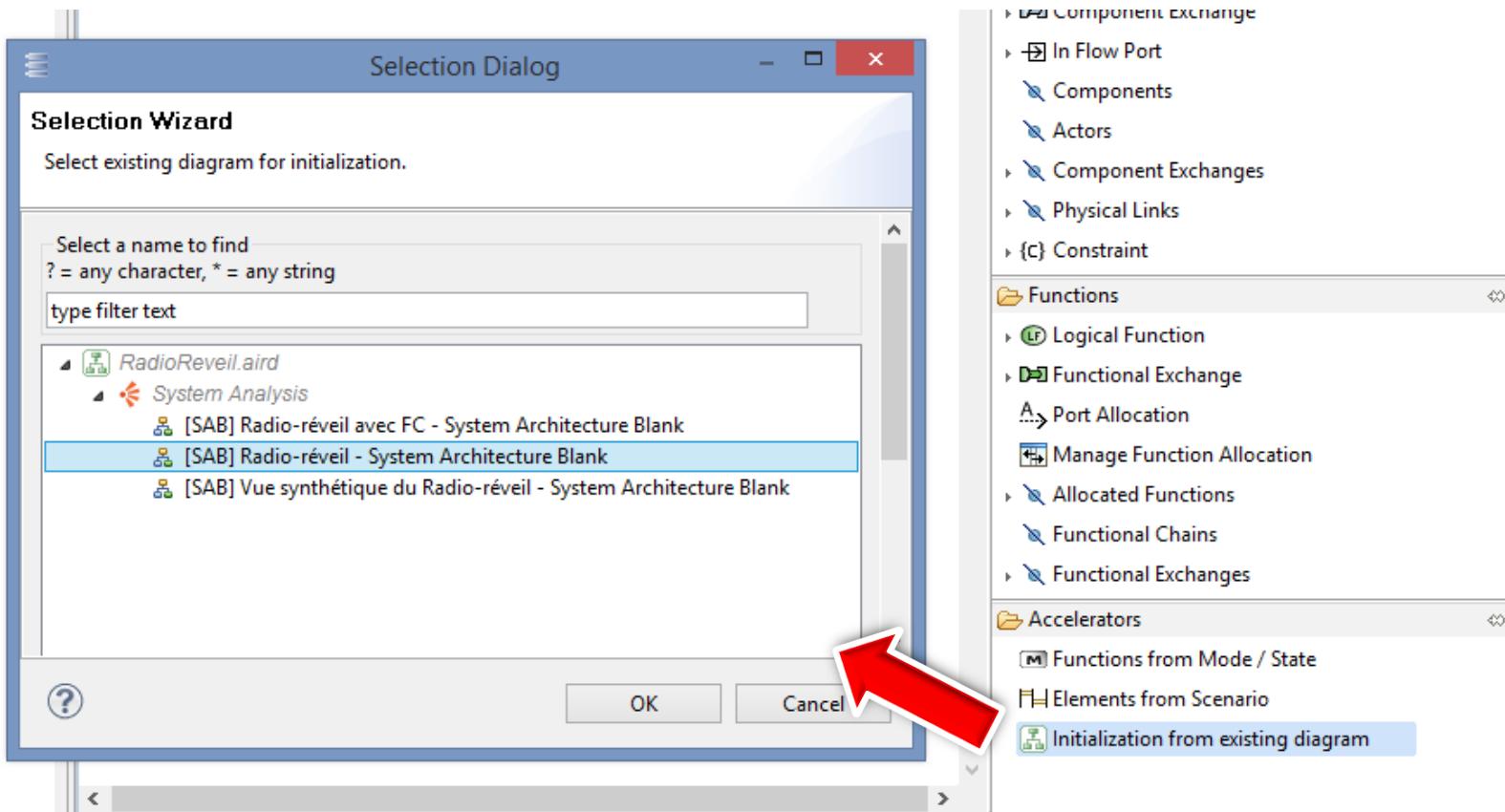
[ES] Create a new Exchange Scenario

Create a new allocation Logical Component / Logical Function Matrix

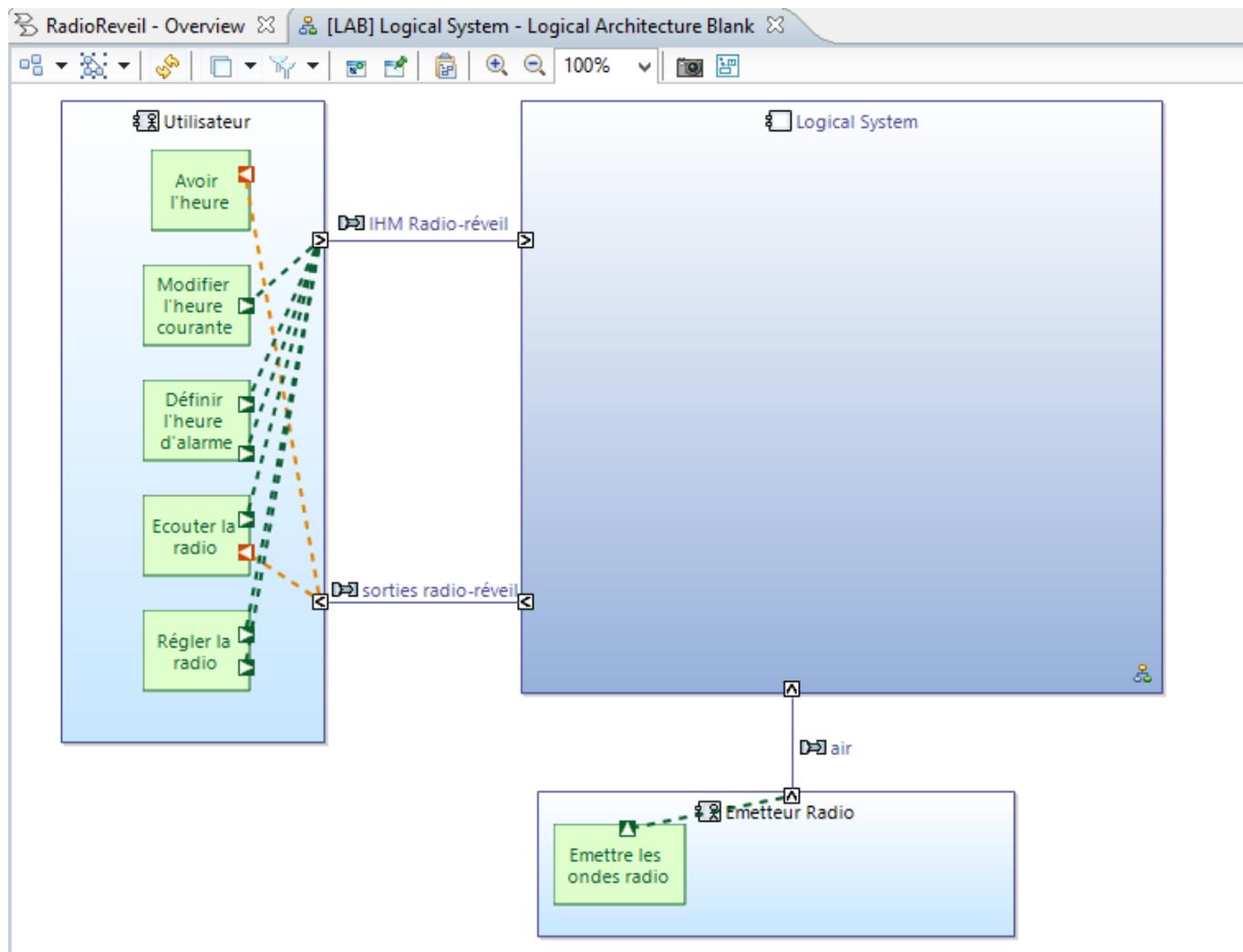
LAB



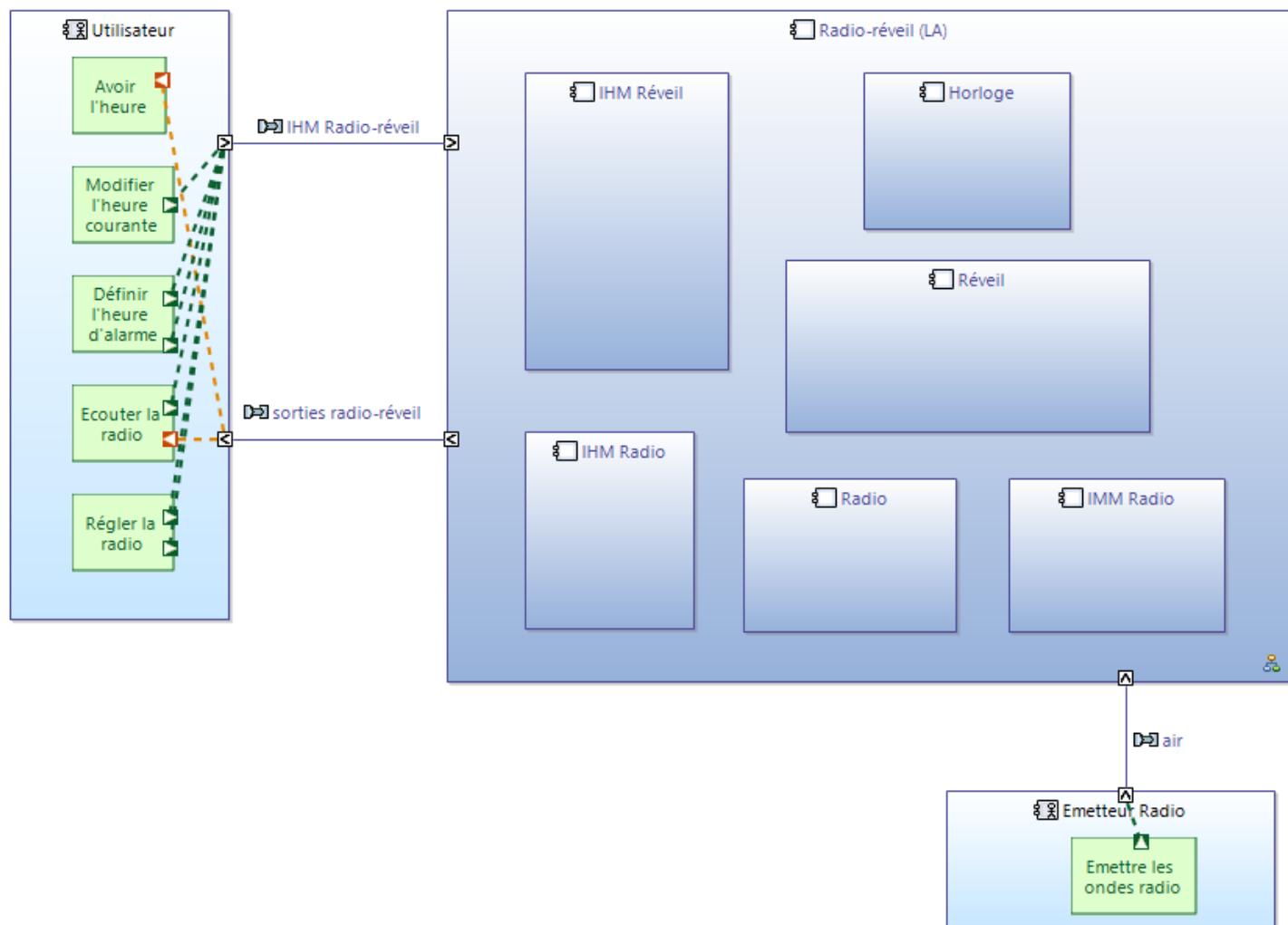
LAB : Accelerator



LAB



LAB : Composants Logiques



LFBD : Décomposition des Fonct. Logiques

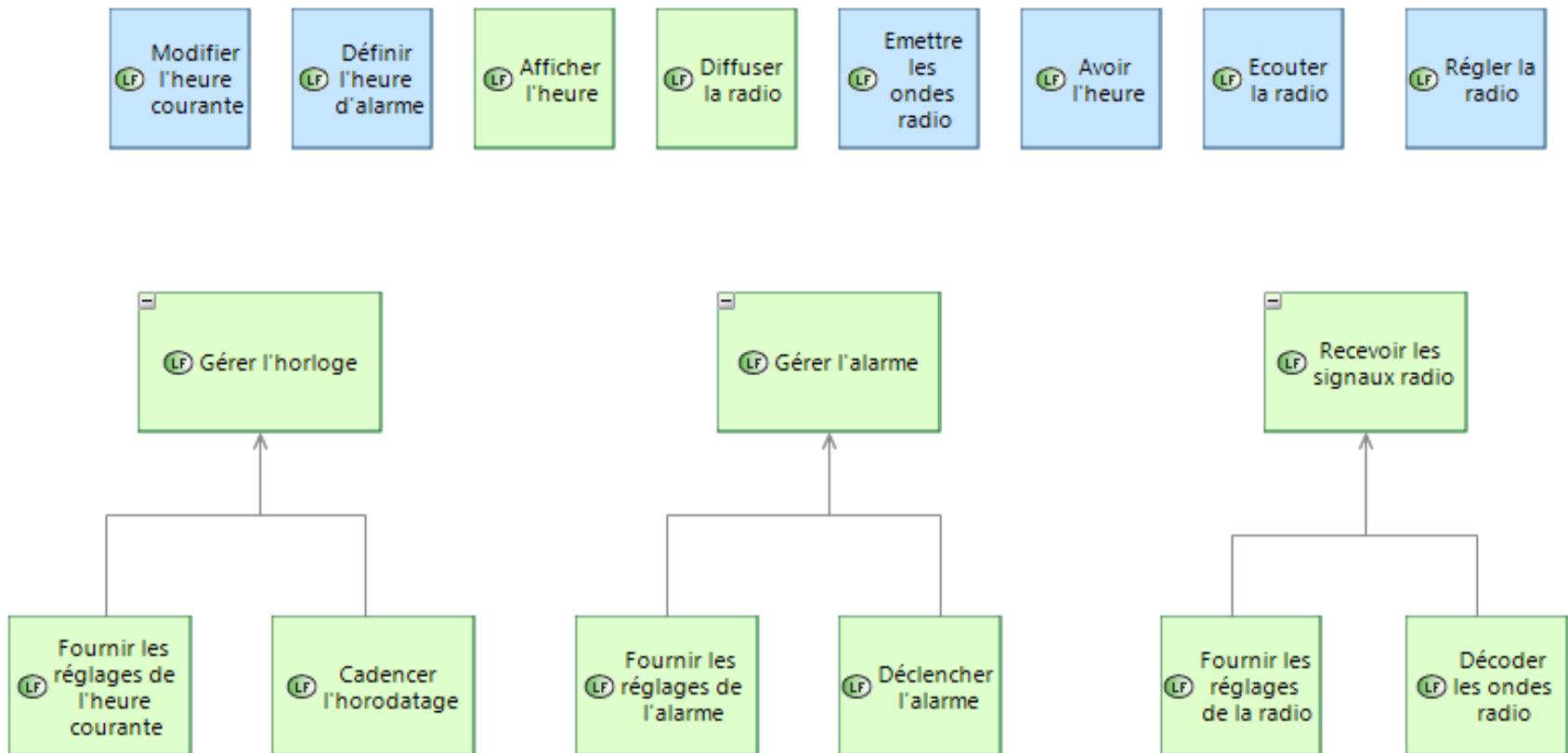
Logical Architecture ▾



System Analysis → **Logical Architecture** *Develop System Architectural Design* → Physical Architecture

- ▶ Transition from System Functions ? ⤵
