

[MS-OINTXML]:

Office Intelligence Extensions to Office Open XML Structure

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Table of Contents

1	Introduction	5
1.1	Glossary	5
1.2	References	5
1.2.1	Normative References	5
1.2.2	Informative References	6
1.3	Overview	6
1.4	Relationship to Protocols and Other Structures	7
1.5	Applicability Statement	7
1.6	Versioning and Localization	7
1.7	Vendor-Extensible Fields	8
2	Structures	9
2.1	http://schemas.microsoft.com/office/intelligence/2020/intelligence	9
2.1.1	Elements	9
2.1.1.1	intelligence	9
2.1.1.2	goals	9
2.1.1.3	similarityCritique	9
2.1.1.4	similaritySummary	10
2.1.2	Attributes	10
2.1.3	Complex Types	10
2.1.3.1	CT_Intelligence	10
2.1.3.2	CT_Observations	11
2.1.3.3	CT_Content	11
2.1.3.4	CT_TextHash	12
2.1.3.5	CT_Bookmark	13
2.1.3.6	CT_EntireDocument	14
2.1.3.7	CT_State	14
2.1.3.8	CT_SimilarityCritique	15
2.1.3.9	CT_SimilaritySource	16
2.1.3.10	CT_SimilaritySuggestionsForType	17
2.1.3.11	CT_SimilaritySuggestion	17
2.1.3.12	CT_SimilaritySummary	18
2.1.3.13	CT_OnDemandWorkflows	19
2.1.3.14	CT_OnDemandWorkflow	19
2.1.3.15	CT_IntelligenceSettings	20
2.1.3.16	CT_Goals	20
2.1.4	Simple Types	21
2.1.4.1	ST_ParagraphVersions	21
3	Structure Examples	22
3.1	Ignore All	22
3.2	Review Specific Observation	22
3.3	Review Specific Observation With Invalidation Range	23
3.4	Workflow progress	23
3.5	Goals setting	24
4	Security	25
4.1	Security Considerations for Implementers	25
4.2	Index of Security Fields	25
5	Appendix A: Full XML Schemas	26
5.1	http://schemas.microsoft.com/office/intelligence/2020/intelligence Schema	26
6	Appendix B: Converting Text to Lowercase	29
6.1	Basic Multilingual Plane	29
6.2	Surrogate Pairs	36

7	Appendix C: Product Behavior	38
8	Change Tracking.....	39
9	Index.....	40

1 Introduction

This document specifies elements and attributes for representing **observation** data, extending the XML vocabulary of the WordprocessingML file format described in [\[ISO/IEC29500-1:2016\]](#). The new elements and attributes are presented using the extensibility mechanisms described in [\[ISO/IEC29500-3:2015\]](#)

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:

invalidation range: A range of text which specifies that some related item is to be deleted if any part of the specified range is modified.

observation: A suggestion produced by a **workflow**.

workflow: An automated procedure that reads the open document and/or the user's actions and produces a set of suggested operations to assist with built-in or user-defined goals.

workflow type: An arbitrary Unicode name for a workflow which is not equal to any other known workflow type.

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.

[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 29500-1:2016, <https://www.iso.org/standard/71691.html>

[ISO/IEC29500-1:2016] ISO/IEC, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 1: Fundamentals and Markup Language Reference", ISO/IEC 29500-1:2016, <https://www.iso.org/standard/71691.html>

[ISO/IEC29500-2:2012] ISO/IEC, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 2: Open Packaging Conventions", ISO/IEC 29500-2:2012, http://www.iso.org/iso/home/store/catalogue_ics/catalogue_detail_ics.htm?csnumber=61796

[ISO/IEC29500-3:2015] ISO/IEC, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 3: Markup Compatibility and Extensibility", <https://www.iso.org/standard/65533.html>

[ISO/IEC29500-4:2016] ISO/IEC, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 4: Transitional Migration Features", <https://www.iso.org/standard/71692.html>

[MS-DOCX] Microsoft Corporation, "[Word Extensions to the Office Open XML \(.docx\) File Format](#)".

