

## Word Coupling Notes



***Rhapsody<sup>®</sup>***

**IBM<sup>®</sup> Rational<sup>®</sup> Rhapsody<sup>®</sup>  
Gateway Add On**

**Word Coupling Notes**



## **License Agreement**

No part of this publication may be reproduced, transmitted, stored in a retrieval system, nor translated into any human or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission of the copyright owner.

The information in this publication is subject to change without notice, and Dassault Systèmes and its affiliates assume no responsibility for any errors which may appear herein. No warranties, either expressed or implied, are made regarding Rhapsody software and its fitness for any particular purpose.

## **Trademarks**

Reqtify is a registered trademark of Dassault Systèmes or its affiliates in the US and/or other countries.

Rhapsody Gateway, IBM, the IBM logo, DOORS and Rhapsody are trademarks or registered trademarks of IBM Corporation.

All other product or company names mentioned herein may be trademarks or registered trademarks of their respective owners.

© Copyright 2001-2011 Dassault Systèmes. All rights reserved.

# Contents

---

<b>Contents .....</b>	<b>5</b>
<b>Introduction .....</b>	<b>7</b>
<b>Word Analysis .....</b>	<b>9</b>
Word Versions Supported .....	9
Selecting the Word File.....	9
Specific Parameters of a Word Based Type .....	10
Adding a Cover.....	11
<b>Requirements Traceability .....</b>	<b>13</b>
Traceability Information in Word.....	13
Intermediate File .....	13
Basics .....	14
Word Tables .....	15
Character Styles .....	16
Annotations in Word Documents.....	17
Capturing Word Annotations .....	17
Customized Type Definition .....	18
New Type Creation .....	18
Defining your Own Type of Analysis .....	18
Conversion of Word Default Styles for non-English Versions .....	19
<b>Analysis of Multiple Word Files.....</b>	<b>21</b>
<b>Troubleshooting.....</b>	<b>23</b>
Navigation Trouble with Word.....	23
Improvements Fallouts.....	23
Requirements Changes not Considered.....	23



# Introduction

---

This technical note describes how to capture traceability information of requirements from Microsoft Word using Rhapsody Gateway.

Some standard operations, such as navigating in a Word document from the Rhapsody Gateway tool, require the Word tool to be installed.

Refer to the *Customization Guide* and run the Coupling example for more information about what is described in this technical note.



# Word Analysis

---

This chapter describes how Rhapsody Gateway captures information items from Word and how these information items are analyzed to be used as requirements, or references to higher level requirements

This chapter covers the following topics:



- ◆ Getting the information items from Word.
- ◆ Configuring Rhapsody Gateway according to the traceability information in Word.






## Word Versions Supported

Rhapsody Gateway supports Word 97, 2000, 2002, 2003 & 2007 versions.

## Selecting the Word File

To insert a Word file, follow these steps:

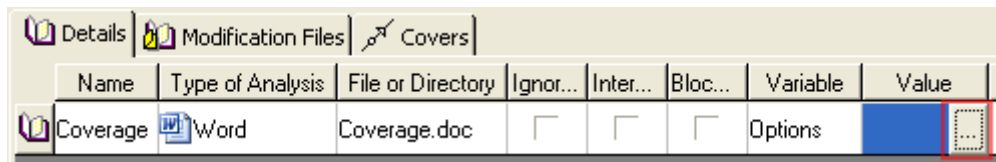
1. In the Project editor, click on the **Add a document**  button to insert a new document into the Traceability Description Area.
2. Select a **Type of Analysis** based on Word.
3. Click on the **File or Directory** field then on the **Browse**  button to select a Word file (with the doc or docx extension) from the Rhapsody Gateway selection window.

 Details				 Modification Files				 Covers							
Name				Type of Analysis				File or Directory				lg			
 Requirements				 Word				Word demo doc.doc							

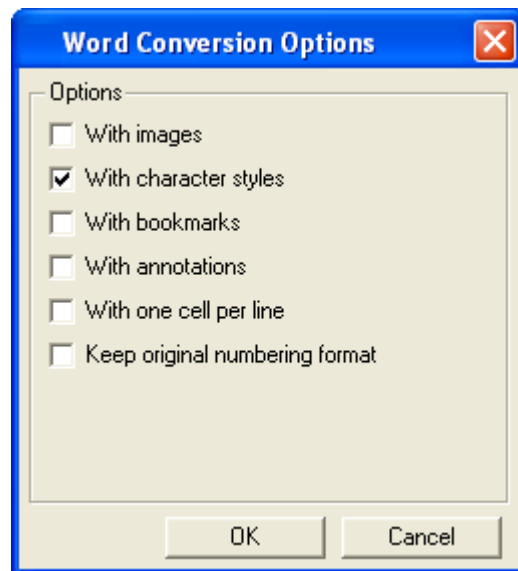
## Specific Parameters of a Word Based Type

When you select a type of analysis defined to capture information from Word (either a default type or a customized one), you have the opportunity to define additional parameters:

- ◆ **Options**—allows accessing to a window presenting some Word file options when clicking in the **Value** field.