- ▼ Refine Logical Functions, describe Functional Exchanges ? ⤵
- [LFBD] Create a new Functional Breakdown diagram 
- [LDFB] Create a new Functional Dataflow Blank diagram 
- [FS] Create a new Functional Scenario 

LFBD : Décomposition des Fonct. Logiques



LDFB : Data Flow au niveau Logique

Logical Architecture ▾



System Analysis **Logical Architecture**
Develop System Architectural Design Physical Architecture

▶ Transition from System Functions ⓘ ⏪

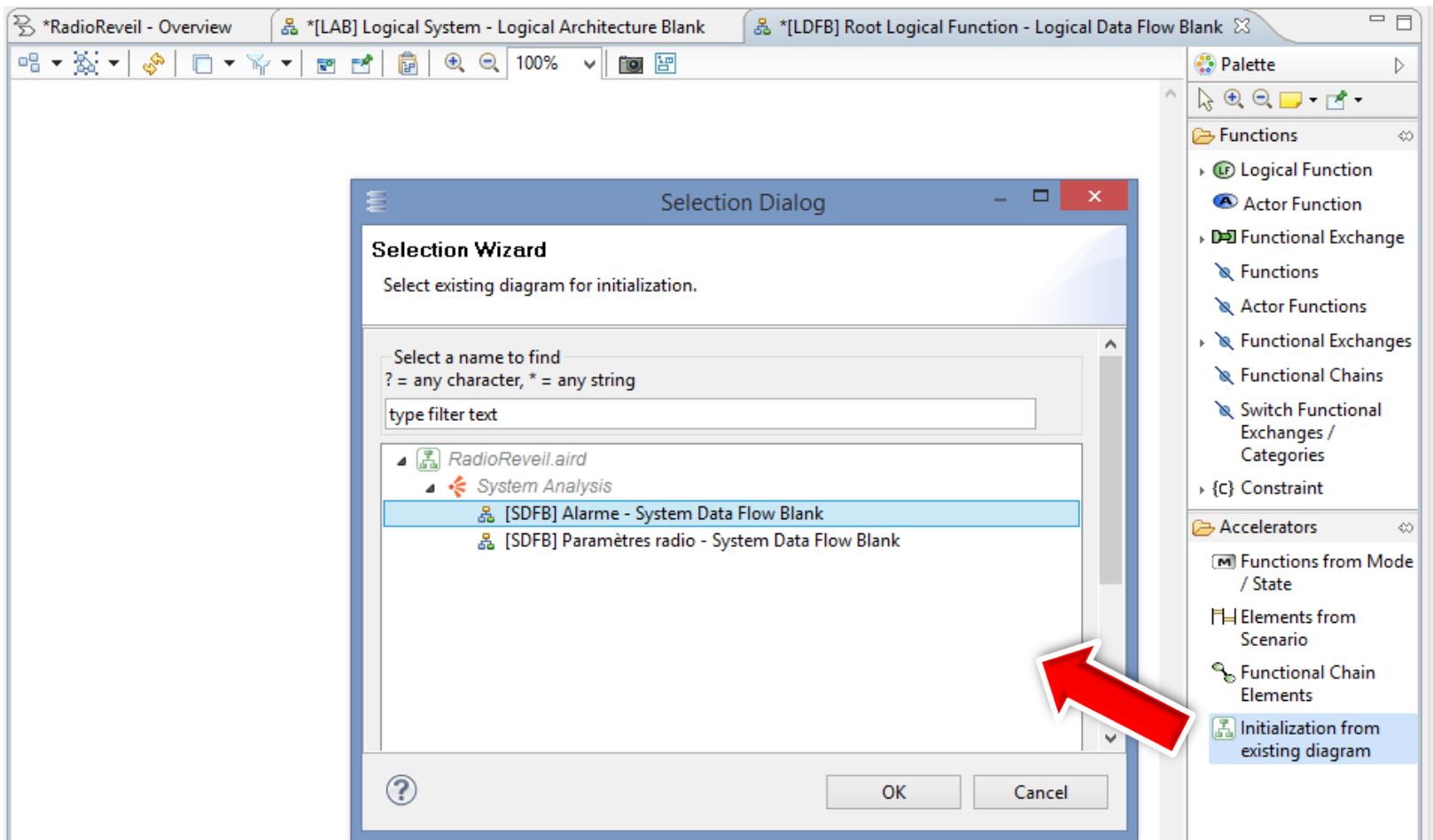
▼ Refine Logical Functions, describe Functional Exchanges ⓘ ⏪

