Semantic Service Matching

How to match Semantic Service

Contents

The Semantic Service Matching function compares target services with the given source service based on the Matching Criteria. It supports the two types of service matching as follows:

Compatible Service Matching

Find and match target services that can be replaced with the given source service. This function can be used to find the target service that has similar functions, objectives, and input/output to those of the source.

Interoperable Service Matching

Find and match target services can be interoperable with the given source service. This function can be used to find the subsequent (target) service that will be seamlessly connected to the source service.

Matching Criteria

The matching criteria to compare two services are as follows:

Functional matching criteria

The service names, categories, descriptions, and objectives of two services are compared and calculated their relatedness lexicographically and semantically.

Non-functional matching criteria

The service providers, supported protocols, and authentication mechanisms of two services are compared and calculated their relatedness lexicographically and semantically.
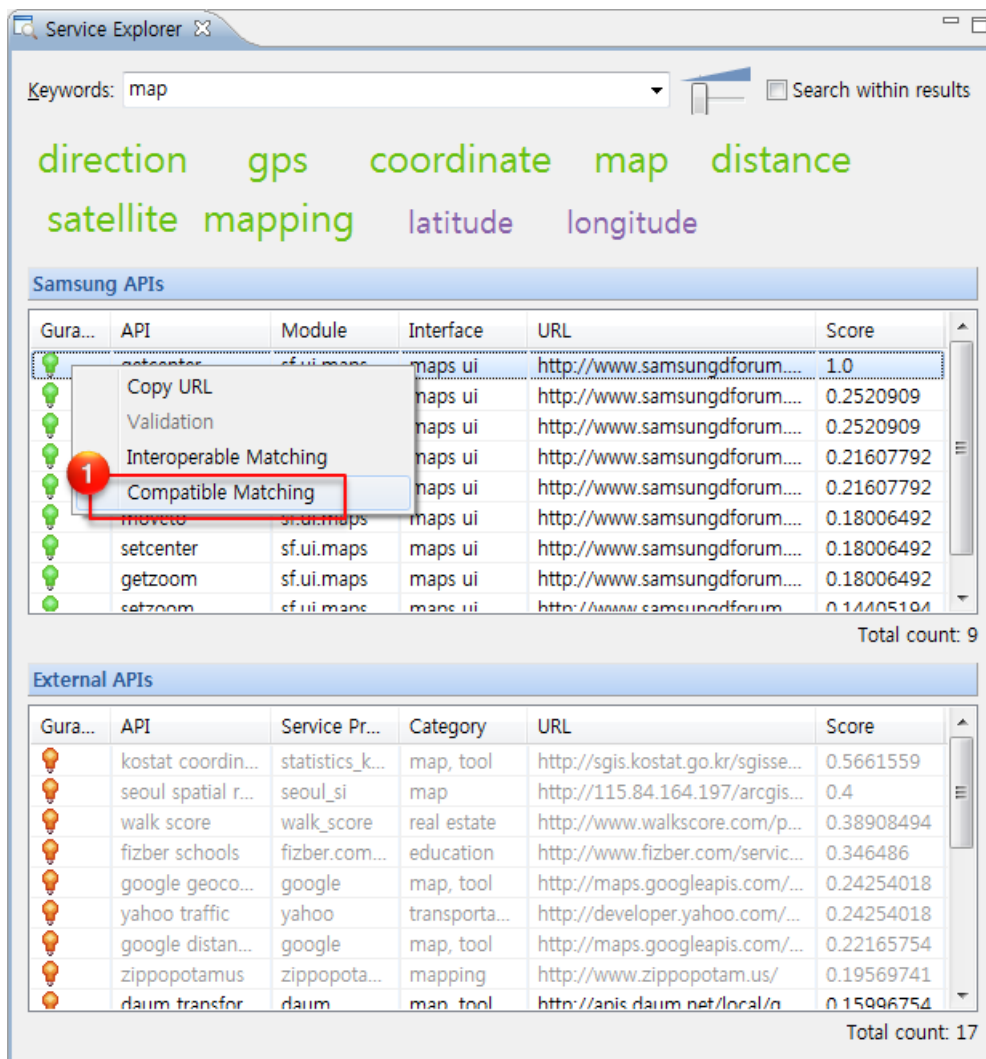
Data matching criteria

The input/output parameter names and types of the two services will be compared and calculated semantically and in terms of type compatibility.

