[MS-OFFMACRO2]: Office Macro-Enabled File Format Version 2 Specification

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Revision Summary

Date	Revision History	Revision Class	Comments
07/13/2009	0.1	Major	Initial Availability
08/28/2009	0.2	Editorial	Revised and edited the technical content
11/06/2009	0.3	Editorial	Revised and edited the technical content
02/19/2010	1.0	Minor	Updated the technical content
03/31/2010	1.01	Editorial	Revised and edited the technical content
04/30/2010	1.02	Editorial	Revised and edited the technical content
06/07/2010	1.03	Editorial	Revised and edited the technical content
06/29/2010	1.04	Editorial	Changed language and formatting in the technical content.
07/23/2010	1.04	No change	No changes to the meaning, language, or formatting of the technical content.
09/27/2010	1.04	No change	No changes to the meaning, language, or formatting of the technical content.
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1 Introduction

This document specifies the Office Macro-Enabled File Format Version 2 (MS-OFFMACRO2). This file format specifies the structures of macro-enabled WordprocessingML, SpreadsheetML, and PresentationML file formats that are either not present in or modified from non-macro-enabled WordprocessingML, SpreadsheetML, and PresentationML file formats specified in [ISO/IEC-29500:2008]. The macro-enabled file formats consist of the non-macro-enabled file formats specified by [ISO/IEC-29500:2008] and the XML structures, XML, and non-XML parts specified in this document.

1.1 Glossary

The following terms are defined in [MS-GLOS]:

XML

The following terms are defined in [MS-OFCGLOS]:

AutoFilter
conditional formatting
data consolidation
document
embedded object
Hypertext Markup Language (HTML)
locale
macro
macro sheet
page break
phonetic information
presentation
protection
range
sheet
sheet view
sort condition
table
Visual Basic for Applications (VBA)
VML
workbook
worksheet

The following terms are specific to this document:

page margin: The white space at the top, bottom, and sides of a document when a document is printed.

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as described in [RFC2119]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

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1.2 References

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information. Please check the archive site, http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624, as an additional source.

[ISO/IEC-29500:2008] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Parts 1-4", Publicly Available Standards, http://standards.iso.org/ittf/PubliclyAvailableStandards/index.html

[ISO/IEC-29500-1] International Organization for Standardization, "Information Technology - Document description and processing languages - Office Open XML File Formats - Part 1: Fundamentals and Markup Language Reference", ISO/IEC PRF 29500-1, 2008, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51463

[ISO/IEC-29500-2] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 2: Open Packaging Conventions", ISO/IEC 29500-2:2008, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51459

[ISO/IEC-29500-3] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 3: Markup Compatibility and Extensibility", 2008, http://www.iso.org/iso/catalogue_detail?csnumber=51461

[ISO/IEC-29500-4] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 4: Transitional Migration Features", ISO/IEC 29500-4:2008, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51462

[MS-OVBA] Microsoft Corporation, "Office VBA File Format Structure Specification"

[MS-XLSX] Microsoft Corporation, "Excel Extensions to the Office Open XML SpreadsheetML File Format (.xlsx) Specification"

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, http://www.rfc-editor.org/rfc/rfc2119.txt

[XMLSCHEMA1] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/

[XMLSCHEMA2] Biron, P.V., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/

1.2.2 Informative References

[MS-GLOS] Microsoft Corporation, "Windows Protocols Master Glossary".

[MS-OFCGLOS] Microsoft Corporation, "Microsoft Office Master Glossary".

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1.3 Structure Overview

This file format specifies structures of macro-enabled WordprocessingML, SpreadsheetML, and PresentationML file formats that are either not present in or modified from non-macro-enabled WordprocessingML, SpreadsheetML, and PresentationML file formats specified in [ISO/IEC-29500:2008]. **Document**, **Workbook**, and **Presentation** data are each contained in a compressed file (.zip) package conforming to the Open Packaging Conventions as specified in [ISO/IEC-29500-2]. Individual files stored in a ZIP package, called parts ([ISO/IEC-29500-1]), contain information about the content and structure of a document, workbook, or presentation. Some parts ([ISO/IEC-29500-1]) store information using **XML** and other parts ([ISO/IEC-29500-1]) store information by using binary data.

Section 2 of this documentation is organized by application.

Section 2.1 covers the structures in the macro-enabled WordprocessingML file format that are either not present in or modified from the structures in the non-macro-enabled WordprocessingML file format specified in [ISO/IEC-29500:2008].

Section 2.2 covers the structures in the macro-enabled SpreadsheetML file format that are either not present in or modified from the structures in the non-macro-enabled SpreadsheetML file format specified in [ISO/IEC-29500:2008].

Section 2.3 covers the structures in the macro-enabled PresentationML file format that are either not present in or modified from the structures in the non-macro-enabled PresentationML file format specified in [ISO/IEC-29500:2008].

Within sections 2.1, 2.2, and 2.3, subsection 1 specifies the parts within the package of a macro-enabled file that are either not present in or modified from a non-macro-enabled file specified by [ISO/IEC-29500-1]. Subsection 2 specifies extensions to [ISO/IEC-29500:2008] within the package ([ISO/IEC-29500-2]). Subsections 3, 4, 5, and 6 specify the details of the structures that are either not present in or are modified from the structures in the non-macro-enabled file formats specified by [ISO/IEC-29500:2008]. Subsection 3 specifies global elements, subsection 4 specifies global attributes, subsection 5 specifies complex types, and subsection 6 specifies simple types.

