[MS-OFFMACRO]:

Office Macro-Enabled File Format

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Revision Summary

Date	Revision History	Revision Class	Comments
7/13/2009	0.1	Major	Initial Availability
8/28/2009	0.2	Editorial	Revised and edited the technical content
11/6/2009	0.3	Editorial	Revised and edited the technical content
2/19/2010	1.0	Editorial	Revised and edited the technical content
3/31/2010	1.01	Editorial	Revised and edited the technical content
4/30/2010	1.02	Editorial	Revised and edited the technical content
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6/29/2010	1.04	Editorial	Changed language and formatting in the technical content.
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9/14/2016	1.5	None	No changes to the meaning, language, or formatting of the technical content.

Table of Contents

1   Introduction

This document specifies the Office Macro-Enabled File Format for WordprocessingML, SpreadsheetML, and PresentationML file formats that are either not present in or modified from non-macro-enabled WordprocessingML, SpreadsheetML, and PresentationML file formats described in [ECMA-376]. The macro-enabled file formats consist of the non-macro-enabled file formats described in [ECMA-376] and the XML structures and the XML and non-XML parts specified in this document.

Sections 1.7 and 2 of this specification are normative. All other sections and examples in this specification are informative.

1.1   Glossary

This document uses the following terms:

AutoFilter: A mechanism that can be used to filter tabular data based on user-defined criteria such as values, strings, and formatting.

conditional formatting: A mechanism that changes the appearance of a user interface element based on the evaluation of a rule or expression.

data consolidation: The process of combining tabular data from various worksheets into a single list.

document: An object in a content database such as a file, folder, list, or site. Each object is identified by a URI.

embedded object: An object that is created by using one application and is hosted in a document that was created by using another application. Embedding an object, rather than inserting or pasting it, ensures that the object retains its original format. Users can double-click an embedded object and edit it with the toolbars and menus from the application that was used to create it. See also Object Linking and Embedding (OLE).

Hypertext Markup Language (HTML): An application of the Standard Generalized Markup Language (SGML) that uses tags to mark elements in a document, as described in [HTML].

locale: A collection of rules and data that are specific to a language and a geographical area. A locale can include information about sorting rules, date and time formatting, numeric and monetary conventions, and character classification.

macro: A set of instructions that are recorded or written, and then typically saved to a file. When a macro is run, all of the instructions are performed automatically.

macro sheet: A single, logical container that is used to store and run Microsoft Excel 4.0 for Windows macro formulas.

page break: A divider that breaks a worksheet into separate pages for printing. Page breaks are inserted automatically based on the paper size, margin settings, scaling options, and the positions of any page breaks that are inserted manually.

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

phonetic information: A series of characters that appear above text in a cell and provide information that helps users pronounce the text.

presentation: A collection of slides that are intended to be viewed by an audience.

protection: A mechanism that helps restrict users from making unwanted changes to the data or structure of a workbook.

range: An addressable region that is in a workbook. A range typically consists of zero or more cells and represents a single, contiguous rectangle of cells on a single sheet.

sheet: A part of an Excel workbook. There are four types of sheets: **worksheet**, **macro sheet**, dialog sheet, and chart sheet. Multiple sheets are stored together within a workbook.

sheet view: A collection of display settings, such as which cells are shown, and the zoom level for a sheet window.

sort condition: A condition that determines how to sort cells in a range.

table: A list that is defined in a workbook.

Vector Markup Language (VML): A system of marking up or tagging two-dimensional vector graphics for publication on the World Wide Web. VML graphics are scalable and editable, and typically require less disk space and less time to download.

Visual Basic for Applications (VBA): A macro-based programming language that derives from Microsoft Visual Basic and can be used to customize and extend an application. Unlike Visual Basic, Microsoft Visual Basic for Applications (VBA) code and macros can be run only from within a host application that supports VBA.

workbook: A container for a collection of **sheets**.

worksheet: A single logical container for a set of tabular data and other objects in a workbook.

XML: The Extensible Markup Language, as described in [XML1.0].

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

1.2   References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the Errata.

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.

[ECMA-376] ECMA International, "Office Open XML File Formats", https://www.ecma-international.org/publications-and-standards/standards/ecma-376/

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

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

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

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

1.2.2 Informative References

[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

1.3 Structure Overview (Synopsis)

This document 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 described in [ECMA-376]. **Document**, **Workbook**, and **Presentation** data are each contained in a in a compressed file (.zip) package conforming to the Open Packaging Conventions as described in [ECMA-376] section 2. Individual files stored in a ZIP package, called parts ([ECMA-376]), contain information about the content and structure of a document, workbook, or presentation. Some parts ([ECMA-376]) store information using **XML** and other parts ([ECMA-376]) store information by using binary data.

1.3.1 Organization of This Document

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 described in [ECMA-376].

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 described in [ECMA-376].

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 described in [ECMA-376].

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 described in [ECMA-376]. Sections 2, 3, 4, and 5 described 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 [ECMA-376]. Section 2 describes global elements, section 3 describes global attributes, section 4 describes complex types, and section 5 describes 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 5 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. Specifications in section 2 provide links to the relevant items in section 5.

1.4 Relationship to Protocols and Other Structures

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

- [ECMA-376] sections 1, 3, and 4 for baseline WordprocessingML, SpreadsheetML, and PresentationML persistence formats.

- [ECMA-376] section 2 for open packaging conventions.

- [ECMA-376] section 5 for markup compatibility and extensibility.

1.5   Applicability Statement

This document specifies a persistence format for structures not present in or modified from the structures described in [ECMA-376] for WordprocessingML, SpreadsheetML, and PresentationML documents. The structures specified in this document are not applicable as a stand-alone file format. Each structure described in this document is integrated with [ECMA-376] WordprocessingML, SpreadsheetML, or PresentationML documents in a particular way, as described in the section for that structure.

1.6   Versioning and Localization

None.

1.7   Vendor-Extensible Fields

None.

2 Structures

2.1 Macro-Enabled WordprocessingML Structures

2.1.1 Part Enumeration

This section specifies the parts ([ECMA-376]) of the macro-enabled WordprocessingML file format that are different from the parts of the non-macro-enabled WordprocessingML file format specified in [ECMA-376] Part 1, Section 11.3. These parts and their relationships are summarized in the following table.

Part	Relationship target
Main Document (section 2.1.1.1)	WordprocessingML Package ([ECMA-376] Part 1, Section 11.2)
VBA Project (section 2.1.1.2)	Main Document
VBA Supplemental Data (section 2.1.1.3)	VBA Project

2.1.1.1 Main Document

Content Type:

▪ 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 specified in [ECMA-376] Part 1, Section 11.3.10.

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].

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 (section 2.1.1.3).

A VBA Project part MUST NOT have implicit or explicit relationships to any other part specified by this document or any part specified in [ECMA-376].

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 Microsoft **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 [ECMA-376].