[LFBD] Create a new Functional Breakdown diagram

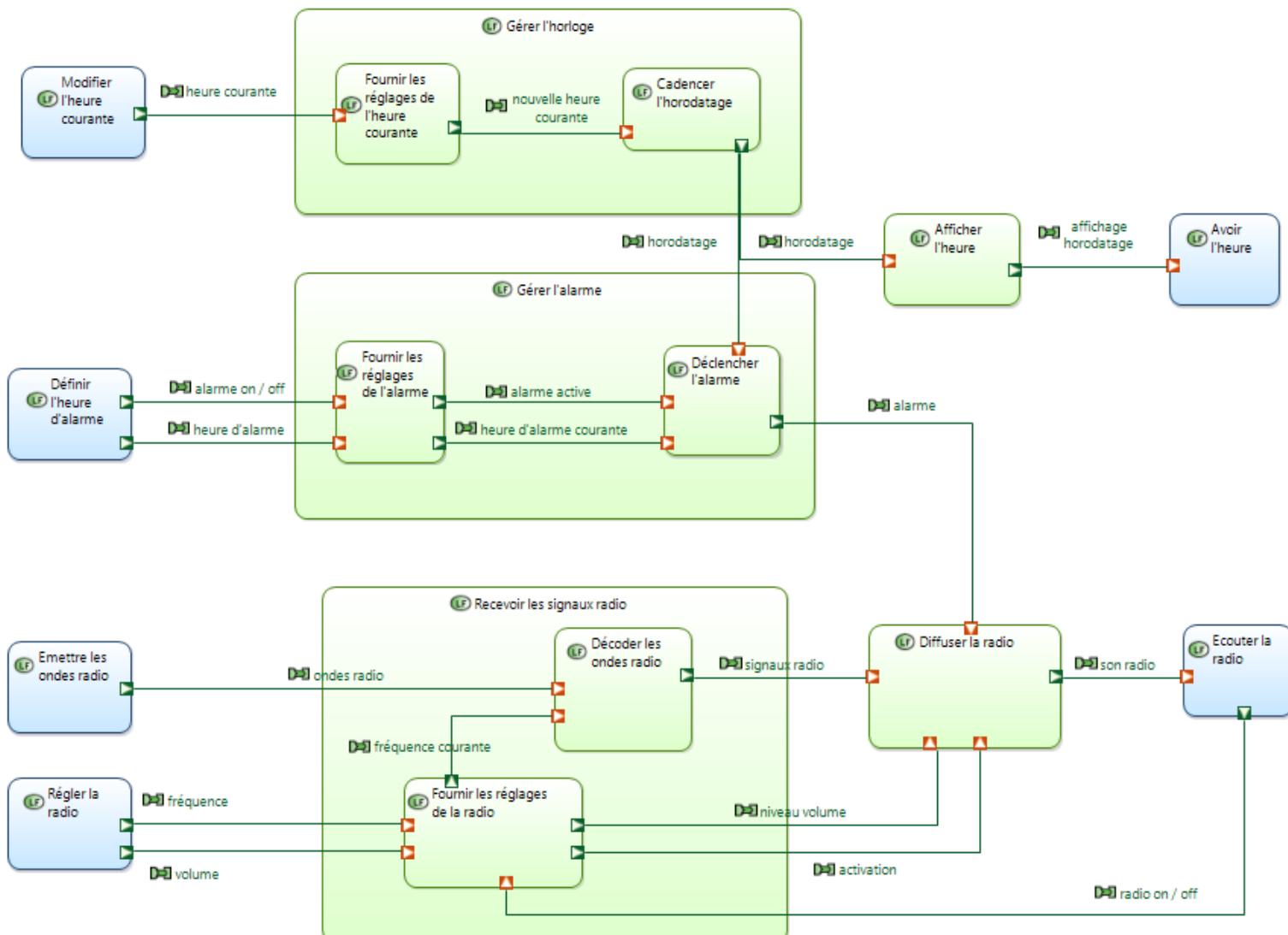
[LDFB] Create a new Functional Dataflow Blank diagram