Compatible Service Matching

Compatible Service Matching performs to find and match target services that can be replaced with the given source by a user. The matching results are displayed in Matching View. A service API shown in Matching View can be explained in Properties View and be dragged & dropped into the source code editor.
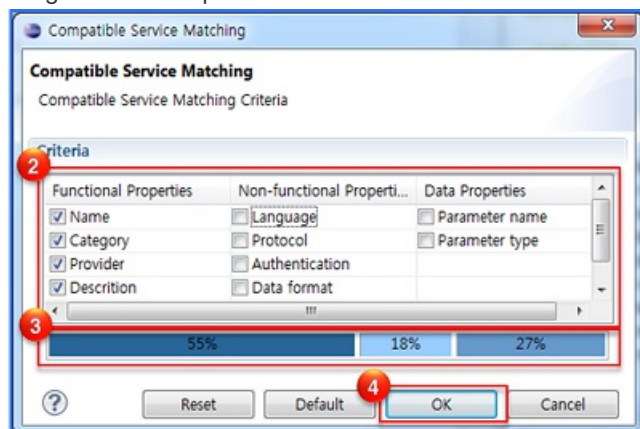
The following section shows how to perform compatible service matching.

1. Select a service API from Service Explorer, which is a source service to be matched, right click on the API, and select Compatible Matching from the pop-up menu. Then, Compatible Service Matching window pops up.

Figure: Compatible Matching execution screen

2. In the Criteria view of the Compatible Service Matching window, check any parameters of Functional Properties, Non-functional Properties, and Data Properties which a user wants to be criteria of this matching. Or uncheck parameters which a user doesn't want to be criteria of the matching.

3. In the Criteria view, a user can relatively adjust the weights of the property by moving slide bar from left to right, vice versa. Then, press **OK**.

4. Press **OK** to perform interoperable matching based on criteria specified by a user from Step 2 to Step 3. If a user presses **Reset** button, all criteria set in Step 5 will be unchecked. If a user presses **Default** button, all criteria set in Step 5 and weights set in Step 6 will be recovered in default. If a user clicks **Cancel** button, the **Criteria** view is closed.
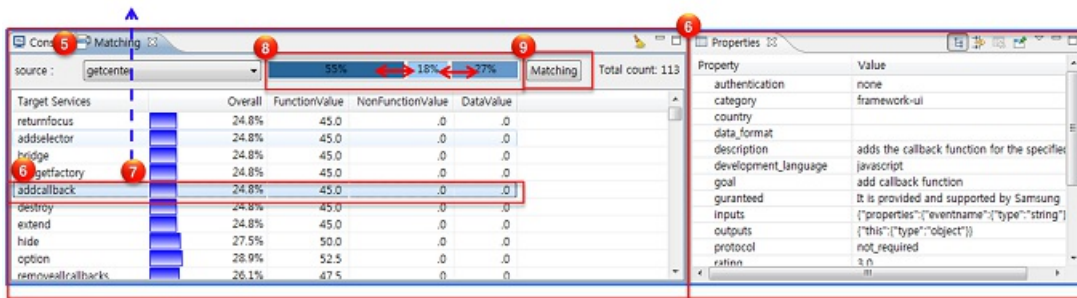

Figure: Compatible Matching Criteria setting screen

5. When matching is successfully performed, the matching results are displayed in Matching View. The value of overall matching is displayed with a bar graph along with numbers. The value of overall matching is the weighted summation of FunctionValue, NonFunctionvalue, and DataValue.