The root element for a part of this content type MUST be **vbaSuppData** (section 2.1.2.1).

2.1.2 Global Elements

2.1.2.1 vbaSuppData

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

A **CT_VbaSuppData** element (section 2.1.4.4) that specifies supplemental Microsoft **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"/>
```

2.1.3 Global Attributes

None.

2.1.4 Complex Types

2.1.4.1 CT_Mcd

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

Referenced by: CT_Mcds

A complex type that specifies a **macro**.

Attributes:

macroName : An **ST_String** attribute ([ECMA-376] Part 4, Section 2.18.89) that MUST equal the **name** attribute with every character set to uppercase.

name : An **ST_String** attribute ([ECMA-376] Part 4, Section 2.18.89) that specifies the name of the macro. **name** MUST NOT exceed 255 characters.

menuHelp : An **ST_String** attribute ([ECMA-376] Part 4, Section 2.18.89) that MUST be ignored.

bEncrypt : An **ST_UcharHexNumber** attribute ([ECMA-376] Part 4, Section 2.18.106) that MUST be 0.

cmg : An **ST_UcharHexNumber** attribute ([ECMA-376] Part 4, Section 2.18.106) 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>
```

2.1.4.2 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 2.1.4.1) 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>
```

2.1.4.3 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.

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
<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>
```

2.1.4.4 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 2.1.4.3) that specifies a container of document events that are active for this document.