The **Options** pane contains the following parameters:



- **With images**—This option allows you to capture images in Word. There are many ways to import images in a Word document, and only some of these solutions are supported by Rhapsody Gateway. You will be able to capture vectorized images (*wmf*) even if directly inserted into the Word text paragraphs. Most of the drawings or images inserted in your Word document using **Insert > Object** menu can be imported.
- **With Character styles**—If this option is activated, the converter adds information concerning the Character Styles used in the Word document, allowing you to capture elements defined with such a format.
- **With Bookmarks**—This option will convert the bookmarks content. This option does not support *.docx* documents.
- **With Annotations**—This option will convert annotations content.
- **One Cell Per Line**—This option gives you the choice to add a carriage return between each column of a table.

- **Keep original numbering format**—This option gives you the choice to keep the original numbering format of the document or to have each heading numbered with 1, 2, etc. numbering. This option does not support .docx documents.
- ◆ **With Rich Text**—This option gives you the possibility to get the rich text properties of a captured text (text color, bold, italic, underlined and strikethrough). The text is displayed formatted in the Text area. This information can also be used in the report generation.

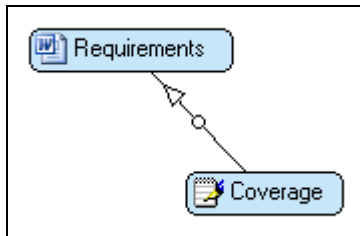
To activate or disable an option, select it in the drop-down list in the **Variable** column then check or uncheck the checkbox in the **Value** field.

Details   Modification Files   Covers							
Name	Type of Analysis	File or Directory	Ignor...	Inter...	Bloc...	Variable	Value
Document	Word	Coverage.docx	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	With Rich Text	<input checked="" type="checkbox"/>

## Adding a Cover

To define traceability, add a cover between the covering document and the covered document.

The Rhapsody Gateway project looks like the following:



Now the traceability analysis of the project can be performed.



# Requirements Traceability

---

There are many ways to enter traceability information in Word.

## Traceability Information in Word

Default configuration of the Word type of analysis considers:

- ◆ Requirements:
  - use the Word paragraph style “Requirement\_ID”.
  - are written using the syntax <ID> : <requirement label>. <ID> is the requirement ID, <requirement label> is the “title” of your requirement, usually written using natural language. Use a colon to separate ID and Label. If you don’t use this colon, all will be captured as an ID. The label is optional.
- ◆ References:
  - Syntax is [Covers: <requirements>] : Use the string [Covers:...], <requirements> are your requirement ID(s). If you list several requirement IDs, insert , or ; between them. For example, use [Covers: REQ1] or [Covers: REQ1,REQ2,REQ3]
  - If you want to create your references in a Word document that is already managed by Rhapsody Gateway as covering your higher level document containing requirements, select a requirement in this document, right-click the requirement and select Copy For > Coverage in the contextual menu.

## Intermediate File

Rhapsody Gateway creates an intermediate file called <document\_name>.txt, containing the information extracted from Word.

You can refer to the Word file `Word demo doc.doc` used in the Coupling Word demo example to analyze how the converter works.

This intermediate file is usually deleted at the end of the conversion process. However, you can helpfully keep this intermediate file available, for training or customization purpose, by activating the option in the Project Editor.

Details   Modification Files   Covers					
	Name	Type of Analysis	File or Directory	Ignor...	Intermediate file
	Requirements	Word	Word demo doc.doc	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## Basics

Considering a Word document such as the following:

<p><b>2    <u>DEMO REQUIREMENTS</u></b></p> <p><b>REQ1 : Capture</b></p> <p><i>The tool shall be able to capture semi-automat and/or in a model. "Semi-automatic" means the user or another dedicated tool.</i></p> <p><b>Allocated to : John Doe</b> <b>Priority: High</b></p> <p><b>REQ2 : Update information when source changes</b></p> <p><i>The tool shall take into account the successive update automatically the traceability information</i></p> <p><b>Allocated to: Tim Jones</b> <b>Priority: High</b></p> <p><b>REQ3 : Multiple requirements definition</b></p> <p><i>The tool shall be able to consider several requirements for example, if Safety requirements, Functional requirements</i></p>
--