[FS] Create a new Functional Scenario

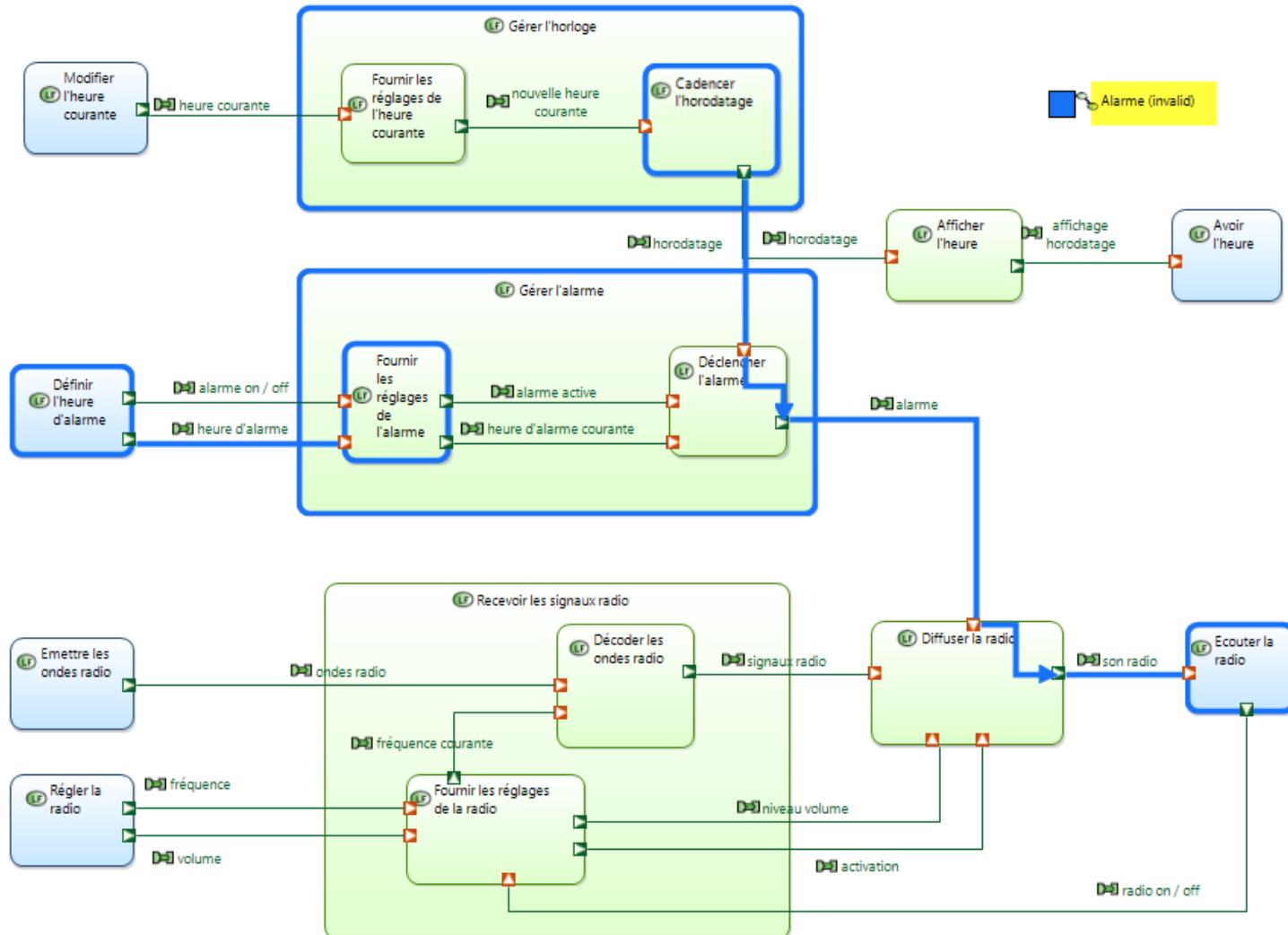
LDFB : Accelerator



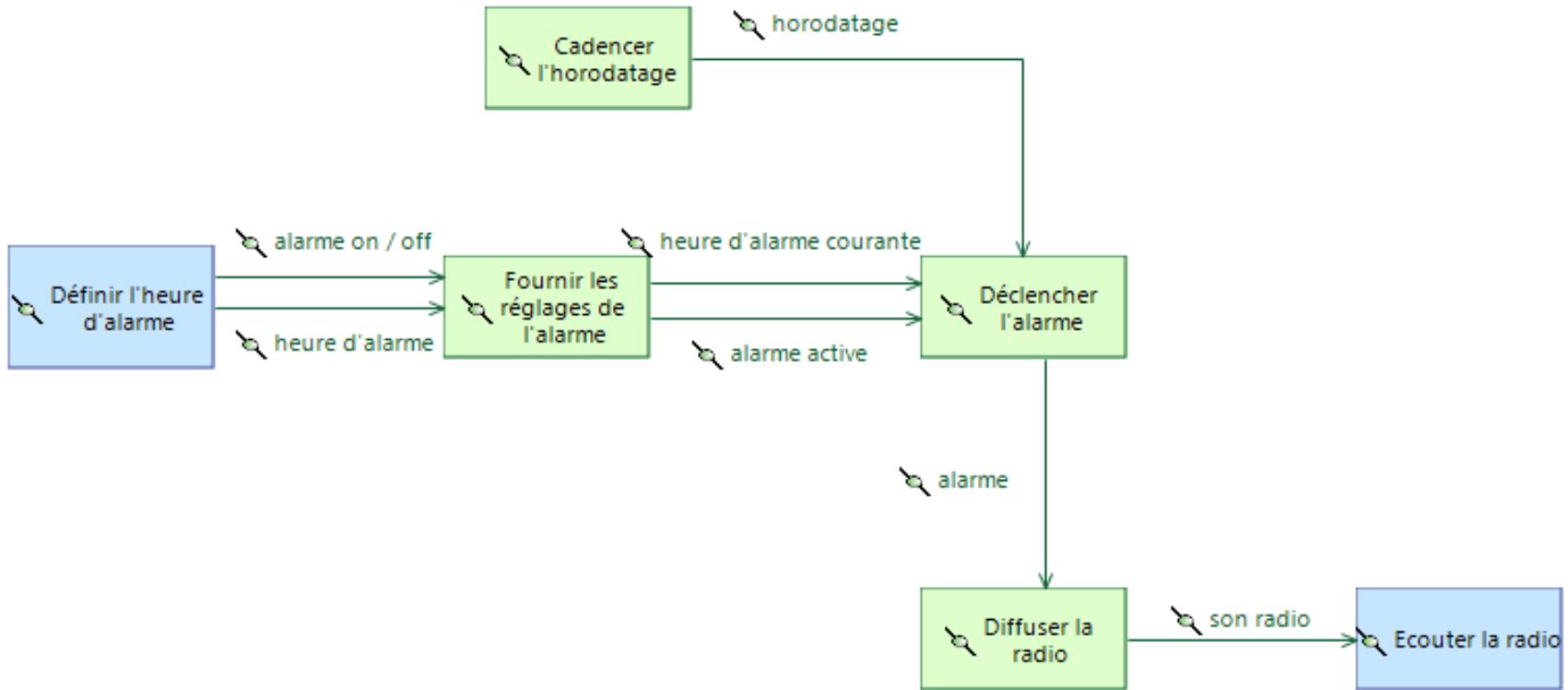
LDFB : après modification



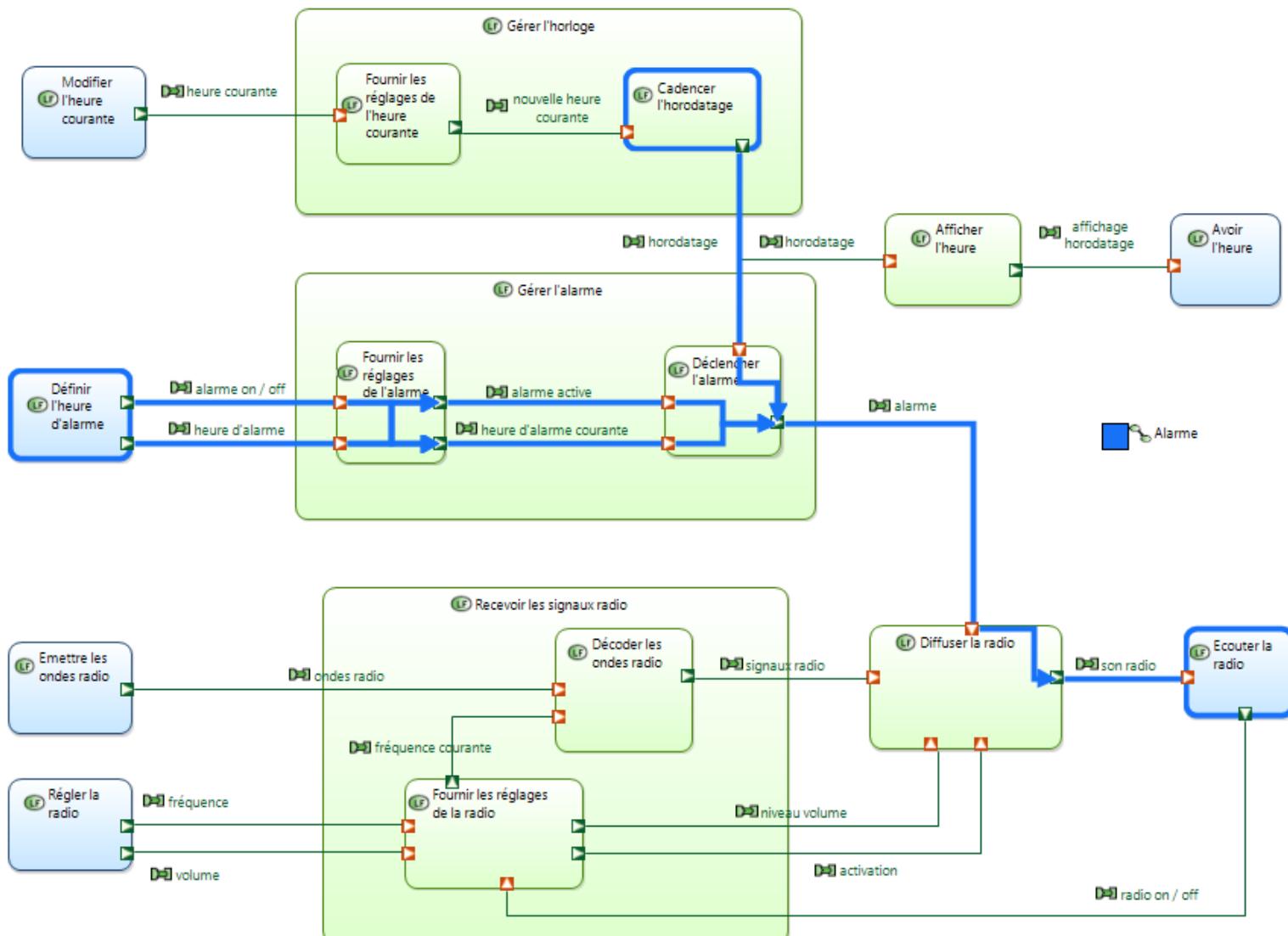