mcds : A **CT_Mcds** element (section 2.1.4.2) 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>
```

2.1.5 Simple Types

None.

2.2 Macro-Enabled SpreadsheetML Structures

2.2.1 Part Enumeration

This section specifies the parts ([ECMA-376]) of the macro-enabled SpreadsheetML file format that are different from the parts of the non-macro-enabled SpreadsheetML file format specified in [ECMA-376] Part 1, Section 12.3. These parts and their relationships are summarized in the following table.

Part	Relationship target
Workbook (section 2.2.1.1)	SpreadsheetML Package ([ECMA-376] Part 1, Section 12.2)
VBA Project (section 2.2.1.2)	Workbook
Macro Sheet (section 2.2.1.3)	Workbook
International Macro Sheet (section 2.2.1.4)	Workbook

2.2.1.1 Workbook

Content Type(s):

- 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 specified in [ECMA-376] Part 1, Section 12.3.23.

2.2.1.2 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 workbook part (section 2.2.1.1).

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 [ECMA-376].

2.2.1.3 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 2.2.1.4) as well.

A Macro Sheet part MUST be the target of an explicit relationship from the workbook part (section 2.2.1.1).

The root element for a part of this content type MUST be a Macro Sheet (section 2.2.1.3).

A Macro Sheet part is permitted to have implicit relationships to the following parts specified in [ECMA-376]:

- Comments

- Macro Sheet Binary Index

- Sort Map

A Macro Sheet part is permitted to have explicit relationships to the following parts specified in [ECMA-376]:

- 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 [ECMA-376].

A formula ([ECMA-376] Part 4, Section 3.17) in a macro sheet is specified in section 2.2.6, which is an extension of the definition in [MS-XLSX] section 2.2.2.

2.2.1.4 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

An instance of this part type specifies the same information as a macrosheet part type (section 2.2.2.1). 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.

2.2.2 Global Elements

2.2.2.1 macrosheet

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

A **CT_Worksheet** element (section 2.2.4.1) 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 Global Attributes

None.

2.2.4 Complex Types

2.2.4.1 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** element ([ECMA-376] Part 4, Annex A) that specifies **sheet**-level properties.

dimension : A **CT_SheetDimension** element ([ECMA-376] Part 4, Annex A) that specifies the used **range** of the **worksheet**.

sheetViews : A **CT_SheetViews** element ([ECMA-376] Part 4, Annex A) that specifies **sheet view** information.

sheetFormatPr : A **CT_SheetFormatPr** element ([ECMA-376] Part 4, Annex A) that specifies sheet formatting properties.

cols : A **CT_Cols** element ([ECMA-376] Part 4, Annex A) that specifies information about whole columns of the worksheet.

sheetData : A **CT_SheetData** element ([ECMA-376] Part 4, Annex A) that specifies the Worksheet ([ECMA-376] Part 4, Section 3.3) cell table.

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

sheetProtection : A **CT_SheetProtection** element ([ECMA-376] Part 4, Annex A) 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** element ([ECMA-376] Part 4, Annex A) that specifies **AutoFilter** settings.

sortState : A **CT_SortState** element ([ECMA-376] Part 4, Annex A) that specifies the different **sort conditions** that apply to a range.

dataConsolidate : A **CT_DataConsolidate** element ([ECMA-376] Part 4, Annex A) that specifies **data consolidation** settings.

customSheetViews : A **CT_CustomSheetViews** element ([ECMA-376] Part 4, Annex A) that specifies custom sheet views.

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

phoneticPr : A **CT_PhoneticPr** element ([ECMA-376] Part 4, Annex A) that specifies default **phonetic information**.

conditionalFormatting : A **CT_ConditionalFormatting** element ([ECMA-376] Part 4, Annex A) 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** element ([ECMA-376] Part 4, Annex A) that specifies print options for the sheet.

pageMargins : A **CT_PageMargins** element ([ECMA-376] Part 4, Annex A) that specifies **page margins** for the sheet.

pageSetup : A **CT_PageSetup** element ([ECMA-376] Part 4, Annex A) that specifies page setup settings for the sheet.

headerFooter : A **CT_HeaderFooter** element ([ECMA-376] Part 4, Annex A) that specifies header and footer settings.

rowBreaks : A **CT_PageBreak** element ([ECMA-376] Part 4, Annex A) that specifies horizontal **page break** information.

colBreaks : A **CT_PageBreak** element ([ECMA-376] Part 4, Annex A) that specifies vertical page break information.

customProperties : A **CT_CustomProperties** element ([ECMA-376] Part 4, Annex A) that specifies references to binary parts containing arbitrary user-defined data.

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

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

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

drawing : A **CT_Drawing** element ([ECMA-376] Part 4, Annex A) that specifies a reference to a drawing part ([ECMA-376] Part 1, Section 12.3.8) containing one or more drawing ([ECMA-376] Part 4, Section 5.6) elements.

picture : A **CT_SheetBackgroundPicture** element ([ECMA-376] Part 4, Annex A) that specifies a background image of a sheet.

oleObjects : A **CT_OleObjects** element ([ECMA-376] Part 4, Annex A) that specifies **embedded objects** in the sheet.

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

webPublishItems : A **CT_WebPublishItems** element ([ECMA-376] Part 4, Annex A) that specifies individual objects that have been published to **HTML**.

tableParts : A **CT_TableParts** element ([ECMA-376] Part 4, Annex A) that specifies references to parts specifying every **table** on the sheet.

extLst : A **CT_ExtensionList** element ([ECMA-376] Part 4, Annex A) 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"/>
    <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 Simple Types

None.

2.2.6 Formulas

The syntax of a formula ([ECMA-376] Part 4, Section 3.17) in a macro sheet is specified by the grammar in [MS-XLSX] section 2.2.2, along with the following extension to that grammar.

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

ref-macro-function-call = "ABSREF" absref-params
ref-macro-function-call =/ "ACTIVE.CELL" active-cell-params
ref-macro-function-call =/ "CALL" call-params
ref-macro-function-call =/ "CALLER" caller-params
ref-macro-function-call =/ "EVALUATE" evaluate-params
ref-macro-function-call =/ "GET.DOCUMENT" get-document-params
ref-macro-function-call =/ "INPUT" input-params
ref-macro-function-call =/ "LAST.ERROR" last-error-params
ref-macro-function-call =/ "SCENARIO.GET" scenario-get-params
ref-macro-function-call =/ "SELECTION" selection-params
ref-macro-function-call =/ "TEXTREF" textref-params
ref-macro-function-call =/ "VIEW.GET" view-get-params

macro-function-call = ref-macro-function-call
macro-function-call =/ "ADD.BAR" add-bar-params
macro-function-call =/ "ADD.COMMAND" add-command-params
macro-function-call =/ "ADD.MENU" add-menu-params
macro-function-call =/ "ADD.TOOLBAR" add-toolbar-params
macro-function-call =/ "APP.TITLE" app-title-params
macro-function-call =/ "ARGUMENT" argument-params
macro-function-call =/ "BREAK" break-params
macro-function-call =/ "CANCEL.KEY" cancel-key-params
macro-function-call =/ "CHECK.COMMAND" check-command-params
macro-function-call =/ "CREATE.OBJECT" create-object-params
macro-function-call =/ "CUSTOM.REPEAT" custom-repeat-params
macro-function-call =/ "CUSTOM.UNDO" custom-undo-params
macro-function-call =/ "DELETE.BAR" delete-bar-params
macro-function-call =/ "DELETE.COMMAND" delete-command-params
macro-function-call =/ "DELETE.MENU" delete-menu-params
macro-function-call =/ "DELETE.TOOLBAR" delete-toolbar-params
macro-function-call =/ "DEREF" deref-params
macro-function-call =/ "DIALOG.BOX" dialog-box-params
macro-function-call =/ "DIRECTORY" directory-params
macro-function-call =/ "DOCUMENTS" documents-params
macro-function-call =/ "ECHO" echo-params
macro-function-call =/ "ELSE" else-params
macro-function-call =/ "ELSE.IF" else-if-params
macro-function-call =/ "ENABLE.COMMAND" enable-command-params