[MS-OEXTXML] Microsoft Corporation, "[Office Shared Extensibility in Office Open XML Structure](#)".

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

[RFC3174] Eastlake III, D., and Jones, P., "US Secure Hash Algorithm 1 (SHA1)", RFC 3174, September 2001, <https://www.rfc-editor.org/info/rfc3174>

[RFC3629] Yergeau, F., "UTF-8, A Transformation Format of ISO 10646", STD 63, RFC 3629, November 2003, <https://www.rfc-editor.org/info/rfc3629>

[RFC4648] Josefsson, S., "The Base16, Base32, and Base64 Data Encodings", RFC 4648, October 2006, <https://www.rfc-editor.org/info/rfc4648>

[URL] van Kesteren, A., "URL: Living Standard", June 2017, <https://url.spec.whatwg.org/>

[XMLSCHEMA1/2] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures Second Edition", W3C Recommendation, October 2004, <https://www.w3.org/TR/2004/REC-xmlschema-1-20041028/>

[XMLSCHEMA2/2] Biron, P., and Malhotra, A., Eds., "XML Schema Part 2: Datatypes Second Edition", W3C Recommendation, October 2004, <https://www.w3.org/TR/2004/REC-xmlschema-2-20041028/>

1.2.2 Informative References

None.

1.3 Overview

This document specifies elements and attributes for representing data related to **observations**. This XML part enables arbitrary **workflows** to store data in a consistent way.

A workflow is a procedure that analyzes the document and/or user activity in order to provide assistance. Some possible examples of workflows include writing style analyzers, formatting assistants, and plagiarism recognizers. A workflow might be activated on request or might run automatically if they have been approved to run. This document describes the data that can be stored on the behalf of workflows; however, the operation of individual workflows is not generally described in this document. Each workflow is identified by a string known as the **workflow type**.

When a workflow runs, it provides zero or more observations. An observation is a suggested action. For example, a writing style analyzer might suggest replacing a specific word with a different word. Most observations are linked to a specific segment of the document, but some apply to the document as a whole.

Ordinarily, observation data is not arbitrarily deleted from the file even if the specified workflow type is not understood. However, many observations apply to a specific unit of text. These observations specify a range of text known as the **invalidation range**, which is a hint that the client should delete that observation if any part of the specified range is modified. For example, a grammar checker might set the observation's range to the exact location of a grammatical error and set the invalidation range to the entire surrounding sentence. This is because a change to any part of the sentence could potentially fix or change the grammatical error.

Of the data described in this document, the most frequently used portion is state information. For example, it is possible to store a record indicating that one specific observation has been rejected. Most state information is applicable even when nothing is known about the operation of that workflow.

State can be stored even with no additional details provided about an observation. For example, consider the case where a writing style analyzer produces an observation targeting a word of text, and this observation has then been rejected. The elements specified in this document can store a record of this rejection. When the same document is viewed again in the future, the writing style analyzer reaches the same conclusion and produces an identical observation again, but the observation can be suppressed because the stored state record exactly matches this observation.

Some specific workflows store data that is specific to their operation. This data is described in this document.

The elements and attributes specified in this document can also store information about which parts of the document have been processed by each workflow. This makes it possible to reduce resource utilization by only running the workflow against new content.

Finally, this document specifies how to store various settings that apply to the document.

1.4 Relationship to Protocols and Other Structures

This specification is dependent on the structures and concepts defined in the following references:

- [\[ISO/IEC29500-1:2016\]](#) for the baseline WordprocessingML persistence format.
- [\[ISO/IEC29500-2:2012\]](#) for open packaging conventions.
- [\[ISO/IEC29500-3:2015\]](#) for markup compatibility and extensibility.
- [\[ISO/IEC29500-4:2016\]](#) for backwards compatibility considerations.
- [\[MS-DOCX\]](#) for WordprocessingML extensions.
- [\[MS-OEXTXML\]](#) for complex types for extension lists.
- [\[RFC3174\]](#) for the SHA-1 hash code algorithm.
- [\[RFC4648\]](#) for Base64 format.