Section 3 provides specific examples intended to illustrate the structures specified in section 2.

Section 4 discusses security issues relating to the structures specified by this document.

Section 6 is a list of version-specific behaviors. It is not intended to be read alone, but rather to be understood in the context of specifications in section 2.

1.4 Relationship to Protocols and Other Structures

The structures specified in section 2 are dependent on the structures and concepts defined in the following references:

- [ISO/IEC-29500-1] for baseline WordprocessingML, SpreadsheetML, and PresentationML persistence formats.
- [ISO/IEC-29500-2] for open packaging conventions.
- [ISO/IEC-29500-3] for markup compatibility and extensibility.
- [ISO/IEC-29500-4] for backward compatibility considerations.

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1.5 Applicability Statement

This document specifies a persistence format for structures either not present in or modified from the structures specified by [ISO/IEC-29500:2008] for WordprocessingML, SpreadsheetML, and PresentationML documents. The structures specified in this document are not applicable as a stand-alone file format. Each structure specified in this document is integrated with [ISO/IEC-29500:2008] WordprocessingML, SpreadsheetML, or PresentationML documents in a particular way, as specified in the section for that structure.

1.6 Versioning and Localization

None.

1.7 Vendor-Extensible Fields

None.

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2 Structures

All global elements, global attributes, complex types, and simple types not defined in [ISO/IEC-29500:2008] and not defined in the following target namespaces are extensions that use conventions specified by [ISO/IEC-29500-3]:

- http://schemas.microsoft.com/office/word/2006/wordml
- http://schemas.microsoft.com/office/excel/2006/main
- http://schemas.openxmlformats.org/presentationml/2006/main

2.1 Macro-enabled WordprocessingML Structures

2.1.1 Part Enumeration

This section specifies the parts ([ISO/IEC-29500-1]) of the macro-enabled WordprocessingML file format that are different from the parts of the non-macro-enabled WordprocessingML file format specified in [ISO/IEC-29500-1] section 11.3. These parts and their relationships are summarized in the following table.

Part	Relationship Target of
Main Document (section 2.1.1.1)	WordprocessingML Package ([ISO/IEC-29500-1] section 11.2)
VBA Project (section 2.1.1.2)	Main Document (section 2.1.1.1)
VBA Supplemental Data (section 2.1.1.3)	VBA Project (section 2.1.1.2)

2.1.1.1 Main Document

Content Types:

- application/vnd.ms-word.document.macroEnabled.main+xml
- application/vnd.ms-word.template.macroEnabledTemplate.main+xml

Root Namespace: http://schemas.openxmlformats.org/wordprocessingml/2006/main

Source Relationship:
http://schemas.openxmlformats.org/officeDocument/2006/relationships/officeDocument

The part is modified from the Main Document specified in [ISO/IEC-29500-1] Part 1, section 11.3.10.

A Main Document part is permitted to have an implicit relationship to the VBA Project part.

2.1.1.2 VBA Project

Content Type: application/vnd.ms-office.vbaProject

Root Namespace: Not applicable

Source Relationship: http://schemas.microsoft.com/office/2006/relationships/vbaProject

This part is specified in [MS-OVBA].

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A package MUST contain at most one VBA Project part, which MUST be the target of an implicit relationship from the **main document** part (section 2.1.1.1).

A VBA Project part MUST have an implicit relationship to the **VBA Supplemental Data** part.

A VBA Project part MUST NOT have implicit or explicit relationships to any other part specified by this document or any part specified in [ISO/IEC-29500-1].

2.1.1.3 VBA Supplemental Data

Content Type: application/vnd.ms-word.vbaData+xml

Root Namespace: http://schemas.microsoft.com/office/word/2006/wordml

Source Relationship: http://schemas.microsoft.com/office/2006/relationships/wordVbaData

An instance of this part type specifies **Visual Basic for Applications (VBA)** supplemental Data.

A VBA Supplemental Data part MUST be the target of an implicit relationship from the **VBA Project** part (section 2.1.1.2).

A VBA Supplemental Data part MUST NOT have implicit or explicit relationships to any other part specified by this document or any part specified in [ISO/IEC-29500-1].

The root element for a part of this content type MUST be **vbaSuppData** (section 2.1.3.1).

2.1.2 Extensions

None.

2.1.3 Global Elements

2.1.3.1 vbaSuppData

Target namespace: http://schemas.microsoft.com/office/word/2006/wordml

A **CT_VbaSuppData** element (section 2.1.5.4) that specifies supplemental Visual Basic for Applications (VBA) data.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this element.

```
<xsd:element name="vbaSuppData" type="CT_VbaSuppData"/>
```

2.1.4 Global Attributes

None.

2.1.5 Complex Types

2.1.5.1 CT_Mcd

Target namespace: http://schemas.microsoft.com/office/word/2006/wordml

Referenced by: CT_Mcds

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A complex type that specifies a macro.