macro-function-call =/ "ENABLE.TOOL" enable-tool-params
macro-function-call =/ "END.IF" end-if-params
macro-function-call =/ "ERROR" error-params
macro-function-call =/ "EXEC" exec-params
macro-function-call =/ "EXECUTE" execute-params
macro-function-call =/ "FCLOSE" fclose-params
macro-function-call =/ "FILES" files-params
macro-function-call =/ "FOPEN" fopen-params
macro-function-call =/ "FOR" for-params
macro-function-call =/ "FOR.CELL" for-cell-params
macro-function-call =/ "FORMULA.CONVERT" formula-convert-params
macro-function-call =/ "FPOS" fpos-params
macro-function-call =/ "FREAD" fread-params
```

```
macro-function-call =/ "FREADLN" freadln-params
macro-function-call =/ "FSIZE" fsize-params
macro-function-call =/ "FWRITE" fwrite-params
macro-function-call =/ "FWRITELN" fwriteln-params
macro-function-call =/ "GET.BAR" get-bar-params
macro-function-call =/ "GET.CELL" get-cell-params
macro-function-call =/ "GET.CHART.ITEM" get-chart-item-params
macro-function-call =/ "GET.DEF" get-def-params
macro-function-call =/ "GET.FORMULA" get-formula-params
macro-function-call =/ "GET.LINK.INFO" get-link-info-params
macro-function-call =/ "GET.MOVIE" get-movie-params
macro-function-call =/ "GET.NAME" get-name-params
macro-function-call =/ "GET.NOTE" get-note-params
macro-function-call =/ "GET.OBJECT" get-object-params
macro-function-call =/ "GET.TOOL" get-tool-params
macro-function-call =/ "GET.TOOLBAR" get-toolbar-params
macro-function-call =/ "GET.WINDOW" get-window-params
macro-function-call =/ "GET.WORKBOOK" get-workbook-params
macro-function-call =/ "GET.WORKSPACE" get-workspace-params
macro-function-call =/ "GOTO" goto-params
macro-function-call =/ "GROUP" group-params
macro-function-call =/ "HALT" halt-params
macro-function-call =/ "HELP" help-params
macro-function-call =/ "INITIATE" initiate-params
macro-function-call =/ "LINKS" links-params
macro-function-call =/ "MOVIE.COMMAND" movie-command-params
macro-function-call =/ "NAMES" names-params
macro-function-call =/ "NEXT" next-params
macro-function-call =/ "NOTE" note-params
macro-function-call =/ "OPEN.DIALOG" open-dialog-params
macro-function-call =/ "OPTIONS.LISTS.GET" options-lists-get-params
macro-function-call =/ "PAUSE" pause-params
macro-function-call =/ "POKE" poke-params
macro-function-call =/ "PRESS.TOOL" press-tool-params
macro-function-call =/ "REFTEXT" reftext-params
macro-function-call =/ "REGISTER" register-params
macro-function-call =/ "REGISTER.ID" register-id-params
macro-function-call =/ "RELREF" relref-params
macro-function-call =/ "RENAME.COMMAND" rename-command-params
macro-function-call =/ "REQUEST" request-params
macro-function-call =/ "RESET.TOOLBAR" reset-toolbar-params
macro-function-call =/ "RESTART" restart-params
macro-function-call =/ "RESULT" result-params
macro-function-call =/ "RESUME" resume-params
macro-function-call =/ "RETURN" return-params
macro-function-call =/ "SAVE.DIALOG" save-dialog-params
macro-function-call =/ "SAVE.TOOLBAR" save-toolbar-params
macro-function-call =/ "SET.NAME" set-name-params
macro-function-call =/ "SET.VALUE" set-value-params
macro-function-call =/ "SHOW.BAR" show-bar-params
macro-function-call =/ "SPELLING.CHECK" spelling-check-params
macro-function-call =/ "STEP" step-params
macro-function-call =/ "TERMINATE" terminate-params
macro-function-call =/ "TEXT.BOX" text-box-params
macro-function-call =/ "UNREGISTER" unregister-params
macro-function-call =/ "VOLATILE" volatile-params
macro-function-call =/ "WHILE" while-params
macro-function-call =/ "WINDOW.TITLE" window-title-params
macro-function-call =/ "WINDOWS" windows-params

absref-params = "(" argument "," ref-expression ")"
active-cell-params = "(" *space ")"
add-bar-params = "(" argument ")"
add-command-params = "(" argument "," argument "," argument ["," argument ["," argument]] ")"
add-menu-params = "(" argument "," argument ["," argument ["," argument]] ")"
add-toolbar-params = "(" argument ["," argument] ")"
app-title-params = "(" argument ")"
argument-params = "(" argument ["," argument ["," ref-expression]] ")"
break-params = "(" *space ")"
```

```
call-params = "(" (expression / (argument "," argument *253("," argument))) ")"
caller-params = "(" *space ")"
cancel-key-params = "(" argument ["," ref-expression] ")"
check-command-params = "(" argument "," argument "," argument "," argument ["," argument] ")"
create-object-params = "(" argument "," argument ["," argument ["," argument ["," argument
["," argument ["," argument ["," argument ["," argument ["," argument ["," argument]]]]]]]]
")"
custom-repeat-params = "(" argument ["," argument ["," argument]] ")"
custom-undo-params = "(" argument ["," argument] ")"
delete-bar-params = "(" expression ")"
delete-command-params = "(" argument "," argument "," argument ["," argument] ")"
delete-menu-params = "(" argument "," argument ["," argument] ")"
delete-toolbar-params = "(" expression ")"
deref-params = "(" ref-expression ")"
dialog-box-params = "(" expression ")"
directory-params = "(" argument ")"
documents-params = "(" argument ["," argument] ")"
echo-params = "(" argument ")"
else-params = "(" *space ")"
else-if-params = "(" expression ")"
enable-command-params = "(" argument "," argument "," argument "," argument ["," argument]
")"
enable-tool-params = "(" argument "," argument "," argument ")"
end-if-params = "(" *space ")"
error-params = "(" argument ["," argument] ")"
evaluate-params = "(" expression ")"
exec-params = "(" (expression / (argument "," argument ["," argument ["," argument]])) ")"
execute-params = "(" argument "," argument ")"
fclose-params = "(" expression ")"
files-params = "(" argument ["," argument] ")"
fopen-params = "(" (expression / (argument "," argument)) ")"
for-params = "(" argument "," argument "," argument ["," argument] ")"
for-cell-params = "(" (expression / (argument "," argument ["," argument])) ")"
formula-convert-params = "(" argument "," argument ["," argument ["," argument ["," 
argument]]] ")"
fpos-params = "(" (expression / (argument "," argument)) ")"
fread-params = "(" argument "," argument ")"
freadln-params = "(" expression ")"
fsize-params = "(" expression ")"
fwrite-params = "(" argument "," argument ")"
fwriteln-params = "(" argument "," argument ")"
get-bar-params = "(" argument ["," argument ["," argument ["," argument]]] ")"
get-cell-params = "(" (expression / (argument "," ref-expression)) ")"
get-chart-item-params = "(" (expression / (argument "," argument ["," argument])) ")"
get-def-params = "(" (expression / (argument "," argument ["," argument])) ")"
get-document-params = "(" (expression / (argument "," argument)) ")"
get-formula-params = "(" expression ")"
get-link-info-params = "(" argument "," argument ["," argument ["," argument]] ")"
get-movie-params = "(" argument "," argument ["," argument] ")"
get-name-params = "(" (expression / (argument "," argument)) ")"
get-note-params = "(" argument ["," argument ["," argument]] ")"
get-object-params = "(" (expression / (argument "," argument ["," argument ["," argument ["," 
argument]]])) ")"
get-tool-params = "(" (expression / (argument "," argument ["," argument])) ")"
get-toolbar-params = "(" (expression / (argument "," argument)) ")"
get-window-params = "(" (expression / (argument "," argument)) ")"
get-workbook-params = "(" (expression / (argument "," argument)) ")"
get-workspace-params = "(" expression ")"
goto-params = "(" ref-expression ")"
group-params = "(" *space ")"
halt-params = "(" argument ")"
help-params = "(" argument ")"
initiate-params = "(" argument "," argument ")"
input-params = "(" (expression / (argument "," argument ["," argument ["," argument ["," 
argument ["," argument ["," argument]]]]])) ")"
last-error-params = "(" *space ")"
links-params = "(" argument ["," argument] ")"
movie-command-params = "(" argument "," argument "," argument ["," argument] ")"
names-params = "(" argument ["," argument ["," argument]] ")"
```

```
next-params = "(" *space ")"
note-params = "(" argument ["," argument ["," argument ["," argument]]] ")"
open-dialog-params = "(" argument ["," argument ["," argument ["," argument]]] ")"
options-lists-get-params = "(" expression ")"
pause-params = "(" argument ")"
poke-params = "(" argument "," argument "," argument ")"
press-tool-params = "(" argument "," argument "," argument ")"