1.5 Applicability Statement

This document specifies a persistence format for extensions as specified by [\[ISO/IEC29500-1:2016\]](#) for WordprocessingML documents. The extensions specified in this document enable expressing **observation** data and some related metadata and are not applicable as a stand-alone file format. Each structure specified in this document is integrated with WordprocessingML documents in a particular way as specified in the section for that structure. All structures are integrated into WordprocessingML documents in a way that maintains compatibility with [\[ISO/IEC29500-1:2016\]](#) implementations. This persistence format can also be used for files that do not use WordprocessingML as long as no elements referencing WordprocessingML are used.

The extensions specified in this document do not require any other extensions to be used and do not prohibit any other extensions from being used in the same document.

1.6 Versioning and Localization

Certain XML elements specified in this document can specify a version number. The client should ignore any element which specifies a version other than what the client expects.

1.7 Vendor-Extensible Fields

Vendors MAY specify any desired value for the **workflow type** of a CT_State (section [2.1.3.7](#)) or CT_OnDemandWorkflow (section [2.1.3.14](#)) element.

Vendors MAY specify any desired state value within a CT_State (section [2.1.3.7](#)) element.

2 Structures

2.1 <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

2.1.1 Elements

2.1.1.1 intelligence

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

A [CT_Intelligence](#) element that specifies the root element for the entire XML part.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="intelligence" type="CT_Intelligence"/>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

2.1.1.2 goals

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

A [CT_Goals](#) element that specifies a setting describing the author's objective. The setting can be used to influence **observations** that are shown. This element MUST NOT be used as the root of the XML part. One instance of this element MAY be used in each instance of [oel:CT_Extension](#) ([\[MS-OEXTXML\]](#) section 2.1.3.1) specifying the URI "74B372B9-2EFF-4315-9A3F-32BA87CA82B1" within an instance of [oel:CT_ExtensionList](#) ([\[MS-OEXTXML\]](#) section 2.1.3.2) within an instance of [CT_IntelligenceSettings](#) (section [2.1.3.15](#)).

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="goals" type="CT_Goals"/>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

2.1.1.3 similarityCritique

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

A [CT_SimilarityCritique](#) element that specifies data for an **observation** indicating that a portion of the document appears similar to another source. This element MUST NOT be used as the root of the XML part. One instance of this element MAY be used in each instance of [oel:CT_Extension](#) ([\[MS-OEXTXML\]](#) section 2.1.3.1) specifying the URI "426473B9-03D8-482F-96C9-C2C85392BACA" within an instance of [oel:CT_ExtensionList](#) ([\[MS-OEXTXML\]](#) section 2.1.3.2) within an instance of [CT_Content](#) (section [2.1.3.3](#)).

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="similarityCritique" type="CT_SimilarityCritique"/>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.1.4 similaritySummary

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

A [CT_SimilaritySummary](#) element that specifies a record of an **observation** which reports statistics related to CT_SimilarityCritique (section [2.1.3.8](#)). This element MUST NOT be used as the root of the XML part. One instance of this element MAY be used in each instance of oel:CT_Extension ([\[MS-OEXTXML\]](#) section 2.1.3.1) specifying the URI "E302BA01-7950-474C-9AD3-286E660C40A8" within an instance of oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) within an instance of CT_Content (section [2.1.3.3](#)).

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="similaritySummary" type="CT_SimilaritySummary"/>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.2 Attributes

None.

2.1.3 Complex Types

2.1.3.1 CT_Intelligence

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [intelligence](#)

Specifies the root element for the entire XML part.