Attributes:

macroName : An ST_String ([ISO/IEC-29500-1] section 22.9.2.13) attribute that MUST equal the **name** attribute with every character set to uppercase.

name : An ST_String ([ISO/IEC-29500-1] section 22.9.2.13) attribute that specifies the name of the **macro**. **name** MUST NOT exceed 255 characters.

menuHelp : An ST_String ([ISO/IEC-29500-1] section 22.9.2.13) attribute that MUST be ignored.

bEncrypt : An ST_UcharHexNumber ([ISO/IEC-29500-1] section 17.18.98) attribute that MUST be 0.

cmg : An ST_UcharHexNumber ([ISO/IEC-29500-1] section 17.18.98) attribute that MUST be 56.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this complex type.

```
<xsd:complexType name="CT_Mcd">
  <xsd:attribute name="macroName" type="w:ST_String" use="optional"/>
  <xsd:attribute name="name" type="w:ST_String" use="optional"/>
  <xsd:attribute name="menuHelp" type="w:ST_String" use="optional"/>
  <xsd:attribute name="bEncrypt" type="w:ST_UcharHexNumber"/>
  <xsd:attribute name="cmg" type="w:ST_UcharHexNumber"/>
</xsd:complexType>
```

2.1.5.2 CT_Mcds

Target namespace: http://schemas.microsoft.com/office/word/2006/wordml

Referenced by: CT_VbaSuppData

A complex type that specifies a collection of macros.

Child Elements:

mcd : A **CT_Mcd** element (section 2.1.5.1) that specifies a macro.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this complex type.

```
<xsd:complexType name="CT_Mcds">
  <xsd:sequence>
    <xsd:element name="mcd" type="CT_Mcd" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.1.5.3 CT_DocEvents

Target namespace: http://schemas.microsoft.com/office/word/2006/wordml

Referenced by: CT_VbaSuppData

A complex type that specifies a container of document events that are active for this document.

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Child Elements:

eventDocNew : An element that specifies that the New event is active.

eventDocOpen : An element that specifies that the Open event is active.

eventDocClose : An element that specifies that the Close event is active.

eventDocSync : An element that specifies that the Sync event is active.

eventDocXmlAfterInsert : An element that specifies that the XmlAfterInsert event is active.

eventDocXmlBeforeDelete : An element that specifies that the XmlBeforeDelete event is active.

eventDocContentControlAfterInsert : An element that specifies that the ContentControlAfterInsert event is active.

eventDocContentControlBeforeDelete : An element that specifies that the ContentControlBeforeDelete event is active.

eventDocContentControlOnExit : An element that specifies that the ContentControlOnExit event is active.

eventDocContentControlOnEnter : An element that specifies that the ContentControlOnEnter event is active.

eventDocStoreUpdate : An element that specifies that the StoreUpdate event is active.

eventDocContentControlContentUpdate : An element that specifies that the ContentControlContentUpdate event is active.

eventDocBuildingBlockAfterInsert : An element that specifies that the BuildingBlockAfterInsert event is active.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this complex type.

```
<xsd:complexType name="CT_DocEvents">
  <xsd:sequence>
    <xsd:element name="eventDocNew" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocOpen" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocClose" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocSync" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocXmlAfterInsert" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocXmlBeforeDelete" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocContentControlAfterInsert" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocContentControlBeforeDelete" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocContentControlOnExit" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocContentControlOnEnter" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocStoreUpdate" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocContentControlContentUpdate" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="eventDocBuildingBlockAfterInsert" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```


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2.1.5.4 CT_VbaSuppData

Target namespace: http://schemas.microsoft.com/office/word/2006/wordml

Referenced by: vbaSuppData

A complex type that specifies document events and macro information for the VBA project.

Child Elements:

docEvents : A **CT_DocEvents** element (section 2.1.5.3) that specifies a container of document events that are active for this document.