reftext-params = "(" ref-expression "," argument ")"
register-params = "(" (expression / (argument "," argument ["," argument ["," argument ["," 
argument ["," argument ["," argument ["," argument ["," argument ["," argument *245("," 
argument)]]]]]]]]])) ")"
register-id-params = "(" argument "," argument ["," argument] ")"
relref-params = "(" ref-expression "," ref-expression ")"
rename-command-params = "(" argument "," argument "," argument "," argument ["," argument] 
")"
request-params = "(" argument "," argument ")"
reset-toolbar-params = "(" expression ")"
restart-params = "(" argument ")"
result-params = "(" argument ")"
resume-params = "(" argument ")"
return-params = "(" argument ")"
save-dialog-params = "(" argument ["," argument ["," argument ["," argument ["," argument]]]] 
")"
save-toolbar-params = "(" argument ["," argument] ")"
scenario-get-params = "(" (expression / (argument "," argument)) ")"
selection-params = "(" *space ")"
set-name-params = "(" (expression / (argument "," argument)) ")"
set-value-params = "(" ref-expression "," argument ")"
show-bar-params = "(" argument ")"
spelling-check-params = "(" (expression / (argument "," argument ["," argument])) ")"
step-params = "(" *space ")"
terminate-params = "(" expression ")"
text-box-params = "(" (expression / (argument "," argument ["," argument ["," argument]])) 
")"
textref-params = "(" (expression / (argument "," argument)) ")"
unregister-params = "(" expression ")"
view-get-params = "(" (expression / (argument "," argument)) ")"
volatile-params = "(" argument ")"
while-params = "(" expression ")"
window-title-params = "(" argument ")"
windows-params = "(" argument ["," argument] ")"


command-function-call = "A1.R1C1" ["?"] a1-r1c1-params
command-function-call =/ "ACTIVATE" ["?"] activate-params
command-function-call =/ "ACTIVATE.NEXT" ["?"] activate-next-params
command-function-call =/ "ACTIVATE.NOTES" ["?"] activate-notes-params
command-function-call =/ "ACTIVATE.PREV" ["?"] activate-prev-params
command-function-call =/ "ACTIVE.CELL.FONT" ["?"] active-cell-font-params
command-function-call =/ "ADD.ARROW" ["?"] add-arrow-params
command-function-call =/ "ADD.CHART.AUTOFORMAT" ["?"] add-chart-autoformat-params
command-function-call =/ "ADD.LIST.ITEM" ["?"] add-list-item-params
command-function-call =/ "ADD.OVERLAY" ["?"] add-overlay-params
command-function-call =/ "ADD.PRINT.AREA" ["?"] add-print-area-params
command-function-call =/ "ADD.TOOL" ["?"] add-tool-params
command-function-call =/ "ADDIN.MANAGER" ["?"] addin-manager-params
command-function-call =/ "ALERT" ["?"] alert-params
command-function-call =/ "ALIGNMENT" ["?"] alignment-params
command-function-call =/ "APP.ACTIVATE" ["?"] app-activate-params
command-function-call =/ "APP.ACTIVATE.MICROSOFT" ["?"] app-activate-microsoft-params
command-function-call =/ "APP.MAXIMIZE" ["?"] app-maximize-params
command-function-call =/ "APP.MINIMIZE" ["?"] app-minimize-params
command-function-call =/ "APP.MOVE" ["?"] app-move-params
command-function-call =/ "APP.RESTORE" ["?"] app-restore-params
command-function-call =/ "APP.SIZE" ["?"] app-size-params
command-function-call =/ "APPLY.NAMES" ["?"] apply-names-params
command-function-call =/ "APPLY.STYLE" ["?"] apply-style-params
command-function-call =/ "ARRANGE.ALL" ["?"] arrange-all-params
command-function-call =/ "ASSIGN.TO.OBJECT" ["?"] assign-to-object-params
command-function-call =/ "ASSIGN.TO.TOOL" ["?"] assign-to-tool-params
```

```
command-function-call =/ "ATTACH.TEXT" ["?"] attach-text-params
command-function-call =/ "ATTACH.TOOLBARS" ["?"] attach-toolbars-params
command-function-call =/ "ATTRIBUTES" ["?"] attributes-params
command-function-call =/ "AUTO.OUTLINE" ["?"] auto-outline-params
command-function-call =/ "AUTOCORRECT" ["?"] autocorrect-params
command-function-call =/ "AXES" ["?"] axes-params
command-function-call =/ "BEEP" ["?"] beep-params
command-function-call =/ "BORDER" ["?"] border-params
command-function-call =/ "BRING.TO.FRONT" ["?"] bring-to-front-params
command-function-call =/ "CALCULATE.DOCUMENT" ["?"] calculate-document-params
command-function-call =/ "CALCULATE.NOW" ["?"] calculate-now-params
command-function-call =/ "CALCULATION" ["?"] calculation-params
command-function-call =/ "CANCEL.COPY" ["?"] cancel-copy-params
command-function-call =/ "CELL.PROTECTION" ["?"] cell-protection-params
command-function-call =/ "CHANGE.LINK" ["?"] change-link-params
command-function-call =/ "CHART.ADD.DATA" ["?"] chart-add-data-params
command-function-call =/ "CHART.TREND" ["?"] chart-trend-params
command-function-call =/ "CHART.WIZARD" ["?"] chart-wizard-params
command-function-call =/ "CHECKBOX.PROPERTIES" ["?"] checkbox-properties-params
command-function-call =/ "CLEAR" ["?"] clear-params
command-function-call =/ "CLEAR.OUTLINE" ["?"] clear-outline-params
command-function-call =/ "CLEAR.PRINT.AREA" ["?"] clear-print-area-params
command-function-call =/ "CLEAR.ROUTING.SLIP" ["?"] clear-routing-slip-params
command-function-call =/ "CLOSE" ["?"] close-params
command-function-call =/ "CLOSE.ALL" ["?"] close-all-params
command-function-call =/ "COLOR.PALETTE" ["?"] color-palette-params
command-function-call =/ "COLUMN.WIDTH" ["?"] column-width-params
command-function-call =/ "COMBINATION" ["?"] combination-params
command-function-call =/ "CONSOLIDATE" ["?"] consolidate-params
command-function-call =/ "CONSTRAIN.NUMERIC" ["?"] constrain-numeric-params
command-function-call =/ "COPY" ["?"] copy-params
command-function-call =/ "COPY.CHART" ["?"] copy-chart-params
command-function-call =/ "COPY.PICTURE" ["?"] copy-picture-params
command-function-call =/ "COPY.TOOL" ["?"] copy-tool-params
command-function-call =/ "CREATE.NAMES" ["?"] create-names-params
command-function-call =/ "CREATE.PUBLISHER" ["?"] create-publisher-params
command-function-call =/ "CUSTOMIZE.TOOLBAR" ["?"] customize-toolbar-params
command-function-call =/ "CUT" ["?"] cut-params
command-function-call =/ "DATA.DELETE" ["?"] data-delete-params
command-function-call =/ "DATA.FIND" ["?"] data-find-params
command-function-call =/ "DATA.FIND.NEXT" ["?"] data-find-next-params
command-function-call =/ "DATA.FIND.PREV" ["?"] data-find-prev-params
command-function-call =/ "DATA.FORM" ["?"] data-form-params
command-function-call =/ "DATA.LABEL" ["?"] data-label-params
command-function-call =/ "DATA.SERIES" ["?"] data-series-params
command-function-call =/ "DEFINE.NAME" ["?"] define-name-params
command-function-call =/ "DEFINE.STYLE" ["?"] define-style-params
command-function-call =/ "DELETE.ARROW" ["?"] delete-arrow-params
command-function-call =/ "DELETE.CHART.AUTOFORMAT" ["?"] delete-chart-autoformat-params
command-function-call =/ "DELETE.FORMAT" ["?"] delete-format-params
command-function-call =/ "DELETE.NAME" ["?"] delete-name-params
command-function-call =/ "DELETE.NOTE" ["?"] delete-note-params
command-function-call =/ "DELETE.OVERLAY" ["?"] delete-overlay-params
command-function-call =/ "DELETE.STYLE" ["?"] delete-style-params
command-function-call =/ "DELETE.TOOL" ["?"] delete-tool-params
command-function-call =/ "DEMOTE" ["?"] demote-params
command-function-call =/ "DISABLE.INPUT" ["?"] disable-input-params
command-function-call =/ "DISPLAY" ["?"] display-params
command-function-call =/ "DUPLICATE" ["?"] duplicate-params
command-function-call =/ "EDIT.COLOR" ["?"] edit-color-params
command-function-call =/ "EDIT.DELETE" ["?"] edit-delete-params
command-function-call =/ "EDIT.OBJECT" ["?"] edit-object-params
command-function-call =/ "EDIT.REPEAT" ["?"] edit-repeat-params
command-function-call =/ "EDIT.SERIES" ["?"] edit-series-params
command-function-call =/ "EDIT.TOOL" ["?"] edit-tool-params
command-function-call =/ "EDITBOX.PROPERTIES" ["?"] editbox-properties-params
command-function-call =/ "EDITION.OPTIONS" ["?"] edition-options-params
command-function-call =/ "ENABLE.OBJECT" ["?"] enable-object-params
command-function-call =/ "ENABLE.TIPWIZARD" ["?"] enable-tipwizard-params
```

```
command-function-call =/ "ENTER.DATA" ["?"] enter-data-params
command-function-call =/ "ERRORBAR.X" ["?"] errorbar-x-params
command-function-call =/ "ERRORBAR.Y" ["?"] errorbar-y-params
command-function-call =/ "EXTEND.POLYGON" ["?"] extend-polygon-params
command-function-call =/ "EXTRACT" ["?"] extract-params