LDFB : FC invalide après modification



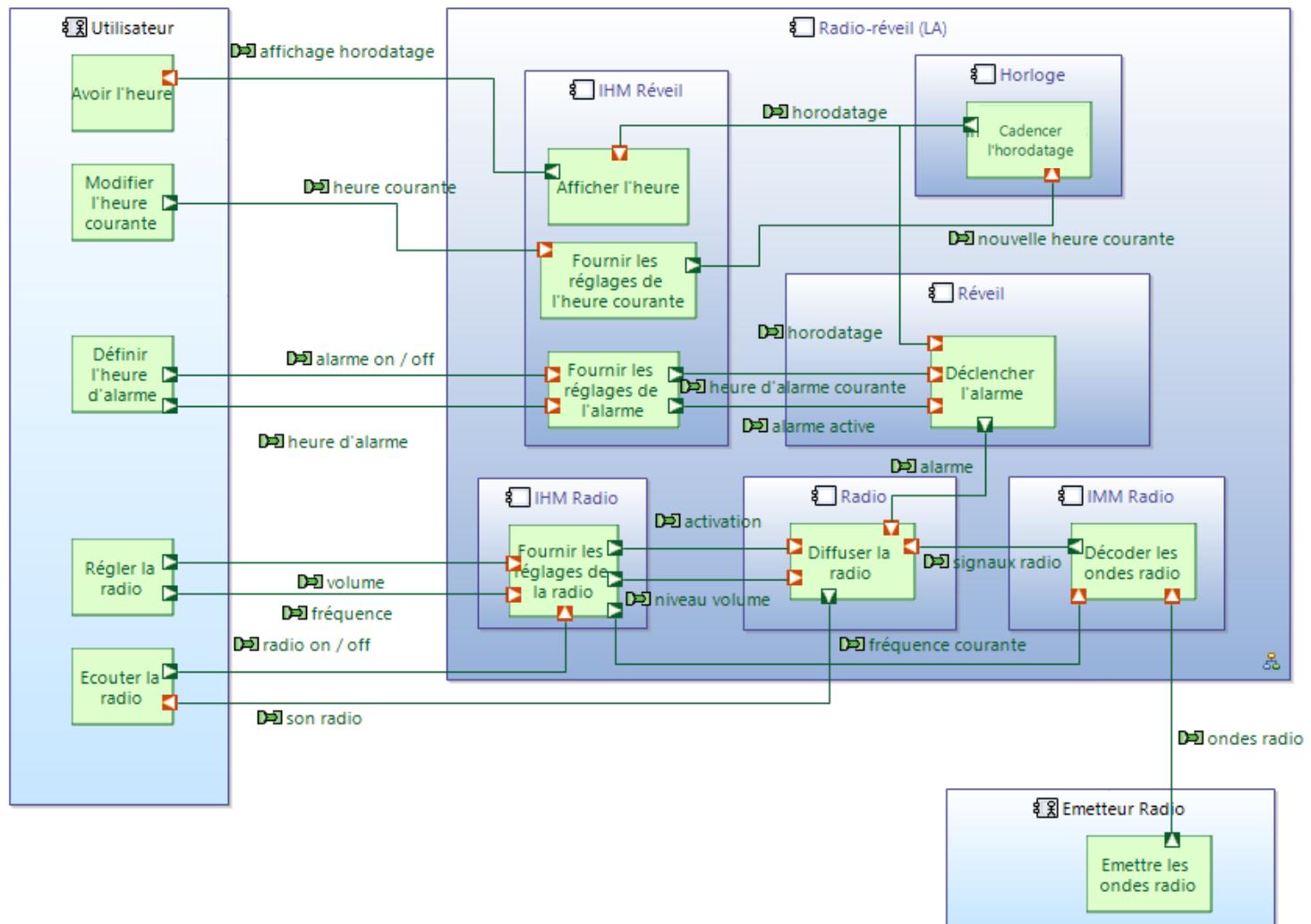
FCD : FC corrigée



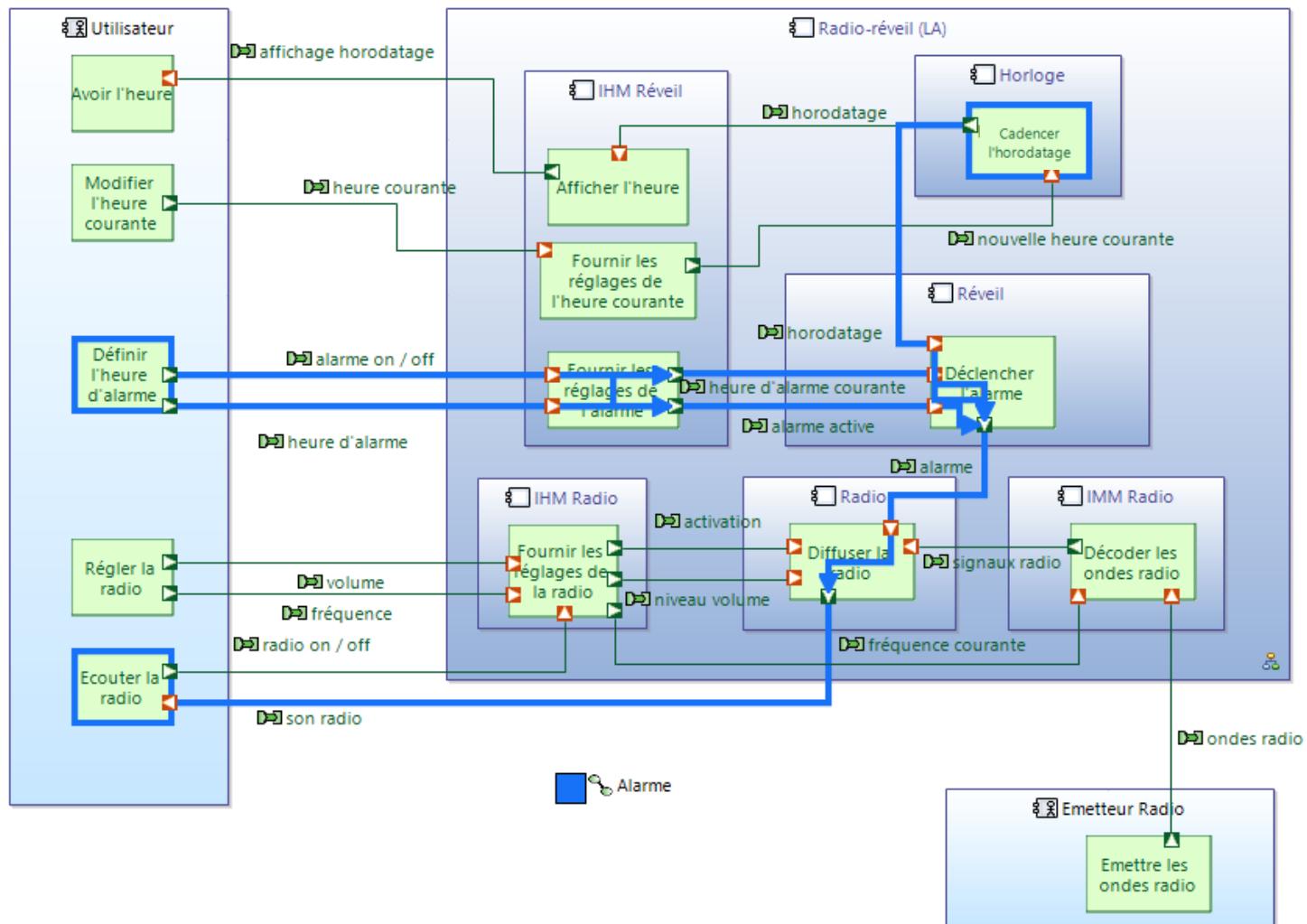
LDFB : FC valide après correction



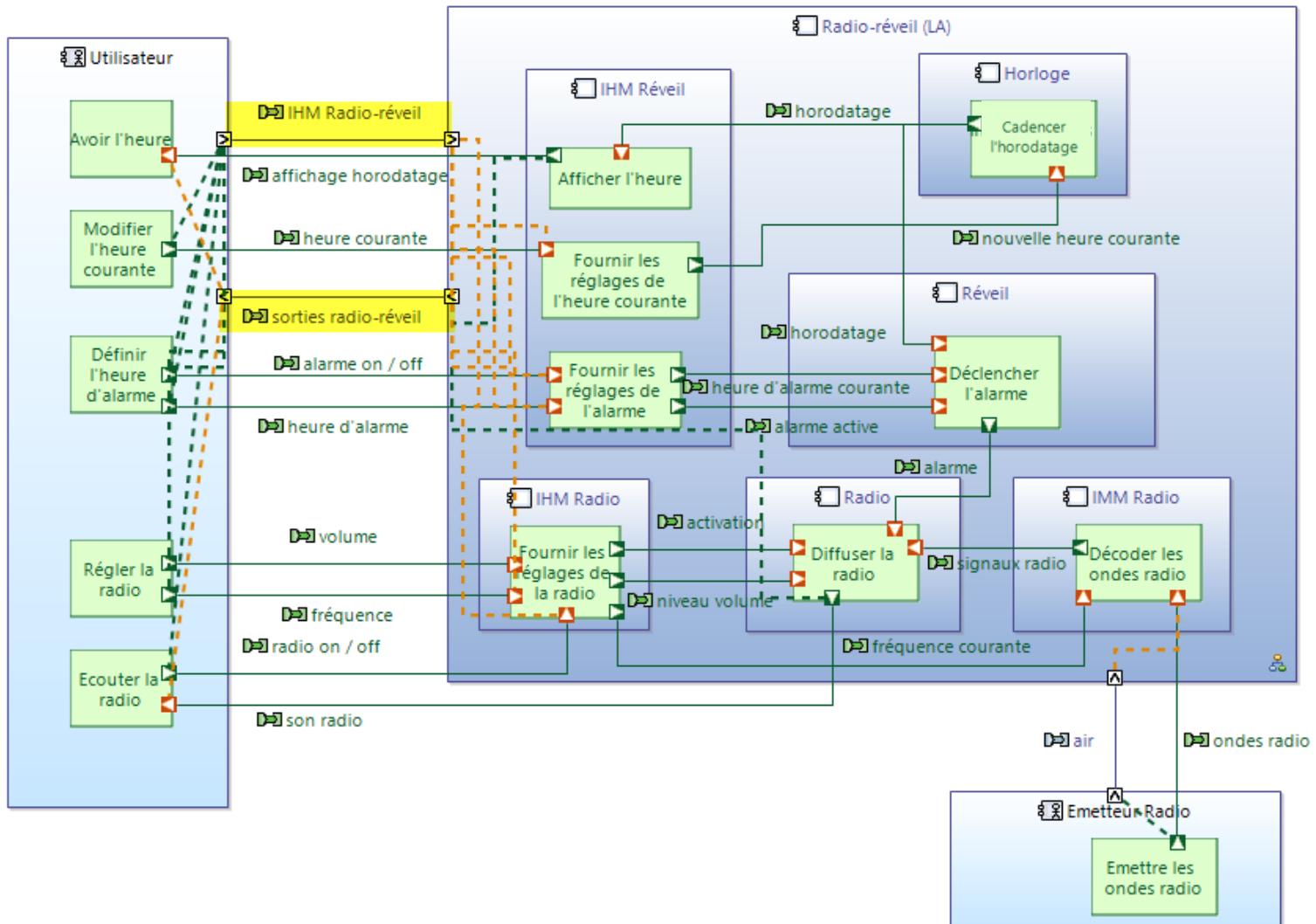