mcds : A **CT_Mcds** element (section 2.1.5.2) that specifies a collection of macros stored in the VBA project.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this complex type.

```
<xsd:complexType name="CT_VbaSuppData">
  <xsd:sequence>
    <xsd:element name="docEvents" type="CT_DocEvents" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="mcds" type="CT_Mcds" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

2.1.6 Simple Types

None.

2.2 Macro-enabled SpreadsheetML structures

2.2.1 Part Enumeration

This section specifies the parts ([ISO/IEC-29500-1]) of the macro-enabled SpreadsheetML file format that are different from the parts of the non-macro-enabled SpreadsheetML file format specified in [ISO/IEC-29500-1] section 12.3. These parts and their relationships are summarized in the following table.

Part	Relationship Target of
International Macro Sheet (section 2.2.1.1)	Workbook (section 2.2.1.4)
Macro Sheet (section 2.2.1.2)	Workbook (section 2.2.1.4)
VBA Project (section 2.2.1.3)	Workbook (section 2.2.1.4)
Workbook (section 2.2.1.4)	SpreadsheetML Package ([ISO/IEC-29500-1] section 12.2)

2.2.1.1 International Macro Sheet

Content Type: application/vnd.ms-excel.intlmacrosheet+xml

Root Namespace: http://schemas.microsoft.com/office/excel/2006/main

Source Relationship: http://schemas.microsoft.com/office/2006/relationships/xlIntlMacrosheet

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An instance of this part type specifies the same information as a **Macro Sheet** part type (section 2.2.1.2). When this part type is present, the associated **macro sheet** will display and operate with the US English **locale**, regardless of what the product locale, user locale, or system locale is. This will maximize compatibility when running under various locales.

2.2.1.2 Macro Sheet

Content Type: application/vnd.ms-excel.macrosheet+xml

Root Namespace: http://schemas.microsoft.com/office/excel/2006/main

Source Relationship: http://schemas.microsoft.com/office/2006/relationships/xlMacrosheet

An instance of this part type specifies a macro sheet. References to the macro sheet part in this document include **international macro sheets** (section 2.2.1.1) as well.

A macro sheet part MUST be the target of an explicit relationship from the **workbook** part (section 2.2.1.4).

The root element for a part of this content type MUST be **macrosheet** (section 2.2.3.1).

A macro sheet part is permitted to have implicit relationships to the following parts specified in [ISO/IEC-29500-1]:

- Comments
- Macro Sheet Binary Index
- Sort Map

A macro sheet part is permitted to have explicit relationships to the following parts specified in [ISO/IEC-29500-1]:

- Custom Property
- Drawings
- OLE Object
- OLE Package
- Images
- Printer Settings
- **VML** Drawing

A macro sheet part MUST NOT have implicit or explicit relationships to any other part specified in [ISO/IEC-29500-1].

A formula ([ISO/IEC-29500-1] section 18.17) in a macro sheet is specified by **Formulas** (section 2.2.7), which is an extension of the definition in [MS-XLSX] section 2.2.2.

2.2.1.3 VBA Project

Content Type: application/vnd.ms-office.vbaProject

Root Namespace: Not applicable

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Source Relationship: http://schemas.microsoft.com/office/2006/relationships/vbaProject

This part is specified in [MS-OVBA].

A package MUST contain at most one VBA Project part, which MUST be the target of an implicit relationship from the **workbook** part (section 2.2.1.4).

A VBA Project part MUST NOT have implicit or explicit relationships to any other part specified by this document or any other part specified in [ISO/IEC-29500-1].

2.2.1.4 Workbook

Content Types:

- application/vnd.ms-excel.sheet.macroEnabled.main+xml
- application/vnd.ms-excel.template.macroEnabled.main+xml

Root Namespace: http://schemas.openxmlformats.org/spreadsheetml/2006/main

Source Relationship:
http://schemas.openxmlformats.org/officeDocument/2006/relationships/officeDocument

This part is modified from the part specified in [ISO/IEC-29500-1] Part1, section 12.3.23.

A Workbook part is permitted to have an implicit relationship to the **VBA Project** (section 2.2.1.3) **Macro Sheet** (section 2.2.1.2) and **International Macro Sheet** (section 2.2.1.1) parts.

2.2.2 Excel Extensions

Extensions are specified by using conventions provided by [ISO/IEC-29500-3].

2.2.2.1 Extensions by Part

This section specifies the elements from [ISO/IEC-29500-1] that are extended by this format. Either the Ignorable attribute ([ISO/IEC-29500-3] section 10.1.1), AlternateContent element ([ISO/IEC-29500-3] section 10.2.1), or extLst element ([ISO/IEC-29500-1] section 18.2.10) MUST be used to maintain compatibility with ISO/IEC-29500 implementations.

2.2.2.1.1 Workbook

The extLst ([ISO/IEC-29500-1] section 18.2.10) child element of the workbook ([ISO/IEC-29500-1] section 18.2.27) element is extended by the addition of new child **ext** ([ISO/IEC-29500-1] section 18.2.7) elements, whose structure is specified in the following table.

Ext uri	Child element
{8193D73E-4604-4355-AFF4-8A2333D13BE4}	**definedNames** (section 2.2.3.2)

For more information about how extension lists are used, see [ISO/IEC-29500-3] section 10.1.2.

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2.2.3 Global Elements

2.2.3.1 macrosheet

Target namespace: http://schemas.microsoft.com/office/excel/2006/main

A **CT_Worksheet** element (section 2.2.5.1) that specifies a macro sheet.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this element.

```
<xsd:element name="macrosheet" type="CT_Worksheet"/>
```

2.2.3.2 definedNames

Target namespace: http://schemas.microsoft.com/office/excel/2008/2/main

A **CT_DefinedNames** element (section 2.2.5.2) that specifies additional properties for macros.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this element.