Child Elements:

observations: A [CT_Observations](#) element that specifies the root element for all **observation** data in the XML part.

intelligenceSettings: A [CT_IntelligenceSettings](#) element that specifies the root element for settings.

onDemandWorkflows: A [CT_OnDemandWorkflows](#) element that specifies the root element for workflow progress data.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_Intelligence">
  <xsd:sequence>
    <xsd:element name="observations" type="CT_Observations" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="intelligenceSettings" type="CT_IntelligenceSettings" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="onDemandWorkflows" type="CT_OnDemandWorkflows" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

```
</xsd:sequence>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.2 CT_Observations

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT Intelligence](#)

Specifies the root element for all **observation** data in the XML part.

Child Elements:

textHash: A CT_TextHash (section [2.1.3.4](#)) element that specifies a reference to all runs of text in the document which match a specified hash code.

bookmark: A CT_Bookmark (section [2.1.3.5](#)) element that specifies a reference to text within a bookmark ([\[ISO/IEC29500-1:2016\]](#) section 17.3.6) in the document.

entireDocument: A CT_EntireDocument (section [2.1.3.6](#)) element that specifies a reference to the entire document as a whole.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_Observations">
  <xsd:sequence>
    <xsd:element name="textHash" type="CT_TextHash" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="bookmark" type="CT_Bookmark" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="entireDocument" type="CT_EntireDocument" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.3 CT_Content

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_TextHash](#), [CT_Bookmark](#), [CT_EntireDocument](#)

The base type for CT_TextHash (section 2.1.3.4), CT_Bookmark (section 2.1.3.5), and CT_EntireDocument (section 2.1.3.6). Specifies a reference to one or more specific units of content in the document.

Child Elements:

state: A CT_State (section [2.1.3.7](#)) element that specifies the current state of an **observation** that affects the referenced unit of content.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies current and future extensions.

Attributes:

id: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies a unique identifier for this element. The specified value is assumed to be unique among all sibling elements. If more than one element specifies the same ID value, only the first matching element SHOULD be used.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_Content">
  <xsd:sequence>
    <xsd:element name="state" type="CT_State" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="id" type="xsd:string" use="required"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

2.1.3.4 CT_TextHash

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_Observations](#)

Specifies a reference to all runs of text in the document which match a specified hash code. This can simultaneously refer to multiple different locations if the same text appears in each location. Matching is case-sensitive because of the way the hash code is computed.

Child Elements:

state: A CT_State (section [2.1.3.7](#)) element that specifies the current state of an **observation** that affects the referenced unit of content.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies current and future extensions.

Attributes:

hashCode: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies the hash code of any amount of text. This MUST be determined by first converting the text to lowercase as described in section [6](#), then representing the lowercase text as a UTF-8 octet stream ([\[RFC3629\]](#)), computing the SHA-1 ([\[RFC3174\]](#)) hash code of the stream, representing the SHA-1 ([\[RFC3174\]](#)) hash code in Base64 ([\[RFC4648\]](#)) format, and finally taking only the first 14 characters of the result.

id: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies a unique identifier for this element. The specified value is assumed to be unique among all sibling elements. If more than one element specifies the same ID value, only the first matching element SHOULD be used.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_TextHash">
  <xsd:complexContent>
    <xsd:extension base="CT_Content">
      <xsd:attribute name="hashCode" type="xsd:string" use="required"/>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```

```
</xsd:complexContent>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.5 CT_Bookmark

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_Observations](#)

Specifies a reference to text within a specified bookmark ([\[ISO/IEC29500-1:2016\]](#) section 17.3.6) in the document.

Child Elements:

state: A CT_State (section [2.1.3.7](#)) element that specifies the current state of an **observation** that affects the referenced unit of content.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies current and future extensions.