LAB : Allocation des Fonctions



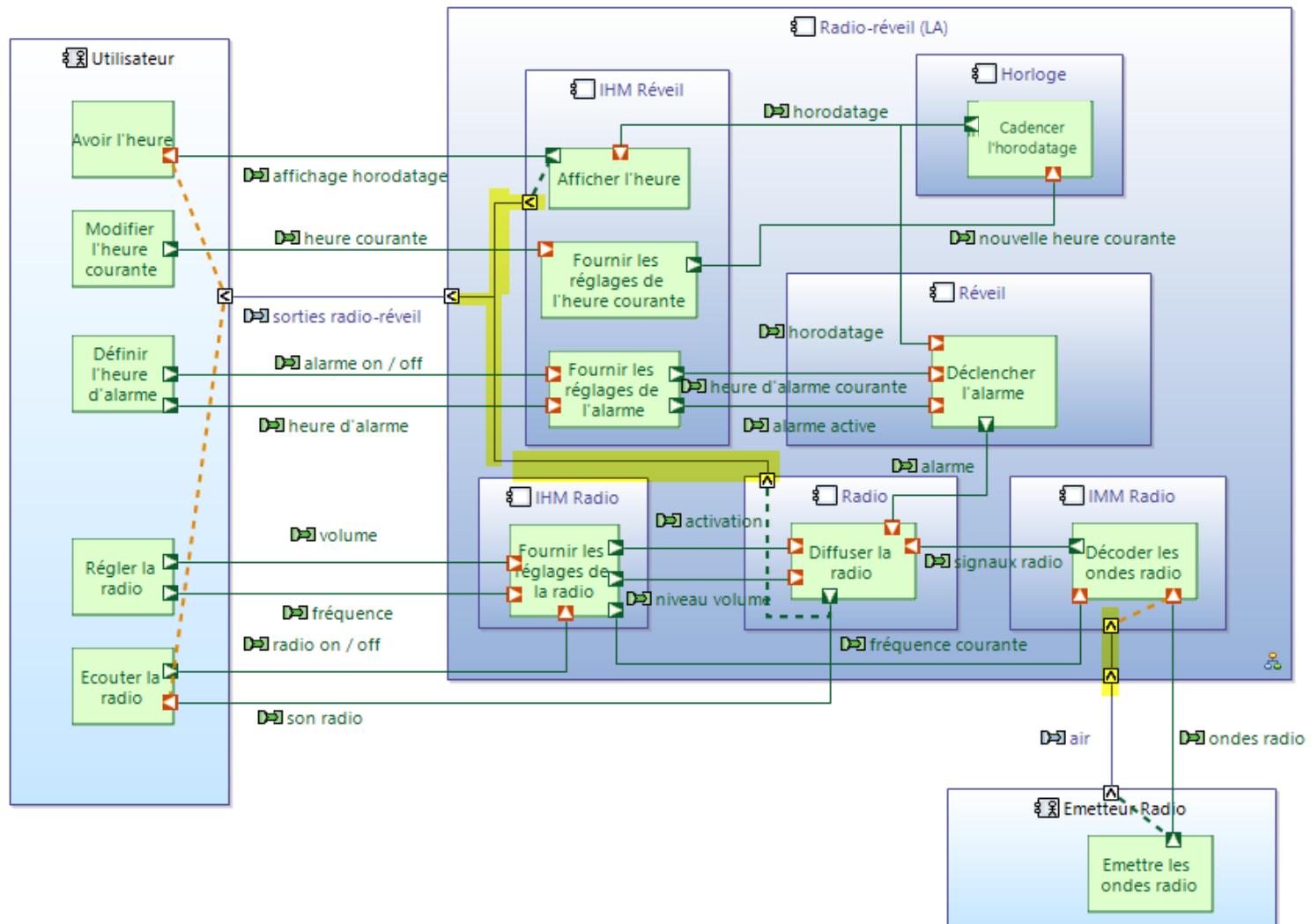
LAB : Allocation des Fonctions + FC



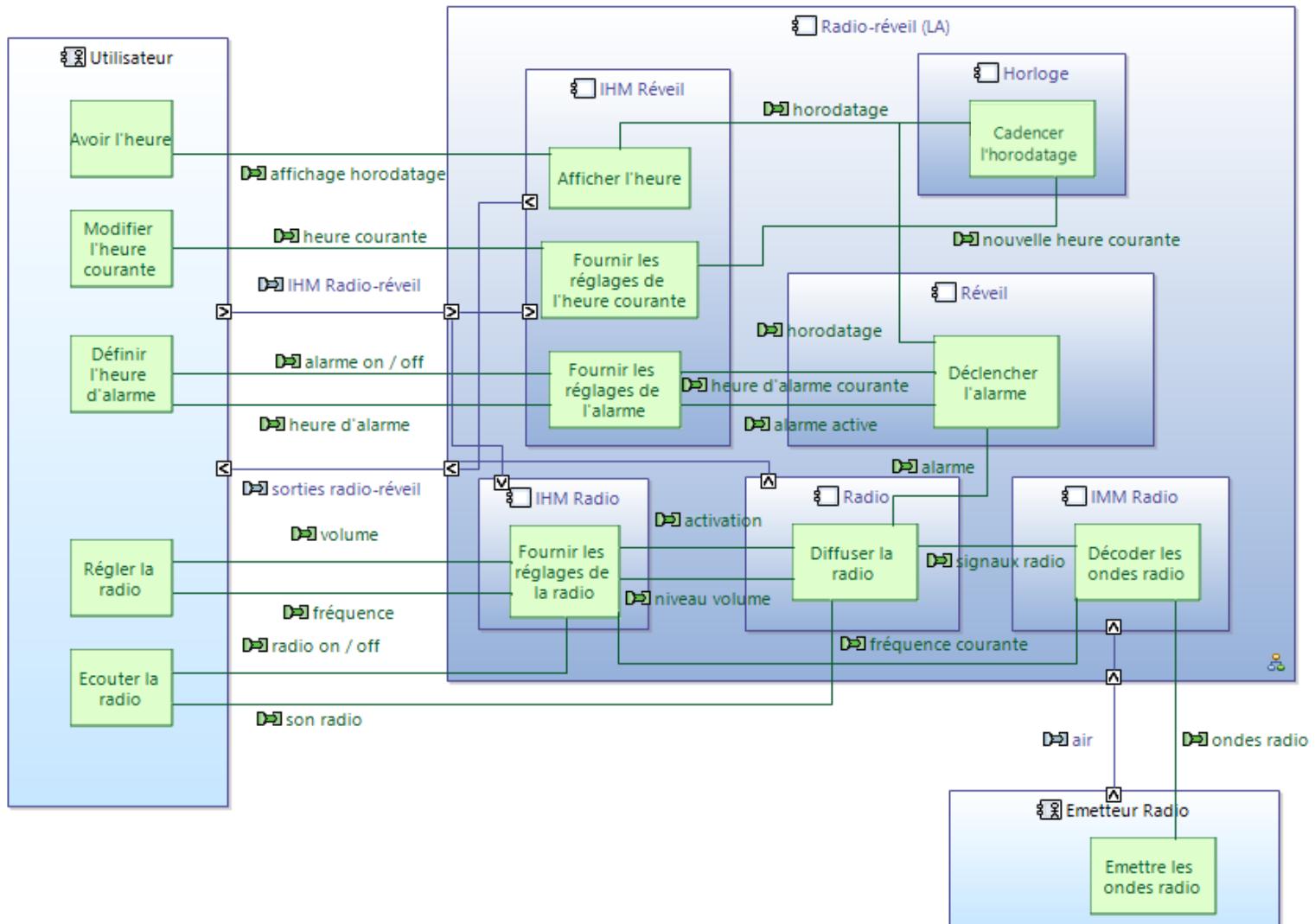
LAB : CE avec allocations (début)