```
<xsd:element name="definedNames" type="CT_DefinedNames"/>
```

2.2.4 Global Attributes

None.

2.2.5 Complex Types

2.2.5.1 CT_Worksheet

Target namespace: http://schemas.microsoft.com/office/excel/2006/main

Referenced by: macrosheet

A complex type that specifies properties for a macro sheet.

Child Elements:

sheetPr : A CT_SheetPr ([ISO/IEC-29500-1] section A.2) element that specifies sheet-level properties.

dimension : A CT_SheetDimension ([ISO/IEC-29500-1] section A.2) element that specifies the used **range** of the **worksheet**.

sheetViews : A CT_SheetViews ([ISO/IEC-29500-1] section A.2) element that specifies **sheet view** information.

sheetFormatPr : A CT_SheetFormatPr ([ISO/IEC-29500-1] section A.2) element that specifies **sheet** formatting properties.

cols : A CT_Cols ([ISO/IEC-29500-1] section A.2) element that specifies information about whole columns of the worksheet.

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sheetData : A CT_SheetData ([ISO/IEC-29500-1] section A.2) element that specifies the Worksheet ([ISO/IEC-29500-1] section 18.3) cell table.

sheetCalcPr : This element MUST be ignored in a macro sheet.

sheetProtection : A CT_SheetProtection ([ISO/IEC-29500-1] section A.2) element that specifies sheet **protection** options.

protectedRanges : This element MUST be ignored in a macro sheet.

scenarios : This element MUST be ignored in a macro sheet.

autoFilter : A CT_AutoFilter ([ISO/IEC-29500-1] section A.2) element that specifies **AutoFilter** settings.

sortState : A CT_SortState ([ISO/IEC-29500-1] section A.2) element that specifies the different **sort conditions** that apply to a range.

dataConsolidate : A CT_DataConsolidate ([ISO/IEC-29500-1] section A.2) element that specifies **data consolidation** settings.

customSheetViews : A CT_CustomSheetViews ([ISO/IEC-29500-1] section A.2) element that specifies custom sheet views.

mergeCells : This element MUST be ignored in a macro sheet.

phoneticPr : A CT_PhoneticPr ([ISO/IEC-29500-1] section A.2) element that specifies default **phonetic information**.

conditionalFormatting : A CT_ConditionalFormatting ([ISO/IEC-29500-1] section A.2) element that specifies **conditional formatting** rules.

dataValidations : This element MUST be ignored in a macro sheet.

hyperlinks : This element MUST be ignored in a macro sheet.

printOptions : A CT_PrintOptions ([ISO/IEC-29500-1] section A.2) element that specifies print options for the sheet.

pageMargins : A CT_PageMargins ([ISO/IEC-29500-1] section A.2) element that specifies **page margins** for the sheet.

pageSetup : A CT_PageSetup ([ISO/IEC-29500-1] section A.2) element that specifies page setup settings for the sheet.

headerFooter : A CT_HeaderFooter ([ISO/IEC-29500-1] section A.2) element that specifies header and footer settings.

rowBreaks : A CT_PageBreak ([ISO/IEC-29500-1] section A.2) element that specifies horizontal **page break (2)** information.

colBreaks : A CT_PageBreak ([ISO/IEC-29500-1] section A.2) element that specifies vertical page break (2) information.

customProperties : A CT_CustomProperties ([ISO/IEC-29500-1] section A.2) element that specifies references to binary parts containing arbitrary user-defined data.

cellWatches : This element MUST be ignored in a macro sheet.

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ignoredErrors : This element MUST be ignored in a macro sheet.

smartTags : This element MUST be ignored in a macro sheet.

drawing : A CT_Drawing ([ISO/IEC-29500-1] section A.2) element that specifies a reference to a drawing part ([ISO/IEC-29500-1] section 12.3.8) containing one or more drawing ([ISO/IEC-29500-1] section 20.5) elements.

picture : A CT_SheetBackgroundPicture ([ISO/IEC-29500-1] section A.2) element that specifies a background image of a sheet.

oleObjects : A CT_OleObjects ([ISO/IEC-29500-1] section A.2) element that specifies **embedded objects** in the sheet.

controls : This element MUST be ignored in a macro sheet.

webPublishItems : A CT_WebPublishItems ([ISO/IEC-29500-1] section A.2) element that specifies individual objects that have been published to **HTML**.

tableParts : A CT_TableParts ([ISO/IEC-29500-1] section A.2) element that specifies references to parts specifying every **table** on the sheet.

extLst : A CT_ExtensionList ([ISO/IEC-29500-1] section A.2) element that specifies future extensions to this format.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this complex type.

```
<xsd:complexType name="CT_Worksheet">
  <xsd:sequence>
    <xsd:element name="sheetPr" type="x:CT_SheetPr" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="dimension" type="x:CT_SheetDimension" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="sheetViews" type="x:CT_SheetViews" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="sheetFormatPr" type="x:CT_SheetFormatPr" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="cols" type="x:CT_Cols" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="sheetData" type="x:CT_SheetData" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="sheetCalcPr" type="x:CT_SheetCalcPr" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="sheetProtection" type="x:CT_SheetProtection" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="protectedRanges" type="x:CT_ProtectedRanges" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="scenarios" type="x:CT_Scenarios" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="autoFilter" type="x:CT_AutoFilter" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="sortState" type="x:CT_SortState" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="dataConsolidate" type="x:CT_DataConsolidate" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="customSheetViews" type="x:CT_CustomSheetViews" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="mergeCells" type="x:CT_MergeCells" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="phoneticPr" type="x:CT_PhoneticPr" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="conditionalFormatting" type="x:CT_ConditionalFormatting" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="dataValidations" type="x:CT_DataValidations" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="hyperlinks" type="x:CT_Hyperlinks" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="printOptions" type="x:CT_PrintOptions" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="pageMargins" type="x:CT_PageMargins" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="pageSetup" type="x:CT_PageSetup" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="headerFooter" type="x:CT_HeaderFooter" minOccurs="0" maxOccurs="1"/>
```


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```
    <xsd:element name="rowBreaks" type="x:CT_PageBreak" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="colBreaks" type="x:CT_PageBreak" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="customProperties" type="x:CT_CustomProperties" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="cellWatches" type="x:CT_CellWatches" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="ignoredErrors" type="x:CT_IgnoredErrors" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="smartTags" type="x:CT_SmartTags" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="drawing" type="x:CT_Drawing" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="picture" type="x:CT_SheetBackgroundPicture" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="oleObjects" type="x:CT_OleObjects" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="controls" type="x:CT_Controls" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="webPublishItems" type="x:CT_WebPublishItems" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="tableParts" type="x:CT_TableParts" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

2.2.5.2 CT_DefinedNames

Target namespace: http://schemas.microsoft.com/office/excel/2008/2/main

Referenced by: definedNames

A complex type that specifies a group of additional properties for macros.

Child Elements:

definedName : A **CT_DefinedName** element (section 2.2.5.3) that specifies additional properties for a particular macro.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this complex type.