The corresponding intermediate file is then created in the **intermediate** sub-directory of the project directory.

```

Heading 1      2 Demo Requirements
Requirement_ID REQ1 : Capture
Requirement_Text      The tool shall be able to ca
Normal  Allocated to : John Doe
Normal  Priority: High
Normal
Requirement_ID REQ2 : Update information when sourc
Requirement_Text      The tool shall take into acc
Normal  Allocated to: Tim Jones
Normal  Priority: High
Normal
Requirement_ID REQ3 : Multiple requirements definit
Requirement_Text      The tool shall be able to co
Normal  Allocated to: John Doe
Normal  Priority: Medium
    
```

In a general way, the lines of the intermediate file are as:

<Word style><tab><numbering><separator>Text of the Word document

A numbering example is presented in the screenshot above for Heading 1 style.

## Word Tables

The page 3 of the file Word\_demo\_doc.doc gives examples combining the use of default styles, customized styles, tables, character styles, etc.

<p><b><u>3 USE OF STYLE : HEADING 1</u></b></p> <p><b><u>3.1 Use of Style : Heading 2</u></b></p> <p>This text is not located in a table, the Word style 'Normal' is</p> <p><i>This text is not located in a table, the Word style 'My_Style'</i></p>	
<p>Text in Table, Row 1, Column 1, Paragraph1, 'Normal' style</p>	<p><i>Text in Table, Row 1, Column 2, Paragraph1, 'My_Style' style</i></p>
<p><i>Text in Table, Row 1, Column 1, Paragraph2, 'My_Style' style</i></p>	<p>Text in Table, Row 1, Column 2, Paragraph2, 'Normal' style</p>

The intermediate file looks like:

```
Heading 1      3 Use of style : Heading 1
Heading 2      3.1 Use of Style : Heading 2
Normal This text is not located in a table, the Word style
'My_Style' is applied ...
My_Style This text is not located in a table, the Word style
'My_Style' is applied ...
Normal
|1 Normal Text in Table, Row 1, Column 1, Paragraph1,
'Normal' style|1 My_Style Text in Table, Row 1, Column 1,
Paragraph2, 'My_Style' style|2 My_Style Text in Table, Row 1,
Column 2, Paragraph1, 'My_Style' style|2 Normal Text in Table,
Row 1, Column 2, Paragraph2, 'Normal' style|3 Normal Text in
Table, Row 1, Column 3, Paragraph1, 'Normal' style|3 My_Style
Text in Table, Row 1, Column 3, Paragraph2, 'My_Style' style
|1 Normal Text in Table, Row 2, Column 1, Paragraph1,
'Normal' style|1 My_Style Text in Table, Row 1, Column 1,
Paragraph2, 'My_Style' style|2 Normal Text in Table, Row 2,
Column 2, Paragraph1, 'Normal' style|2 Normal Text in Table,
Row 1, Column 2, Paragraph2, 'Normal' style|3 Normal Text in
Table, Row 2, Column 3, Paragraph1, 'Normal' style|3 My_Style
Text in Table, Row 1, Column 3, Paragraph2, 'My_Style' style
|1 Normal |2 Normal |3 Normal
```

More generally, for tables the intermediate file contains:

```
|<column number><style> Your text
```

For several paragraphs in the same column, like in the above screenshot, all paragraphs are presented on the same line before switching to the next column. For example, if you have 2 paragraphs in column 1:

```
|1<style> 1st paragraph|1<style> 2nd paragraph|2<style> Second
column...
```

## Character Styles

Word allows definition of styles not only for paragraphs but also for characters.

For a new style you can select "Character" instead of "Paragraph" from the **Style type** drop-down list.

As explained in the Parameters section, you need to activate the option **With Character styles** if you want the converter to generate this information.

Details		Modification Files		Covers			
Name	Type of Analysis	File or Directory	Ig...	In...	Bl...	Variable	Value
Requirements	Word	Word demo doc.doc	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	With Character styles	<input checked="" type="checkbox"/>

The file `Word demo doc.doc` gives an example of a string with a character style applied:

The system shall have a *max response time* of 10 milliseconds.

In the previous paragraph all the text is in 'Normal' style, and "r  
'requirement' style applied to characters. (Word style type = cha

The paragraph style is "Normal", but the character style "Requirement" is applied to the string `Max Response Time`.

In this case the intermediate file contains:

```
Normal
Normal The system shall have a max response time of 10 milliseconds.
Requirement max response time
Normal
Normal In the previous paragraph all the text is in 'Normal' style, a
```

So for character styles inside a paragraph you will get:

```
<paragraph style> text of the paragraph, (including the string).
<character style> string styles with the character styled
```

## Annotations in Word Documents

To extract Word annotations, the intermediate file contains:

```
Annot_<initiales>_<annotNumber>/<annotation text>/<highlighted
text in Word document>/End_Annot_<initiales>_<annotNumber>
```

## Capturing Word Annotations

Traceability information can be added in annotations. To capture annotations, the **With annotations** option needs to be checked and a customized definition of requirement needs to be created.