Attributes:

bookmarkName: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies the name of the bookmark ([ISO/IEC29500-1:2016] section 17.3.6) showing the location of the item being referenced. The value MUST begin with "_Int_". This element SHOULD be ignored if the specified bookmark ([ISO/IEC29500-1:2016] section 17.3.6) has its w:bookmarkStart ([ISO/IEC29500-1:2016] section 17.3.6.2) and w:bookmarkEnd ([ISO/IEC29500-1:2016] section 17.3.6.1) tags in two different paragraphs.

invalidationBookmarkName: A xsd:string ([XMLSCHEMA2/2] section 3.2.1) attribute that optionally specifies the name of the bookmark ([ISO/IEC29500-1:2016] section 17.3.6) showing the **invalidation range**. The value MUST begin with "_Int_". This value hints that the element can be deleted if any modification is applied to the text within the invalidation range. If this attribute is not set, the bookmark ([ISO/IEC29500-1:2016] section 17.3.6) referenced by bookmarkName constitutes the invalidation range by default. This element SHOULD be ignored if this specified bookmark ([ISO/IEC29500-1:2016] section 17.3.6) has start and end markers in two different paragraphs, or if it exists on a different paragraph than the bookmark ([ISO/IEC29500-1:2016] section 17.3.6) specified by bookmarkName.

hashCode: A xsd:string ([XMLSCHEMA2/2] section 3.2.1) attribute that optionally specifies the hash code of the text in the invalidation range. If this attribute is present, the value MUST be determined by representing the text as a UTF-8 octet stream ([\[RFC3629\]](#)), computing the SHA-1 ([\[RFC3174\]](#)) hash code of the stream, representing the SHA-1 ([\[RFC3174\]](#)) hash code in Base64 ([\[RFC4648\]](#)) format, and finally taking only the first 14 characters of the result.

id: A xsd:string ([XMLSCHEMA2/2] section 3.2.1) attribute that specifies a unique identifier for this element. The specified value is assumed to be unique among all sibling elements. If more than one element specifies the same ID value, only the first matching element SHOULD be used.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_Bookmark">
  <xsd:complexContent>
    <xsd:extension base="CT_Content">
      <xsd:attribute name="bookmarkName" type="xsd:string" use="required"/>
      <xsd:attribute name="invalidationBookmarkName" type="xsd:string" use="optional"/>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```

```
<xsd:attribute name="hashCode" type="xsd:string" use="optional"/>
</xsd:extension>
</xsd:complexContent>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.6 CT_EntireDocument

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_Observations](#)

Specifies a reference to the entire document as a whole.

Child Elements:

state: A CT_State (section [2.1.3.7](#)) element that specifies the current state of an **observation** that affects the referenced unit of content.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies current and future extensions.

Attributes:

id: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies a unique identifier for this element. The specified value is assumed to be unique among all sibling elements. If more than one element specifies the same ID value, only the first matching element SHOULD be used.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_EntireDocument">
  <xsd:complexContent>
    <xsd:extension base="CT_Content"/>
  </xsd:complexContent>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.7 CT_State

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_TextHash](#), [CT_Content](#), [CT_Bookmark](#), [CT_EntireDocument](#)

Specifies the current state of an **observation** affecting the unit of content described by the parent element.

Child Elements:

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

Attributes:

type: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies the **workflow type** which this state applies to.

The value "spell" indicates that the **workflow** is the default spell checker. The value "gram" indicates the default grammar checker. For either of these types, if the value attribute is "Rejected", this takes precedence over any conflicting spelling or grammar annotations ([\[ISO/IEC-29500-1\]](#) section 17.13.8).

The value "AugLoop_Text_Critique" is equivalent to "gram".

The value "style" indicates that the workflow checks for mistakes in the writing style of the document.

The value "similarity" indicates that the workflow checks for external content which is measurably similar to the content of the document.

value: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies the state of the observation. The value "Rejected" indicates that the observation was expressly rejected. The value "Reviewed" indicates that the observation was manually reviewed in some way. No other values currently have any effect, but this might be extended in the future.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_State">
  <xsd:sequence>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="type" type="xsd:string" use="required"/>
  <xsd:attribute name="value" type="xsd:string" use="required"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

2.1.3.8 CT_SimilarityCritique

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [similarityCritique](#)

Specifies data constituting an **observation** indicating that a portion of the document appears similar to another source.

Child Elements:

source: A CT_SimilaritySource (section [2.1.3.9](#)) element that specifies a similar source of content.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

Attributes:

version: A xsd:int ([\[XMLSCHEMA2/2\]](#) section 3.3.17) attribute that SHOULD equal 1, otherwise behavior is unspecified.

context: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies an arbitrary selection of text from the vicinity of the affected range of text. This is used to display previews of the suggested operations.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_SimilarityCritique">
  <xsd:sequence>
```

```

    <xsd:element name="source" type="CT_SimilaritySource" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="version" type="xsd:int"/>
  <xsd:attribute name="context" type="xsd:string"/>
</xsd:complexType>