```
<xsd:complexType name="CT_DefinedNames">
  <xsd:sequence>
    <xsd:element name="definedName" type="CT_DefinedName" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.2.5.3 CT_DefinedName

Target namespace: http://schemas.microsoft.com/office/excel/2008/2/main

Referenced by: CT_DefinedNames

A complex type that specifies additional properties for a macro named **name**.

Child Elements:

argumentDescriptions : A **CT_DefinedNameArgumentDescriptions** element (section 2.2.5.4) that specifies a group of descriptions for the macro arguments if the macro has arguments.

Attributes:

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name : An ST_Xstring ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the name of a macro. The **name** attribute value MUST be unique for each **CT_DefinedName** element inside the **CT_DefinedNames** element (section 2.2.5.2). At least one of the following conditions MUST be true: there exists a CT_DefinedName ([ISO/IEC-29500-1] section A.2) element with a **name** attribute equal to this value and either the **vbProcedure** attribute or the **xlm** attribute is equal to 1, or there exists a Visual Basic for Applications (VBA) macro having a name equal to this value.

The string MUST adhere to the **name** grammar as specified in [MS-XLSX] section 2.2.2.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this complex type.

```
<xsd:complexType name="CT_DefinedName">
  <xsd:sequence>
    <xsd:element name="argumentDescriptions" type="CT_DefinedNameArgumentDescriptions"
minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
</xsd:complexType>
```

2.2.5.4 CT_DefinedNameArgumentDescriptions

Target namespace: http://schemas.microsoft.com/office/excel/2008/2/main

Referenced by: CT_DefinedName

A complex type that specifies a group of argument descriptions for a particular macro.

Child Elements:

argumentDescription : A **CT_DefinedNameArgumentDescription** element (section 2.2.5.5) that specifies an argument description for a particular macro. Each **index** attribute of these child elements MUST be unique for all **CT_DefinedNameArgumentDescription** elements (section 2.2.5.5) within this **CT_DefinedNameArgumentDescriptions** element.

Attributes:

count : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of **CT_DefinedNameArgumentDescription** child elements (section 2.2.5.5) of this element and specifies the number of argument descriptions of the associated macro. MUST be greater than or equal to 1 and MUST be less than or equal to 60.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this complex type.

```
<xsd:complexType name="CT_DefinedNameArgumentDescriptions">
  <xsd:sequence>
    <xsd:element name="argumentDescription" type="CT_DefinedNameArgumentDescription"
minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
</xsd:complexType>
```


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2.2.5.5 CT_DefinedNameArgumentDescription

Target namespace: http://schemas.microsoft.com/office/excel/2008/2/main

Referenced by: CT_DefinedNameArgumentDescriptions

A complex type that specifies an argument description for a particular argument of a macro. The length of the ST_Xstring ([ISO/IEC-29500-1] section 22.9.2.19) MUST be less than or equal to 255.

Attributes:

index : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the zero-based index referring to the argument at position **index** of the associated macro. MUST be less than the **count** attribute value in the parent **CT_DefinedNameArgumentDescription** element (section 2.2.5.5).

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment defines the contents of this complex type.

```
<xsd:complexType name="CT_DefinedNameArgumentDescription">
  <xsd:simpleContent>
    <xsd:extension base="x:ST_Xstring">
      <xsd:attribute name="index" type="xsd:unsignedInt" use="required"/>
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>
```

2.2.6 Simple Types

None.

2.2.7 Formulas

```
function-call =/ (macro-function-call / command-function-call)
```

2.3 Macro-Enabled PresentationML Structures

2.3.1 Part Enumeration

This section specifies the parts ([ISO/IEC-29500-1]) of the macro-enabled PresentationML file format that are different from the parts of the non-macro-enabled PresentationML file format specified in [ISO/IEC-29500-1] section 13.3. These parts and their relationships are summarized in the following table.

Part	Relationship Target of
Presentation (section 2.3.1.1)	PresentationML Package ([ISO/IEC-29500-1] section 13.2)
VBA Project (section 2.3.1.2)	Presentation (section 2.3.1.1)

2.3.1.1 Presentation

Content Types:

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- application/vnd.ms-powerpoint.presentation.macroEnabled.main+xml
- application/vnd.ms-powerpoint.slideshow.macroEnabled.main+xml
- application/vnd.ms-powerpoint.template.macroEnabled.main+xml

Root Namespace: http://schemas.openxmlformats.org/presentationml/2006/main

Source Relationship:
http://schemas.openxmlformats.org/officeDocument/2006/relationships/officeDocument

This part is modified from the presentation part specified in [ISO/IEC-29500-1] Part 1, section 13.3.6.presentation part is permitted to have an implicit relationship to the VBA Project part.

2.3.1.2 VBA Project

Content Type: application/vnd.ms-office.vbaProject

Root Namespace: Not applicable

Source Relationship: http://schemas.microsoft.com/office/2006/relationships/vbaProject

This part is specified in [MS-OVBA].

A package MUST contain at most one VBA Project part, which MUST be the target of an implicit relationship from the **presentation** part (section 2.3.1.1).

A VBA Project part MUST NOT have implicit or explicit relationships to any other part specified by this document or any part specified in [ISO/IEC-29500-1].

2.3.2 Extensions

None.

2.3.3 Global Elements

None.

2.3.4 Global Attributes

None.

2.3.5 Complex Types

2.3.5.1 CT_SlideMasterIdListEntry

Target namespace: http://schemas.openxmlformats.org/presentationml/2006/main

This element specifies a slide master that is available within the corresponding presentation. A slide master is a slide that is specifically designed to be a template for all related child layout slides.