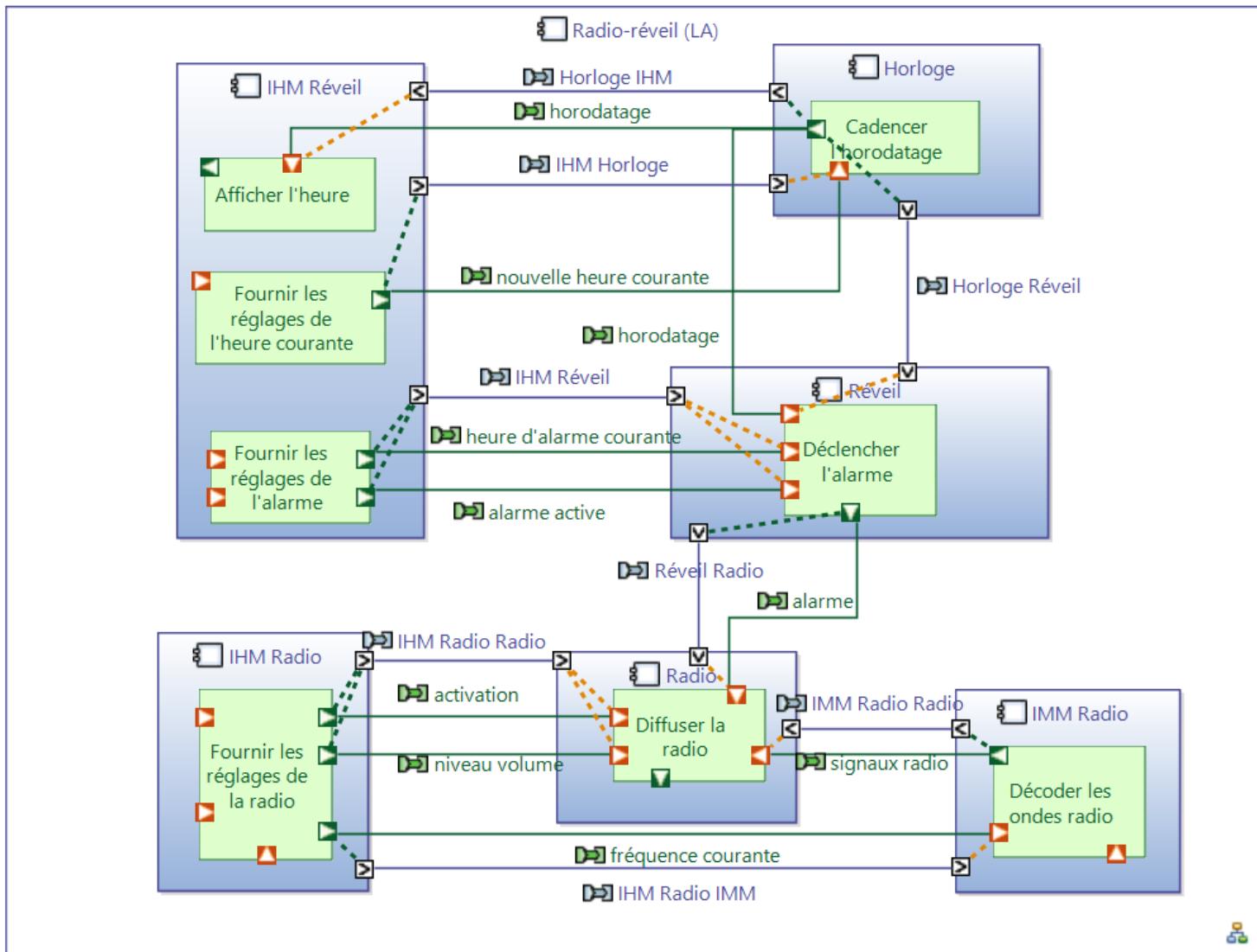
LAB : CE avec délégations (partiel)



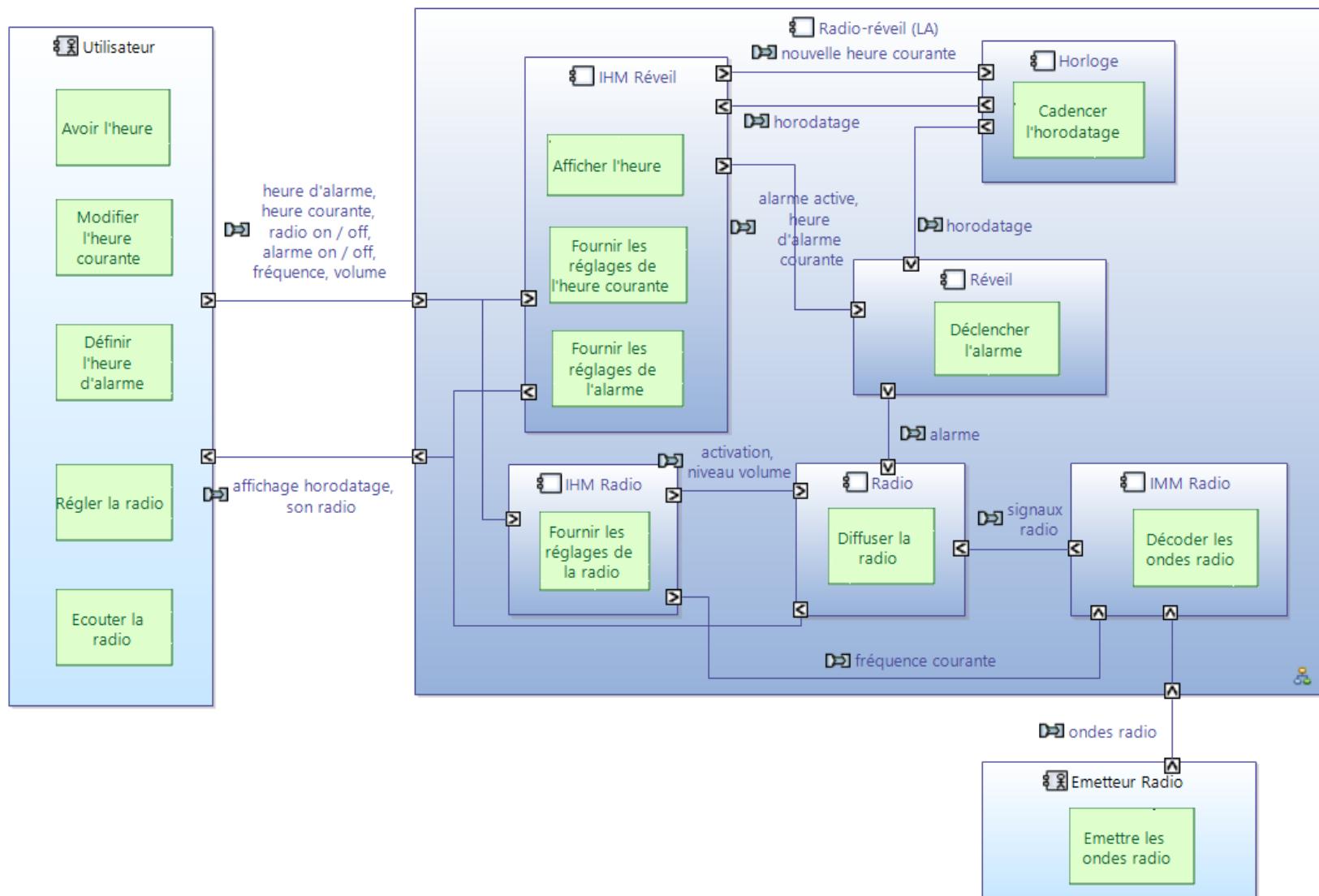
LAB : CE avec délégations (fin)



LAB : CE internes entre LCs



LAB simplifié



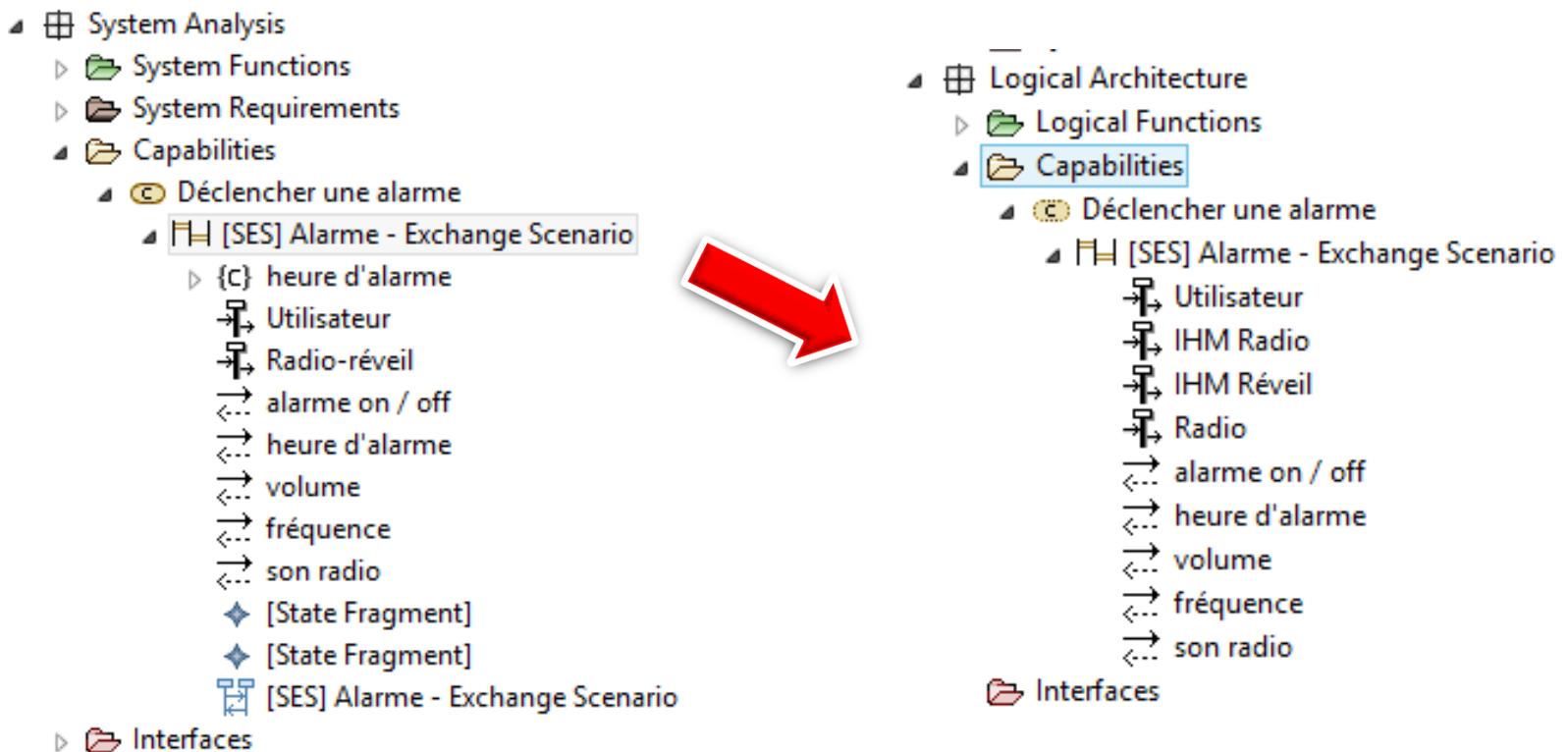
Scénario de niveau LA par transition

Diagram illustrating the creation of a Logical Exchange Scenario (LES) from a System Function (SF) using the Capella tool.