6. Click a service API among matching results in Matching View, the detailed information of the selected service is shown in
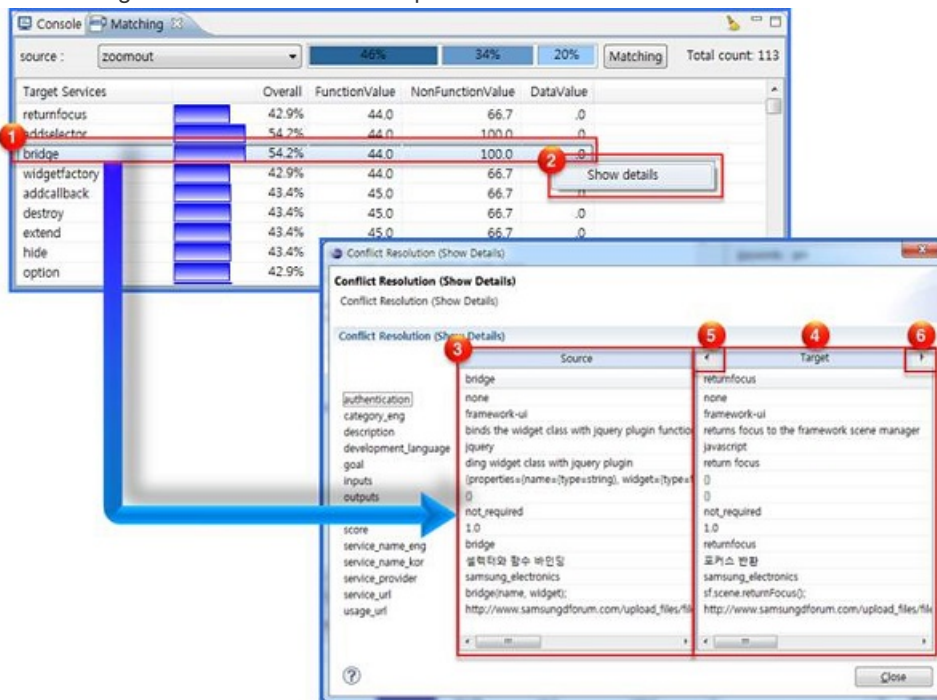
7. The sample code snippet of the selected service API if it is black-colored can be added to the editor by dragging & dropping into the source code editor.

8. While pushing the sliding bar at the left and right, a user can adjust the weight values of Functional/Non-functional/Data Properties relatively.

9. When a user press **Matching** button, the matching is performed again based on the new weights specified by a user in step 8.

Figure: Matching Result Detail screen

10. Select a service to see the details of matching results from Matching View.

11. Right click the mouse button and select the Show details menu.

12. The source service selected in Step 10 is displayed in detail.

13. The detailed information on target services which were compared with the source service is displayed.

14. The previous target service which was compared with the source service is shown in detail.

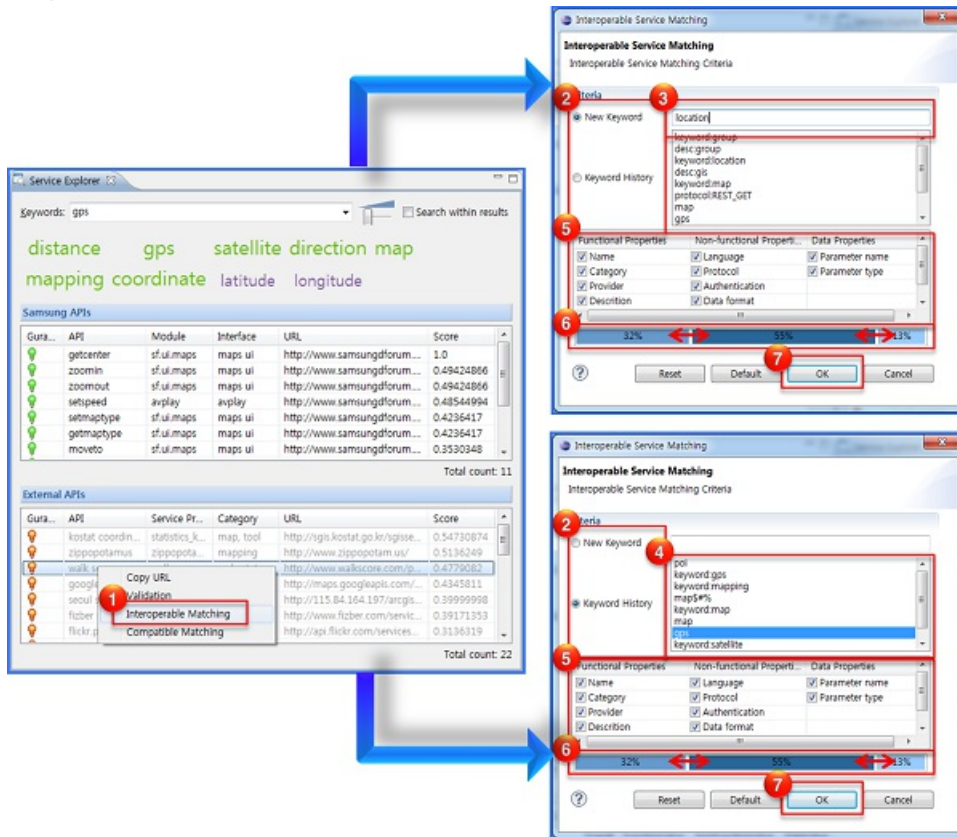15. The next target service which was compared with the source service is shown in detail.