This complex type is modified from the **CT_SlideMasterIdListEntry** specified in [ISO/IEC-29500-1], section 19.2.1.37.

The **id** attribute of this part MUST be present in the macro-enabled PresentationML format.

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2.3.6 Simple Types

None.

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3 Structure Examples

3.1 VBA Supplemental Data Part

This example shows a usage of a Word **VBA Supplemental Data** part (section 2.1.1.3). Consider the following XML, showing the complete contents of the **VBA Supplemental Data** part (section 2.1.1.3) of a word-processing document.

```
<wne:vbaSuppData
  xmlns:ve="http://schemas.openxmlformats.org/markup-compatibility/2006"
  xmlns:o="urn:schemas-microsoft-com:office:office"
  xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
  xmlns:m="http://schemas.openxmlformats.org/officeDocument/2006/math"
  xmlns:v="urn:schemas-microsoft-com:vml"
  xmlns:wp="http://schemas.openxmlformats.org/drawingml/2006/wordprocessingDrawing"
  xmlns:w10="urn:schemas-microsoft-com:office:word"
  xmlns:w="http://schemas.openxmlformats.org/wordprocessingml/2006/main"
  xmlns:wne="http://schemas.microsoft.com/office/word/2006/wordml">
  <wne:docEvents>
    <wne:eventDocOpen/>
    <wne:eventDocXmlAfterInsert/>
  </wne:docEvents>
  <wne:mcds>
    <wne:mcd wne:macroName="PROJECT.NEWMACROS.MACRO1" wne:name="Project.NewMacros.Macro1"
wne:bEncrypt="00" wne:cmg="56"/>
  </wne:mcds>
</wne:vbaSuppData>
```

The **docEvents** child of the **vbaSuppData** element (section 2.1.3.1) specifies that both the Open event and the XMLAfterInsert event are active for this document. The **mcds** element of the **vbaSuppData** element (section 2.1.3.1) contains an **mcd** element that specifies macro information for the "Project.NewMacros.Macro1" macro.

3.2 Macro Sheet Part

This example shows a usage of an Excel **macro sheet** part (section 2.2.1.2). Consider the following XML, showing the complete contents of a **macro sheet** part (section 2.2.1.2) of a workbook.

```
<xm:macrosheet
  xmlns="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
  xmlns:xm="http://schemas.microsoft.com/office/excel/2006/main"
  xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships">
  <dimension ref="A1"/>
  <sheetViews>
    <sheetView showFormulas="1" tabSelected="1" workbookViewId="0">
      <selection activeCell="A2" sqref="A2"/>
    </sheetView>
  </sheetViews>
  <sheetFormatPr defaultRowHeight="15"/>
  <sheetData>
    <row r="1" spans="1:1">
      <c r="A1" t="b">
        <f>ACTIVATE()</f>
        <v>0</v>
      </c>
    </row>
```


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```
    </sheetData>
    <pageMargins left="0.7" right="0.7" top="0.75" bottom="0.75" header="0.3" footer="0.3"/>
  </xm:macrosheet>
```

The **macrosheet** element (section 2.2.3.1) specifies the macro sheet. A formula following the grammar specified in section 2.2.7 is specified by the **f** element ([ISO/IEC-29500-1] section 18.17).

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4 Security Considerations

No additional security considerations.

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5 Appendix A: Full XML Schemas

For ease of implementation, this section provides the full W3C XML Schemas for the new elements, attributes, complex types, and simple types specified in the preceding sections. Any schema references to namespaces included in [ISO/IEC-29500:2008] refer specifically to the transitional schemas as specified in [ISO/IEC-29500-4].

5.1 http://schemas.microsoft.com/office/word/2006/wordml

```
<xsd:schema elementFormDefault="qualified"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
xmlns:w="http://schemas.openxmlformats.org/wordprocessingml/2006/main"
xmlns="http://schemas.microsoft.com/office/word/2006/wordml"
targetNamespace="http://schemas.microsoft.com/office/word/2006/wordml">
  <xsd:import namespace="http://schemas.openxmlformats.org/wordprocessingml/2006/main"
schemaLocation="word12.xsd" />
  <xsd:import id="rel"
namespace="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
schemaLocation="orel.xsd" />
  <xsd:element name="vbaSuppData" type="CT_VbaSuppData"/>
  <xsd:complexType name="CT_DocEvents">
    <xsd:sequence>
      <xsd:element name="eventDocNew" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocOpen" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocClose" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocSync" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocXmlAfterInsert" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocXmlBeforeDelete" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocContentControlAfterInsert" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocContentControlBeforeDelete" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocContentControlOnExit" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocContentControlOnEnter" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocStoreUpdate" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="eventDocContentControlContentUpdate" minOccurs="0" maxOccs="1"/>
      <xsd:element name="eventDocBuildingBlockAfterInsert" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_Mcd">
    <xsd:attribute name="macroName" type="w:ST_String" use="optional"/>
    <xsd:attribute name="name" type="w:ST_String" use="optional"/>
    <xsd:attribute name="menuHelp" type="w:ST_String" use="optional"/>
    <xsd:attribute name="bEncrypt" type="w:ST_UcharHexNumber"/>
      <xsd:attribute name="cmg" type="w:ST_UcharHexNumber"/>
  </xsd:complexType>
    <xsd:complexType name="CT_Mcds">
      <xsd:sequence>
        <xsd:element name="mcd" type="CT_Mcd" minOccurs="0" maxOccurs="unbounded"/>
      </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CT_VbaSuppData">
      <xsd:sequence>
        <xsd:element name="docEvents" type="CT_DocEvents" minOccurs="0" maxOccurs="1"/>
        <xsd:element name="mcds" type="CT_Mcds" minOccurs="0" maxOccurs="1"/>
      </xsd:sequence>
    </xsd:complexType>
  </xsd:schema>
```


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5.2 http://schemas.microsoft.com/office/excel/2006/main