command-function-call =/ "FILE.CLOSE" ["?"] file-close-params
command-function-call =/ "FILE.DELETE" ["?"] file-delete-params
command-function-call =/ "FILL.AUTO" ["?"] fill-auto-params
command-function-call =/ "FILL.DOWN" ["?"] fill-down-params
command-function-call =/ "FILL.GROUP" ["?"] fill-group-params
command-function-call =/ "FILL.LEFT" ["?"] fill-left-params
command-function-call =/ "FILL.RIGHT" ["?"] fill-right-params
command-function-call =/ "FILL.UP" ["?"] fill-up-params
command-function-call =/ "FILTER" ["?"] filter-params
command-function-call =/ "FILTER.ADVANCED" ["?"] filter-advanced-params
command-function-call =/ "FILTER.SHOW.ALL" ["?"] filter-show-all-params
command-function-call =/ "FIND.FILE" ["?"] find-file-params
command-function-call =/ "FONT" ["?"] font-params
command-function-call =/ "FONT.PROPERTIES" ["?"] font-properties-params
command-function-call =/ "FORMAT.AUTO" ["?"] format-auto-params
command-function-call =/ "FORMAT.CHART" ["?"] format-chart-params
command-function-call =/ "FORMAT.CHARTTYPE" ["?"] format-charttype-params
command-function-call =/ "FORMAT.FONT" ["?"] format-font-params
command-function-call =/ "FORMAT.LEGEND" ["?"] format-legend-params
command-function-call =/ "FORMAT.MAIN" ["?"] format-main-params
command-function-call =/ "FORMAT.MOVE" ["?"] format-move-params
command-function-call =/ "FORMAT.NUMBER" ["?"] format-number-params
command-function-call =/ "FORMAT.OVERLAY" ["?"] format-overlay-params
command-function-call =/ "FORMAT.SHAPE" ["?"] format-shape-params
command-function-call =/ "FORMAT.SIZE" ["?"] format-size-params
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command-function-call =/ "FORMULA.FIND.PREV" ["?"] formula-find-prev-params
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command-function-call =/ "FULL.SCREEN" ["?"] full-screen-params
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command-function-call =/ "HSCROLL" ["?"] hscroll-params
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command-function-call =/ "PASTE" ["?"] paste-params
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edit-tool-params = "(" argument ["," argument] ")"
editbox-properties-params = "(" argument *3("," argument) ")"
edition-options-params = "(" argument *6("," argument) ")"
enable-object-params = "(" argument ["," argument] ")"
enable-tipwizard-params = "(" argument ")"
enter-data-params = "(" argument ")"
errorbar-x-params = "(" argument *3("," argument) ")"
errorbar-y-params = "(" argument *3("," argument) ")"
extend-polygon-params = "(" argument ")"
extract-params = "(" argument ")"
file-close-params = "(" argument ["," argument] ")"
file-delete-params = "(" argument ")"
fill-auto-params = "(" argument ["," argument] ")"
fill-down-params = "(" *space ")"
fill-group-params = "(" argument ")"
fill-left-params = "(" *space ")"
fill-right-params = "(" *space ")"
fill-up-params = "(" *space ")"
filter-params = "(" argument *5("," argument) ")"
filter-advanced-params = "(" argument *4("," argument) ")"
filter-show-all-params = "(" *space ")"
find-file-params = "(" *space ")"
font-params = "(" argument ["," argument] ")"
```

```
font-properties-params = "(" argument *13("," argument) ")"
format-auto-params = "(" argument *6("," argument) ")"
format-chart-params = "(" argument *17("," argument) ")"
format-charttype-params = "(" argument *3("," argument) ")"
format-font-params = "(" argument *14("," argument) ")"
format-legend-params = "(" argument ")"
format-main-params = "(" argument *13("," argument) ")"
format-move-params = "(" argument *2("," argument) ")"
format-number-params = "(" argument ")"
format-overlay-params = "(" argument *13("," argument) ")"
format-shape-params = "(" argument *4("," argument) ")"
format-size-params = "(" argument *2("," argument) ")"
format-text-params = "(" argument *10("," argument) ")"
formula-params = "(" argument ["," argument] ")"
formula-array-params = "(" argument ["," argument] ")"
formula-fill-params = "(" argument ["," argument] ")"
formula-find-params = "(" argument *11("," argument) ")"
formula-find-next-params = "(" *space ")"
formula-find-prev-params = "(" *space ")"
formula-goto-params = "(" argument ["," argument] ")"
formula-replace-params = "(" argument *10("," argument) ")"
freeze-panes-params = "(" argument *2("," argument) ")"
full-params = "(" argument ")"
full-screen-params = "(" argument ")"
function-wizard-params = "(" argument ")"
gallery-3d-area-params = "(" argument ")"
gallery-3d-bar-params = "(" argument ")"
gallery-3d-column-params = "(" argument ")"
gallery-3d-line-params = "(" argument ")"
gallery-3d-pie-params = "(" argument ")"
gallery-3d-surface-params = "(" argument ")"
gallery-area-params = "(" argument ["," argument] ")"
gallery-bar-params = "(" argument ["," argument] ")"
gallery-column-params = "(" argument ["," argument] ")"
gallery-custom-params = "(" argument ")"
gallery-doughnut-params = "(" argument ["," argument] ")"
gallery-line-params = "(" argument ["," argument] ")"
gallery-pie-params = "(" argument ["," argument] ")"
gallery-radar-params = "(" argument ["," argument] ")"
gallery-scatter-params = "(" argument ["," argument] ")"
goal-seek-params = "(" argument *2("," argument) ")"
gridlines-params = "(" argument *6("," argument) ")"
hide-params = "(" *space ")"
hide-dialog-params = "(" argument ")"
hide-object-params = "(" argument ["," argument] ")"
hideall-inkannots-params = "(" argument ")"
hideall-notes-params = "(" argument ")"
hidecurr-note-params = "(" argument ["," argument] ")"
hline-params = "(" argument ")"
hpage-params = "(" argument ")"
hscroll-params = "(" argument ["," argument] ")"
insert-params = "(" argument ["," argument] ")"
insert-map-object-params = "(" *space ")"
insert-object-params = "(" argument *12("," argument) ")"
insert-picture-params = "(" argument ["," argument] ")"
insert-title-params = "(" argument *4("," argument) ")"
insertdatatable-params = "(" argument ")"
justify-params = "(" *space ")"
label-properties-params = "(" argument *2("," argument) ")"
layout-params = "(" *space ")"
legend-params = "(" argument ")"
line-print-params = "(" argument *10("," argument) ")"
link-combo-params = "(" argument ")"
link-format-params = "(" *space ")"
list-names-params = "(" *space ")"
listbox-properties-params = "(" argument *4("," argument) ")"
macro-options-params = "(" argument *9("," argument) ")"
mail-add-mailer-params = "(" *space ")"
mail-delete-mailer-params = "(" *space ")"
```

```
mail-edit-mailer-params = "(" argument *5("," argument) ")"
mail-forward-params = "(" *space ")"
mail-logoff-params = "(" *space ")"
mail-logon-params = "(" argument *2("," argument) ")"
mail-next-letter-params = "(" *space ")"
mail-reply-params = "(" *space ")"
mail-reply-all-params = "(" *space ")"
mail-send-mailer-params = "(" argument ["," argument] ")"
main-chart-params = "(" argument *9("," argument) ")"
main-chart-type-params = "(" argument ")"
menu-editor-params = "(" *space ")"
merge-styles-params = "(" argument ")"
message-params = "(" argument ["," argument] ")"
move-brk-params = "(" argument *3("," argument) ")"
move-tool-params = "(" argument *5("," argument) ")"
new-params = "(" argument *2("," argument) ")"
new-window-params = "(" *space ")"
newwebquery-params = "(" argument ")"
normal-params = "(" *space ")"
object-properties-params = "(" argument ["," argument] ")"
object-protection-params = "(" argument ["," argument] ")"
on-data-params = "(" argument ["," argument] ")"
on-doubleclick-params = "(" argument ["," argument] ")"
on-entry-params = "(" argument ["," argument] ")"
on-key-params = "(" argument ["," argument] ")"
on-recalc-params = "(" argument ["," argument] ")"
on-sheet-params = "(" argument *2("," argument) ")"
on-time-params = "(" argument *3("," argument) ")"
on-window-params = "(" argument ["," argument] ")"
open-params = "(" argument *16("," argument) ")"
open-links-params = "(" argument *14("," argument) ")"
open-mail-params = "(" argument ["," argument] ")"
open-text-params = "(" argument *16("," argument) ")"
options-calculation-params = "(" argument *9("," argument) ")"
options-chart-params = "(" argument *2("," argument) ")"
options-edit-params = "(" argument *10("," argument) ")"
options-general-params = "(" argument *13("," argument) ")"