In the customized type, a regular expression corresponding to this capture can be:

```
^Annot[^\s]+/([^\s]+)/([^\s]+)
```

- ◆ The first parentheses group captures the requirement ID.
- ◆ The second parentheses group captures the requirement text if **Text** is selected for **Field2** in the contextual menu of the requirement field. For more detailed, refer to the *Defining Requirement* section in the *Customization Guide*.

## Customized Type Definition

### New Type Creation

As Word manages objects and text properties, and Rhapsody Gateway expects requirements, it is necessary to specify how properties can be captured as requirements or references by higher level requirements. This capture can be performed using the definition of Types of Analysis.

The types of analysis also contains definitions of Attributes, Text, etc.

This work can be performed by Application Engineers or the Support team, but also by advanced users using this *Coupling Note* and the *Customization Guide*.

Select **File > Edit Types** to launch the Type Editor and select a Word based type in the office folder.

Duplicate this type in order to create yours: right-click the Word type in the Type Editor and select **Duplicate**.

You can use the helpful information found in the Word example.

### Defining your Own Type of Analysis

- ◆ For requirements, you have to define the **requirement** element(s) of your new type.
- ◆ For coverage information, define the **reference** element(s) of your new type,
- ◆ For attributes, define the **attribute** element(s) of your new type.

Refer to the *Customization Guide* to learn more about this customization.

## Conversion of Word Default Styles for non-English Versions

Word supplies the English names for its default types. The names of user-defined styles are provided without changing the name defined by the user.

For example, the table below gives examples for the default style names provided for the French version of Word.

<b>French style name</b>	<b>Styles name provided by Word</b>
Normal	Normal
Corps de texte	Body Text
Sous-titre	Subtitle
Titre 1	Heading 1
Titre 2	Heading 2
Titre 3	Heading 3
Texte brut	Plain Text
Liste à numéros	List Number
Liste à numéros 2	List Number 2
Liste à puces	List Bullet
Liste à puces 2	List Bullet 2
Index 1	Index 1
Index 2	Index 2
TM 1	TOC 1
TM 2	TOC 2
TM 3	TOC 3





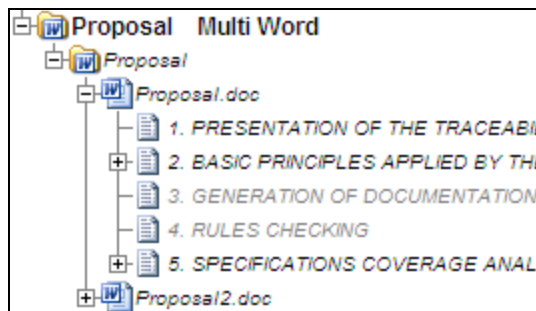
# Analysis of Multiple Word Files

---

The **Multi Word** type allows the user to analyze all the Word documents stored in a directory, with subdirectories.

To insert a **Multi Word** type, follow these steps:

1. In the Project editor, click on the **Add a document**  button to insert a new document into the Traceability Description Area.
2. Select a **Type of Analysis** based on Multi Word.
3. Click on the **File or Directory** field then on the **Browse**  button to select the directory to be analyzed.
4. The main window displays the directory, with its subdirectories if any, and all documents in these directories are also displayed.
5. The structure of individual documents is displayed as if each document is analyzed as a standalone document.





# Troubleshooting

---

The tasks in this section can help you resolve the most common problems with Word usage.

## Navigation Trouble with Word

The user may encounter problems during his navigation to a Word document.

If the following error messages appear **Call was rejected by callee.** or **The Open method or property is not available.** that may mean that a dialog box, such as the Find or Replace dialog, is still open in Word and hinders the document from opening.

To be able to open the document, first close the opened pop-up windows from Word.

## Improvements Fallouts

Since the Word converter has been improved, the bullet management of the bulleted lists and the numbered lists has been changed.

These changes may imply problems for the previous analysed projects. To solve this kind of problem, you should replace the bullet replacement character by its new value.

In order to, you can consult the intermediate file to get the new character that represents the bullet.

The Regular Expression Tester is also a helpful mean to assist you with converter problems.

## Requirements Changes not Considered

If the **Allow fast saves** is checked in Word Save options, requirements changes are not taken into account by Rhapsody Gateway analysis.

To solve this problem, uncheck this option.

If the above proposals do not solve your problems or if you need help with any other issues, do not hesitate to consult the Support Team.