Interoperable Service Matching

Find and match target services can be interoperable with the given source service by a user. The matching results are displayed in Matching View. A service API shown in Matching View can be explained in Properties View and be dragged & dropped into the source code editor.

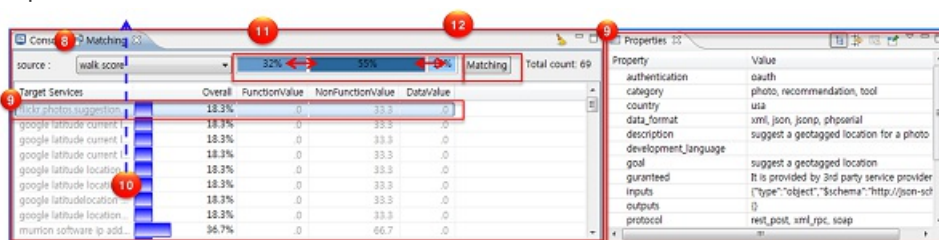The following section shows how to perform compatible service matching.

1. Select a service API from Service Explorer, which is a source service to be matched, right click on the API, and select Interoperable Matching from the pop-up menu. Then, Interoperable Service Matching window pops up

2. In the **Criteria** view of the Interoperable Service Matching window, check only one button of the New Keyword and Keyword History.

3. If the **New Keyword** radio button is selected in Step 2, input a new keyword for searching the target services.

4. If the **Keyword History** radio button is selected in Step 2, select a keyword from the keyword history, which was accumulated from semantic service searching in Service Explorer.

5. Then, check any parameters of Functional Properties, Non-function Properties, and Data Properties which a user wants to be criteria of this matching. Or uncheck parameters which a user doesn't want to be criteria of the matching.

6. A user can relatively adjust the weights of the property by moving slide bar from left to right, vice versa.

7. Press **OK** to perform interoperable matching based on criteria specified by a user from Step 2 to Step 6. If a user presses **Reset** button, all criteria set in Step 5 will be unchecked. If a user presses **Default** button, all criteria set in Step 5 and weights set in Step 6 will be recovered in default. If a user clicks **Cancel** button, the **Criteria** view is closed.

Figure: Interoperable Matching execution screen

8. When matching is successfully performed, the matching results are displayed in Matching View. The value of overall matching is displayed with a bar graph along with numbers. The value of overall matching is the weighted summation of FunctionValue, NonFunctionvalue, and DataValue.

9. Click a service API among matching results in Matching View, the detailed information of the selected service is shown in Properties View.

10. The sample code snippet of the selected service API if it is black-colored can be inserted into the source code editor by dragging & dropping it.

11. While pushing the sliding bar at the left and right, a user can adjust the weight values of Functional/Non-functional/Data Properties relatively.