```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.9 CT_SimilaritySource

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_SimilarityCritique](#)

Specifies a source which contains content similar to what is found in the document.

Child Elements:

suggestions: A CT_SimilaritySuggestionsForType (section [2.1.3.10](#)) element that specifies the collection of all suggested rewrites for the apparently similar text that apply for a given citation type.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

Attributes:

sourceType: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that SHOULD equal "Online", otherwise behavior is unspecified.

sourceTitle: A xsd:string ([XMLSCHEMA2/2] section 3.2.1) attribute that specifies the title of the similar source. For example, this could be the title of a web page where similar text was found.

sourceUrl: A xsd:string ([XMLSCHEMA2/2] section 3.2.1) attribute that specifies a URL ([\[URL\]](#)) identifying to the similar source.

sourceSnippet: A xsd:string ([XMLSCHEMA2/2] section 3.2.1) attribute that specifies a selection of matching text from the similar source. This is used to display a preview of the suggested operation.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="CT_SimilaritySource">
  <xsd:sequence>
    <xsd:element name="suggestions" type="CT_SimilaritySuggestionsForType" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="sourceType" type="xsd:string"/>
  <xsd:attribute name="sourceTitle" type="xsd:string"/>
  <xsd:attribute name="sourceUrl" type="xsd:string"/>
  <xsd:attribute name="sourceSnippet" type="xsd:string"/>
</xsd:complexType>

```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.10 CT_SimilaritySuggestionsForType

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_SimilaritySource](#)

Specifies the collection of all suggested rewrites for the apparently similar text that apply for a given citation type.

Child Elements:

suggestion: A CT_SimilaritySuggestion (section [2.1.3.11](#)) element that specifies a single suggested citation. Each instance of CT_SimilaritySuggestionsForType SHOULD have three of these children, specifying each of the following values of citationStyle: "Mla", "Apa", and "Chicago".

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

Attributes:

citationType: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies the type of citation. Supported values are "Full", indicating that a citation is added as a block, or "Inline", indicating that a citation is typically appended to the text. Other values currently have no effect, but this might be extended in the future.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_SimilaritySuggestionsForType">
  <xsd:sequence>
    <xsd:element name="suggestion" type="CT_SimilaritySuggestion" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="citationType" type="xsd:string"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

2.1.3.11 CT_SimilaritySuggestion

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_SimilaritySuggestionsForType](#)

Specifies a single suggested citation.

Child Elements:

citationText: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) element that specifies suggested text that can be appended to the matching text range as a citation.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

Attributes:

citationStyle: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that specifies the style guide that the citation is based on. Supported values are "Mla", "Apa", and "Chicago". Other values currently have no effect, but this might be extended in the future.

isIdentical: A xsd:boolean ([XMLSCHEMA2/2] section 3.2.2) attribute that specifies whether the text in the document exactly matches the other source.

The following W3C XML Schema ([XMLSCHEMA1/2] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_SimilaritySuggestion">
  <xsd:sequence>
    <xsd:element name="citationText" type="xsd:string"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="citationStyle" type="xsd:string"/>
  <xsd:attribute name="isIdentical" type="xsd:boolean"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.12 CT_SimilaritySummary

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [similaritySummary](#)

Specifies data for an **observation** which reports statistics related to CT_SimilarityCritique (section [2.1.3.8](#)).

Child Elements:

extLst: An oel:CT_ExtensionList ([MS-OEXTXML] section 2.1.3.2) element that specifies future extensions.

Attributes:

version: A xsd:int ([XMLSCHEMA2/2] section 3.3.17) attribute that SHOULD equal 1, otherwise behavior is unspecified.

runId: A xsd:string ([XMLSCHEMA2/2] section 3.2.1) attribute that specifies an arbitrary ID representing the origin of the other attribute values applied to this element. This value is not useful when loading a document for the first time in a session. This value is useful when CT_SimilarityCritique (section 2.1.3.8) elements are created by some **workflow** that is not finished running by the time the file is saved. In this case, if any more observations are produced, the runId value can be used to determine whether those observations will affect the other attributes of this element, or alternatively whether most values will restart from zero.