```
<xsd:schema elementFormDefault="qualified" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://schemas.microsoft.com/office/excel/2006/main"
xmlns:x="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
targetNamespace="http://schemas.microsoft.com/office/excel/2006/main"
  <xsd:import namespace="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
schemaLocation="xlsheet.xsd" />
  <xsd:import
namespace="http://schemas.microsoft.com/office/excel/2006/main"
schemaLocation="xlmacrosheet.xsd" />
  <xsd:element name="macrosheet" type="CT_Worksheet"/>
  <xsd:complexType name="CT_Worksheet">
    <xsd:sequence>
      <xsd:element name="sheetPr" type="x:CT_SheetPr" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="dimension" type="x:CT_SheetDimension" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="sheetViews" type="x:CT_SheetViews" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="sheetFormatPr" type="x:CT_SheetFormatPr" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="cols" type="x:CT_Cols" minOccurs="0" maxOccurs="unbounded"/>
      <xsd:element name="sheetData" type="x:CT_SheetData" minOccurs="1" maxOccurs="1"/>
      <xsd:element name="sheetCalcPr" type="x:CT_SheetCalcPr" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="sheetProtection" type="x:CT_SheetProtection" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="protectedRanges" type="x:CT_ProtectedRanges" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="scenarios" type="x:CT_Scenarios" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="autoFilter" type="x:CT_AutoFilter" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="sortState" type="x:CT_SortState" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="dataConsolidate" type="x:CT_DataConsolidate" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="customSheetViews" type="x:CT_CustomSheetViews" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="mergeCells" type="x:CT_MergeCells" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="phoneticPr" type="x:CT_PhoneticPr" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="conditionalFormatting" type="x:CT_ConditionalFormatting"
minOccurs="0" maxOccurs="unbounded"/>
      <xsd:element name="dataValidations" type="x:CT_DataValidations" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="hyperlinks" type="x:CT_Hyperlinks" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="printOptions" type="x:CT_PrintOptions" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="pageMargins" type="x:CT_PageMargins" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="pageSetup" type="x:CT_PageSetup" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="headerFooter" type="x:CT_HeaderFooter" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="rowBreaks" type="x:CT_PageBreak" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="colBreaks" type="x:CT_PageBreak" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="customProperties" type="x:CT_CustomProperties" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="cellWatches" type="x:CT_CellWatches" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="ignoredErrors" type="x:CT_IgnoredErrors" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="smartTags" type="x:CT_SmartTags" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="drawing" type="x:CT_Drawing" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="picture" type="x:CT_SheetBackgroundPicture" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="oleObjects" type="x:CT_OleObjects" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="controls" type="x:CT_Controls" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="webPublishItems" type="x:CT_WebPublishItems" minOccurs="0"
maxOccurs="1"/>
```


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```
      <xsd:element name="tableParts" type="x:CT_TableParts" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:schema>
```

5.3 http://schemas.microsoft.com/office/excel/2008/2/main

```
<xsd:schema elementFormDefault="qualified"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
xmlns="http://schemas.microsoft.com/office/excel/2008/2/main"
xmlns:x="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
xmlns:xm="http://schemas.microsoft.com/office/excel/2006/main"
targetNamespace="http://schemas.microsoft.com/office/excel/2008/2/main">
  <xsd:import namespace="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
schemaLocation="xlbasictypes.xsd" />
  <xsd:import namespace="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
schemaLocation="xlsheet.xsd" />
  <xsd:import namespace="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
schemaLocation="xlpivot.xsd" />
  <xsd:import namespace="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
schemaLocation="orel.xsd" />
  <xsd:import namespace="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
schemaLocation="xlworkbook.xsd" />
  <xsd:import namespace="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
schemaLocation="xlsupbook.xsd" />
  <xsd:element name="macrosheet" type="CT_Worksheet"/>
  <xsd:complexType name="CT_DefinedName">
    <xsd:sequence>
      <xsd:element name="argumentDescriptions" type="CT_DefinedNameArgumentDescriptions"
minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_DefinedNameArgumentDescription">
    <xsd:simpleContent>
      <xsd:extension base="x:ST_Xstring">
        <xsd:attribute name="index" type="xsd:unsignedInt" use="required"/>
      </xsd:extension>
    </xsd:simpleContent>
  </xsd:complexType>
  <xsd:complexType name="CT_DefinedNameArgumentDescriptions">
    <xsd:sequence>
      <xsd:element name="argumentDescription" type="CT_DefinedNameArgumentDescription"
minOccurs="1" maxOccurs="unbounded"/>
    </xsd:sequence>
    <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_DefinedNames">
    <xsd:sequence>
      <xsd:element name="definedName" type="CT_DefinedName" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:schema>
```


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6 Appendix B: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

- Microsoft® Office 2010 suites
- Microsoft® Visual Basic® for Applications 6.0 (VBA 6.0)
- Microsoft® Visual Basic® for Applications 7.0 (VBA 7.0)

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

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7 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

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