options-lists-add-params = "(" argument ["," argument] ")"
options-lists-delete-params = "(" argument ")"
options-me-params = "(" argument *8("," argument) ")"
options-menono-params = "(" argument *4("," argument) ")"
options-save-params = "(" argument *3("," argument) ")"
options-spell-params = "(" argument *11("," argument) ")"
options-transition-params = "(" argument *4("," argument) ")"
options-view-params = "(" argument *17("," argument) ")"
outline-params = "(" argument *3("," argument) ")"
overlay-params = "(" argument *11("," argument) ")"
overlay-chart-type-params = "(" argument ")"
page-setup-params = "(" argument *29("," argument) ")"
parse-params = "(" argument ["," argument] ")"
paste-params = "(" argument ")"
paste-link-params = "(" *space ")"
paste-picture-params = "(" *space ")"
paste-picture-link-params = "(" *space ")"
paste-special-params = "(" argument *6("," argument) ")"
paste-tool-params = "(" argument ["," argument] ")"
patterns-params = "(" argument *12("," argument) ")"
picklist-params = "(" *space ")"
pivot-add-fields-params = "(" argument *4("," argument) ")"
pivot-field-params = "(" argument *3("," argument) ")"
pivot-field-group-params = "(" argument *3("," argument) ")"
pivot-field-properties-params = "(" argument *6("," argument) ")"
pivot-field-ungroup-params = "(" *space ")"
pivot-item-params = "(" argument *3("," argument) ")"
pivot-item-properties-params = "(" argument *6("," argument) ")"
pivot-refresh-params = "(" argument ")"
pivot-show-pages-params = "(" argument ["," argument] ")"
pivot-table-chart-params = "(" argument *15("," argument) ")"
pivot-table-wizard-params = "(" argument *15("," argument) ")"
```

```
post-document-params = "(" argument ")"
precision-params = "(" argument ")"
preferred-params = "(" *space ")"
print-params = "(" argument *16("," argument) ")"
print-preview-params = "(" argument ")"
printer-setup-params = "(" argument ")"
promote-params = "(" argument ")"
protect-document-params = "(" argument *6("," argument) ")"
protect-revisions-params = "(" *space ")"
pushbutton-properties-params = "(" argument *5("," argument) ")"
quit-params = "(" *space ")"
remove-list-item-params = "(" argument ["," argument] ")"
remove-page-break-params = "(" argument ["," argument] ")"
rename-object-params = "(" argument ")"
replace-font-params = "(" argument *9("," argument) ")"
reset-tool-params = "(" argument ["," argument] ")"
rm-print-area-params = "(" argument ")"
route-document-params = "(" *space ")"
routing-slip-params = "(" argument *5("," argument) ")"
row-height-params = "(" argument *3("," argument) ")"
run-params = "(" argument ["," argument] ")"
save-params = "(" *space ")"
save-as-params = "(" argument *6("," argument) ")"
save-copy-as-params = "(" argument ")"
save-new-object-params = "(" argument ")"
save-workbook-params = "(" argument *5("," argument) ")"
save-workspace-params = "(" argument ")"
scale-params = "(" argument *9("," argument) ")"
scenario-add-params = "(" argument *5("," argument) ")"
scenario-cells-params = "(" argument ")"
scenario-delete-params = "(" argument ")"
scenario-edit-params = "(" argument *6("," argument) ")"
scenario-merge-params = "(" argument ")"
scenario-show-params = "(" argument ")"
scenario-show-next-params = "(" *space ")"
scenario-summary-params = "(" argument ["," argument] ")"
scrollbar-properties-params = "(" argument *6("," argument) ")"
select-params = "(" argument ["," argument] ")"
select-all-params = "(" *space ")"
select-chart-params = "(" *space ")"
select-end-params = "(" argument ")"
select-last-cell-params = "(" *space ")"
select-list-item-params = "(" argument ["," argument] ")"
select-plot-area-params = "(" *space ")"
select-special-params = "(" argument *2("," argument) ")"
send-keys-params = "(" argument ["," argument] ")"
send-mail-params = "(" argument *2("," argument) ")"
send-to-back-params = "(" *space ")"
series-axes-params = "(" argument ")"
series-order-params = "(" argument *2("," argument) ")"
series-x-params = "(" argument ")"
series-y-params = "(" argument ["," argument] ")"
set-control-value-params = "(" argument ")"
set-criteria-params = "(" *space ")"
set-database-params = "(" *space ")"
set-dialog-default-params = "(" argument ")"
set-dialog-focus-params = "(" argument ")"
set-extract-params = "(" *space ")"
set-list-item-params = "(" argument ["," argument] ")"
set-page-break-params = "(" *space ")"
set-preferred-params = "(" argument ")"
set-print-area-params = "(" argument ")"
set-print-titles-params = "(" argument ["," argument] ")"
set-update-status-params = "(" argument *2("," argument) ")"
share-params = "(" *space ")"
share-name-params = "(" argument ")"
sheet-background-params = "(" argument ["," argument] ")"
short-menus-params = "(" argument ")"
show-active-cell-params = "(" *space ")"
```

```
show-clipboard-params = "(" *space ")"
show-detail-params = "(" argument *3("," argument) ")"
show-dialog-params = "(" argument ")"
show-info-params = "(" argument ")"
show-levels-params = "(" argument ["," argument] ")"
show-toolbar-params = "(" argument *9("," argument) ")"
sort-params = "(" argument *16("," argument) ")"
sort-special-params = "(" argument *13("," argument) ")"
sound-note-params = "(" argument *2("," argument) ")"
sound-play-params = "(" argument *2("," argument) ")"
spelling-params = "(" argument *5("," argument) ")"
split-params = "(" argument ["," argument] ")"
standard-font-params = "(" argument *8("," argument) ")"
standard-width-params = "(" argument ")"
style-params = "(" argument ["," argument] ")"
subscribe-to-params = "(" argument ["," argument] ")"
subtotal-create-params = "(" argument *5("," argument) ")"
subtotal-remove-params = "(" *space ")"
summary-info-params = "(" argument *4("," argument) ")"
tab-order-params = "(" *space ")"
table-params = "(" argument ["," argument] ")"
text-to-columns-params = "(" argument *13("," argument) ")"
tracer-clear-params = "(" *space ")"
tracer-display-params = "(" argument ["," argument] ")"
tracer-error-params = "(" *space ")"
tracer-navigate-params = "(" argument *2("," argument) ")"
traverse-notes-params = "(" argument ["," argument] ")"
undo-params = "(" *space ")"
ungroup-params = "(" *space ")"
ungroup-sheets-params = "(" *space ")"
unhide-params = "(" argument ")"
unlocked-next-params = "(" *space ")"
unlocked-prev-params = "(" *space ")"
unprotect-revisions-params = "(" *space ")"
update-link-params = "(" argument ["," argument] ")"
vba-insert-file-params = "(" argument ")"
vba-make-addin-params = "(" argument ")"
vba-procedure-definition-params = "(" *space ")"
vbaactivate-params = "(" argument ["," argument] ")"
view-3d-params = "(" argument *5("," argument) ")"
view-define-params = "(" argument *2("," argument) ")"
view-delete-params = "(" argument ")"
view-show-params = "(" argument ")"
vline-params = "(" argument ")"
vpage-params = "(" argument ")"
vscroll-params = "(" argument ["," argument] ")"
wait-params = "(" argument ")"
web-publish-params = "(" argument *8("," argument) ")"
window-maximize-params = "(" argument ")"
window-minimize-params = "(" argument ")"
window-move-params = "(" argument *2("," argument) ")"
window-restore-params = "(" argument ")"
window-size-params = "(" argument *2("," argument) ")"
workbook-activate-params = "(" argument ["," argument] ")"
workbook-add-params = "(" argument *2("," argument) ")"
workbook-copy-params = "(" argument *2("," argument) ")"
workbook-delete-params = "(" argument ")"
workbook-hide-params = "(" argument ["," argument] ")"
workbook-insert-params = "(" argument ")"
workbook-move-params = "(" argument *2("," argument) ")"
workbook-name-params = "(" argument ["," argument] ")"
workbook-new-params = "(" argument *2("," argument) ")"
workbook-next-params = "(" *space ")"
workbook-options-params = "(" argument *2("," argument) ")"
workbook-prev-params = "(" *space ")"
workbook-protect-params = "(" argument *2("," argument) ")"
workbook-scroll-params = "(" argument ["," argument] ")"
workbook-select-params = "(" argument *2("," argument) ")"
workbook-tab-split-params = "(" argument ")"
```

```
workbook-unhide-params = "(" argument ")"
workgroup-params = "(" argument ")"
workgroup-options-params = "(" *space ")"
workspace-params = "(" argument *15("," argument) ")"
zoom-params = "(" argument ")"
```