tilesCheckedInThisRun: A xsd:int ([XMLSCHEMA2/2] section 3.3.17) attribute that specifies the number of paragraphs that have been checked for similarity to other sources.

totalNumOfTiles: A xsd:int ([XMLSCHEMA2/2] section 3.3.17) attribute that specifies the total number of paragraphs in the document that could potentially be checked for similarity.

similarityAnnotationCount: A xsd:int ([XMLSCHEMA2/2] section 3.3.17) attribute that specifies the number of SimilarityCritique observations that are currently in the document.

numWords: A xsd:int ([XMLSCHEMA2/2] section 3.3.17) attribute that specifies the total number of words in the document that have been checked for similarity to other sources.

numFlaggedWords: A xsd:int ([XMLSCHEMA2/2] section 3.3.17) attribute that specifies the total number of words in the document that are considered similar to other sources.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_SimilaritySummary">
  <xsd:sequence>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="version" type="xsd:int"/>
  <xsd:attribute name="runId" type="xsd:string"/>
  <xsd:attribute name="tilesCheckedInThisRun" type="xsd:int"/>
  <xsd:attribute name="totalNumOfTiles" type="xsd:int"/>
  <xsd:attribute name="similarityAnnotationCount" type="xsd:int"/>
  <xsd:attribute name="numWords" type="xsd:int"/>
  <xsd:attribute name="numFlaggedWords" type="xsd:int"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

2.1.3.13 CT_OnDemandWorkflows

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_Intelligence](#)

Specifies the root element for **workflow** progress data.

Child Elements:

onDemandWorkflow: A [CT_OnDemandWorkflow](#) element that specifies the current level of completeness of a workflow which processes paragraphs.

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_OnDemandWorkflows">
  <xsd:sequence>
    <xsd:element name="onDemandWorkflow" type="CT_OnDemandWorkflow" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

2.1.3.14 CT_OnDemandWorkflow

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_OnDemandWorkflows](#)

Specifies the current level of completeness of a **workflow** which processes paragraphs.

Child Elements:

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

Attributes:

type: A `xsd:string` ([XMLSCHEMA2/2] section 3.2.1) attribute that specifies the **workflow type** which this record applies to.

paragraphVersions: An `ST_ParagraphVersions` attribute that specifies a space-separated list of paragraphs which the specified workflow has finished processing. Each paragraph is specified in the format "{paraId}-{textId}" ([MS-DOCX] section 2.6.2.3) ([MS-DOCX] section 2.6.2.4). For example, a possible value is "11111111-AAAAAAAA 22222222-BBBBBBBB 01234567-89ABCDEF".

The following W3C XML Schema ([XMLSCHEMA1/2] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_OnDemandWorkflow">
  <xsd:sequence>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="type" type="xsd:string" use="required"/>
  <xsd:attribute name="paragraphVersions" type="ST_ParagraphVersions" use="required"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.15 CT_IntelligenceSettings

Target namespace: `http://schemas.microsoft.com/office/intelligence/2020/intelligence`

Referenced by: [CT_Intelligence](#)

Specifies the root element for settings.

Child Elements:

extLst: An `oel:CT_ExtensionList` ([MS-OEXTXML] section 2.1.3.2) element that specifies current and future extensions.

The following W3C XML Schema ([XMLSCHEMA1/2] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_IntelligenceSettings">
  <xsd:sequence>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.3.16 CT_Goals

Target namespace: `http://schemas.microsoft.com/office/intelligence/2020/intelligence`

Referenced by: [goals](#)

Specifies a setting describing the author's objective. The setting can be used to influence **observations** that are shown.

Child Elements:

extLst: An oel:CT_ExtensionList ([\[MS-OEXTXML\]](#) section 2.1.3.2) element that specifies future extensions.

Attributes:

version: A xsd:string ([\[XMLSCHEMA2/2\]](#) section 3.2.1) attribute that SHOULD equal 1, otherwise behavior is unspecified.

formality: A xsd:string ([XMLSCHEMA2/2] section 3.2.1) attribute that specifies the quantity of observations that would be displayed. The value "0" indicates that all available observations SHOULD be shown. The value "1" indicates that some less-important observations SHOULD be hidden from view. The value "2" indicates that only the most important observations SHOULD be displayed. No other values are supported.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_Goals">
  <xsd:sequence>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="version" type="xsd:string"/>
  <xsd:attribute name="formality" type="xsd:string"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

2.1.4 Simple Types

2.1.4.1 ST_ParagraphVersions

Target namespace: <http://schemas.microsoft.com/office/intelligence/2020/intelligence>

Referenced by: [CT_OnDemandWorkflow](#)

Specifies a space-separated list of paragraphs which the specified workflow has finished processing. Each paragraph is specified in the format "{paraId}-{textId}" ([\[MS-DOCX\]](#) section 2.6.2.3) ([MS-DOCX] section 2.6.2.4). For example, a possible value is "11111111-AAAAAAAA 22222222-BBBBBBBB 01234567-89ABCDEF".

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this simple type.