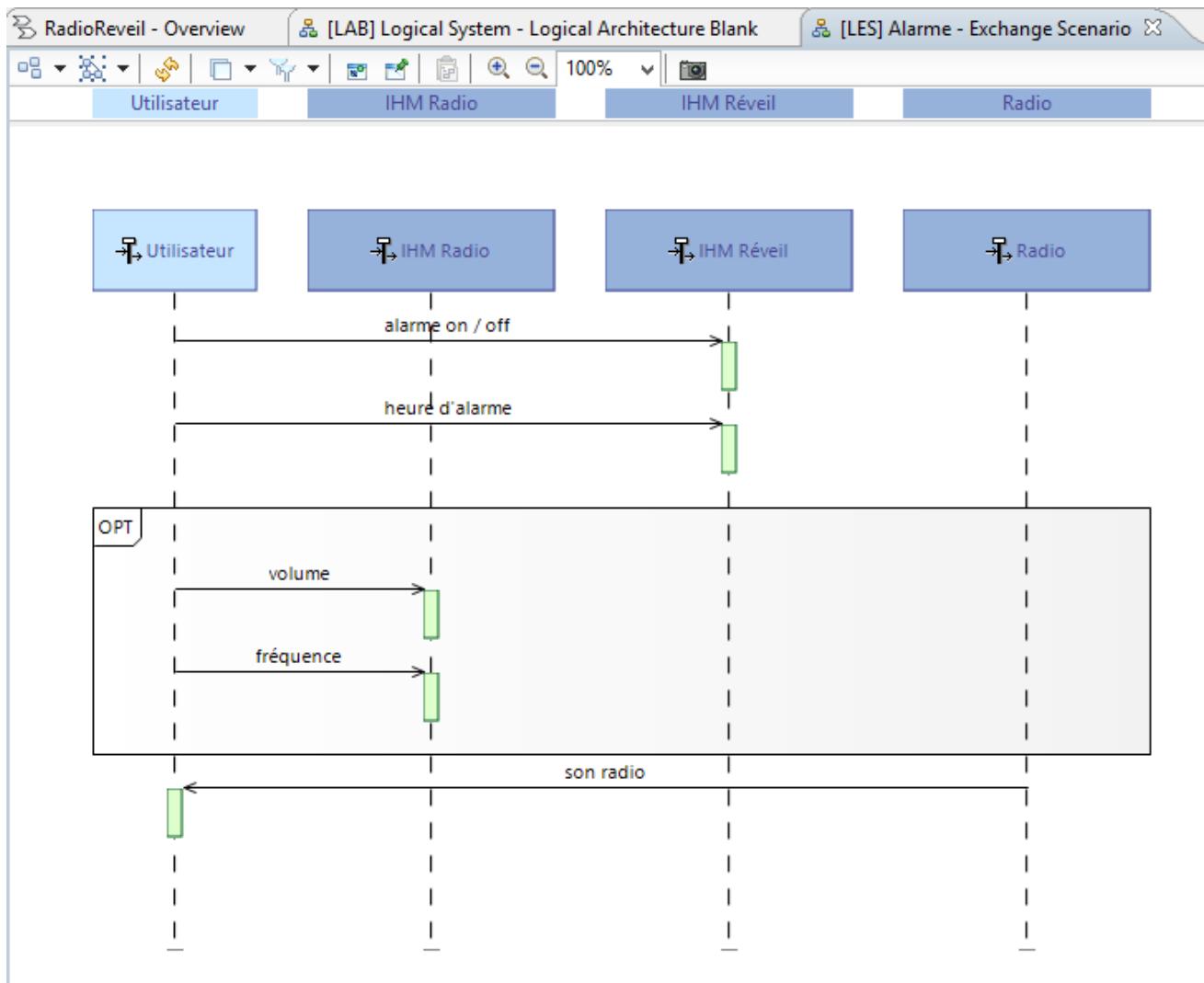
Left Panel (Model Tree):

- RadioRéveil
 - Operational Analysis
 - System Analysis
 - System Functions
 - System Requirements
 - Capabilities
 - Déclencher une alarme
 - [SES] Alarme - Exchange Scenario
 - heure d'alarme
 - Utilisateur
 - Radio-réveil
 - alarme on / off
 - heure d'alarme
 - volume
 - fréquence
 - son radio
 - [State Fragment]
 - [State Fragment]
 - Interfaces
 - Data
 - System Context
 - Radio-réveil
 - Actors
 - Missions
 - Radio Réveil System Functions - Operational
 - System Actors - Operational Actors/Operational
 - System State Machine and Function Mat
- Logical Architecture
 - Logical Functions
 - Capabilities
 - Interfaces
 - Data
- Logical Context
 - air
 - IHM Radio-réveil

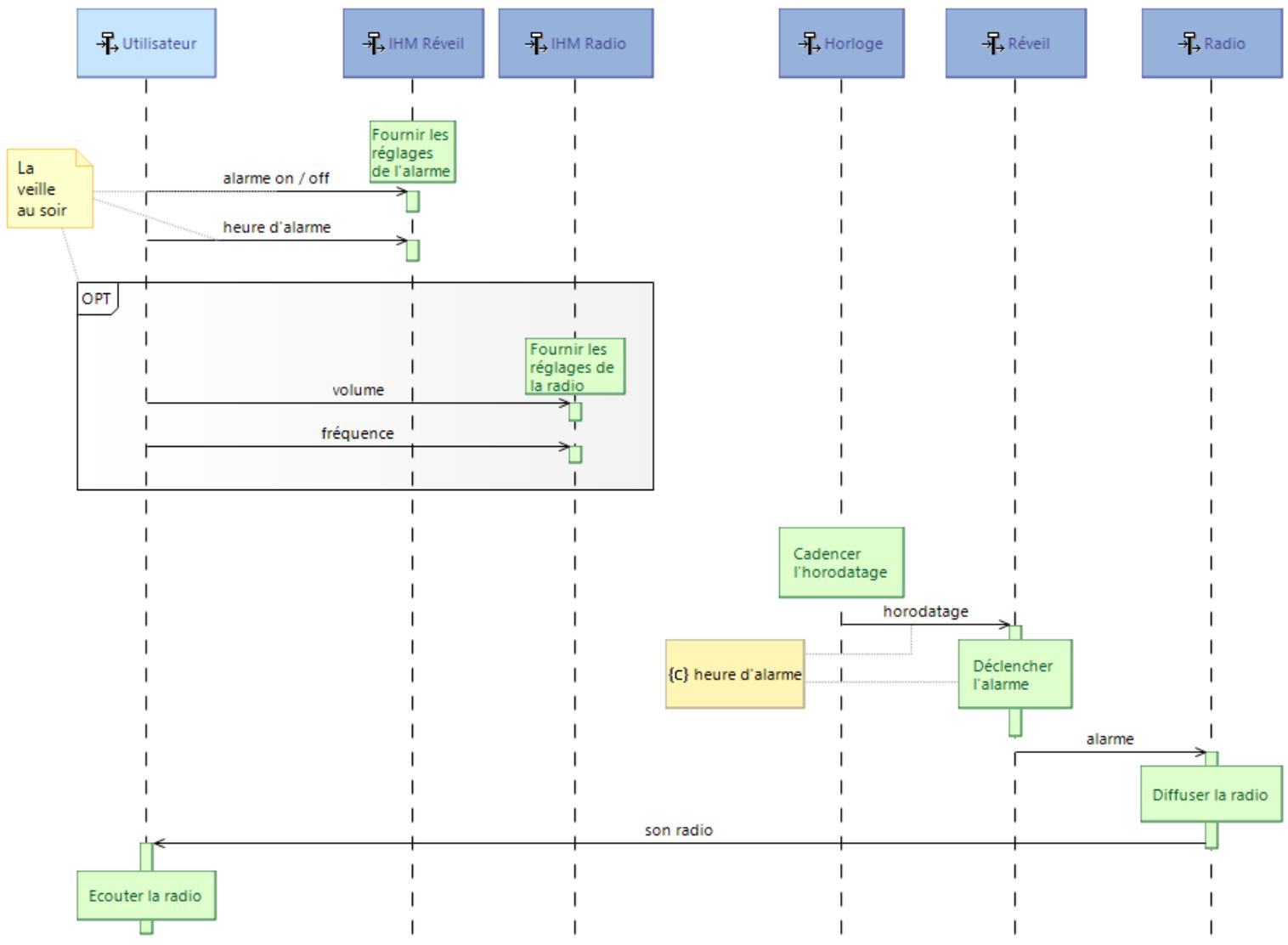
Scénario de niveau LA par transition



LES initialisé à partir du SES



LES finalisé



Pour en savoir plus

www.polarsys.org/capella/index.html

- www.prfc.fr
- pascalroquesformationconseil.blogspot.fr/
- www.incose.org/
- www.afis.fr