2.3 Macro-Enabled PresentationML Structures

2.3.1 Part Enumeration

This section specifies the parts ([ECMA-376]) of the macro-enabled PresentationML file format that are different from the parts of the non-macro-enabled PresentationML file format specified in [ECMA-376] Part 1, Section 13.3. These parts and their relationships are summarized in the following table.

Part	Relationship target
Presentation (section 2.3.1.1)	PresentationML Package ([ECMA-376] Part 1, Section 13.2)
VBA Project (section 2.3.1.2)	Presentation

2.3.1.1 Presentation

Content Type(s):

- 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 specified in [ECMA-376] Part 1, Section 13.3.6.

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 [ECMA-376].

2.3.2 Global Elements

None.

2.3.3 Global Attributes

None.

2.3.4 Complex Types

2.3.4.1 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 [ECMA-376] Part 3, section 4.1.3.1.

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

2.3.5 Simple Types

None.

3   Structure Examples

3.1   VBA Supplemental Data Part of a Word-Processing Document

This example shows a usage of a Word VBA Supplemental Data part (section 2.1.1.3). See section 2.1.1.3 for more information. Consider the following XML, showing the complete contents of the VBA Supplemental Data part 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 2.1.2.1) specifies that both the Open event and the XMLAfterInsert event are active for this document. The **mcds** element of the **vbaSuppData** element contains an **mcd** element that specifies **macro** information for the "Project.NewMacros.Macro1" macro.

3.2   Macro Sheet Part of a Workbook

This example shows a usage of an Excel Macro Sheet part. See section 2.2.1.3 for more information. Consider the following XML, showing the complete contents of a Macro Sheet part 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>
  </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 2.2.2.1) specifies the **macro sheet**. A formula following the grammar specified in section 2.2.6 is specified by the **f** element ([ECMA-376] Part 4, Section 3.17).

4 Security Considerations

None.

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 described 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>
```

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"
```

```xsd
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"/>
      <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>
```

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 updates to those products.

- The 2007 Microsoft Office system

- Microsoft Visual Basic for Applications 6.0 (VBA 6.0)

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates 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.

7 Change Tracking

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

8 Index

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