12. When a user press **Matching** button, the matching is performed again based on the new weights specified by a user in step 8.
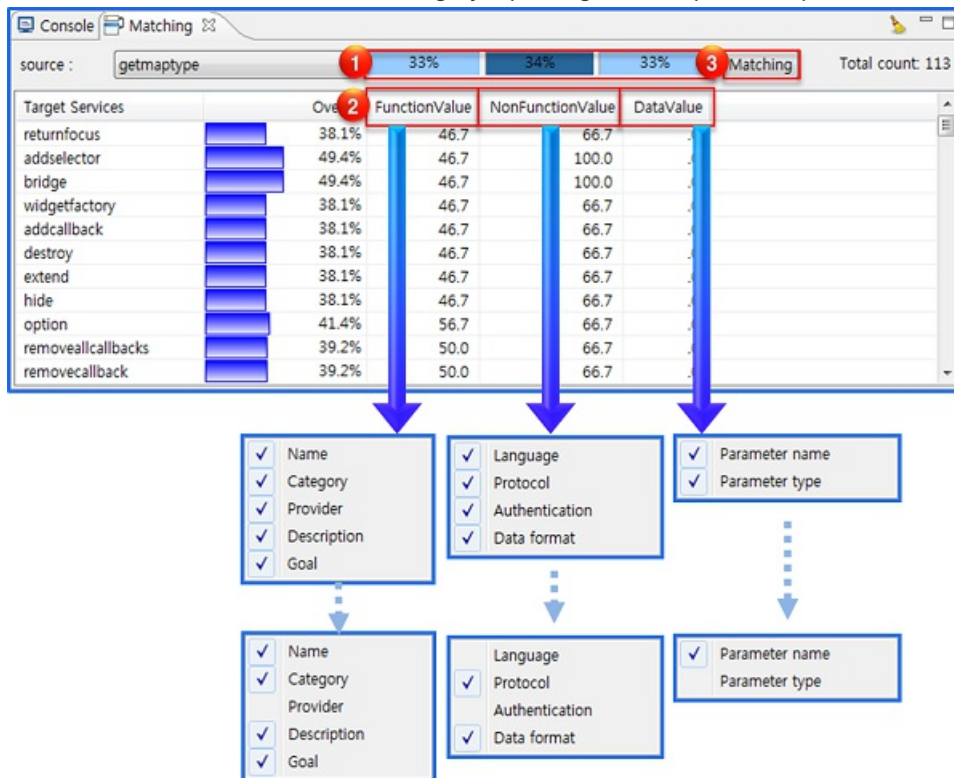

Figure: Interoperable Matching result screen
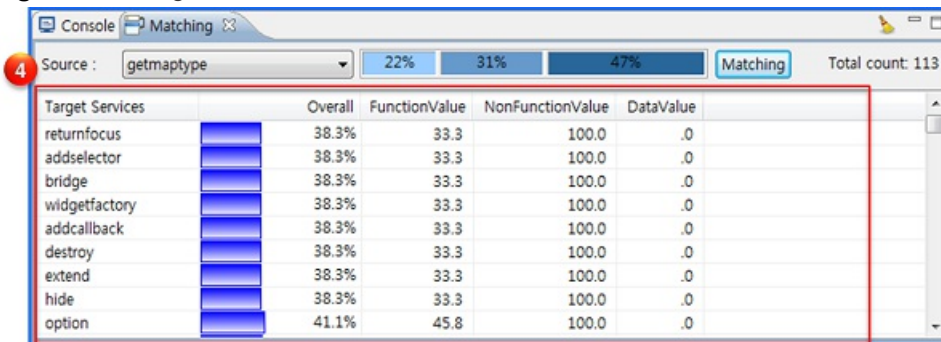
Repetitive Matching Evaluation

In the **Matching** view, matching evaluation can be performed repetitively after updating criteria by a user as follows:

1. Moving slide bar to the left or right makes weights of matching properties changed.
2. Right click the mouse on the FunctionValue, NonFunctionValue, or DataValue in the header of the table, each criterion can be selected and unselected.
3. After finishing re-arrangement of matching criteria in step 3, click **Matching** button.
4. The results of new matching evaluation are displayed in the table.
5. A user can re-evaluate service matching by repeating from Step 1 to Step 4.

Figure: Matching Service Research Process

Figure: Matching Service Re Search Result