```
<xsd:simpleType name="ST_ParagraphVersions">
  <xsd:list itemType="xsd:string"/>
</xsd:simpleType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

3 Structure Examples

3.1 Ignore All

This example shows how to use the types in this document to specify that a certain kind of observation should never be displayed if it would affect an exact word or phrase.

"WritingAssistant" is a hypothetical **workflow type** for a **workflow** that produces **observations** related to the writing style of a document. This workflow produces an observation every time the word "whom" is used in a document. The user reviews one such observation and decides that it should never be displayed again even if the word "whom" is used again in another location.

The content selector CT_TextHash (section [2.1.3.4](#)) can be used to suppress all such instances. This element requires a hash code. The SHA-1 hash code ([\[RFC3174\]](#)) of the word "whom" represented in Base64 format ([\[RFC4648\]](#)) is "CXaroNQwQFYioAmBvFjG8W0qQPE=". The first 14 characters, "CXaroNQwQFYioA", are the final hash code.

Any arbitrary string is permitted for the value of *id* as long as the value is unique among all sibling elements.

```
<int2:intelligence
xmlns:int2="http://schemas.microsoft.com/office/intelligence/2020/intelligence"
xmlns:oel="http://schemas.microsoft.com/office/2019/extlst">
  <int2:observations>
    <int2:textHash int2:hashCode="CXaroNQwQFYioA" int2:id="abc">
      <int2:state int2:type="WritingAssistant" int2:value="Rejected"/>
    </int2:textHash>
  </int2:observations>
</int2:intelligence>
```

3.2 Review Specific Observation

This example shows how to use the types in this document to specify that a specific instance of an **observation** has been reviewed by the user.

This example uses the same hypothetical **workflow type** as the previous example (section 3.1), "WritingAssistant". The user notices one observation applied to the word "whom" and chooses to indicate that the observation has been reviewed even though the suggestion was not applied to the document.

The content selector CT_Bookmark (section [2.1.3.5](#)) can be used to save this state. First, a bookmark ([\[ISO/IEC29500-1:2016\]](#) section 17.3.6) must be created around the particular instance of the word "whom", and the bookmark name must begin with "_Int_". For this example, the selected bookmark name is "_Int_12345". The observation does not depend on any other words in the sentence to remain applicable, so it is appropriate to leave the invalidation range attribute unset. However, it is strongly encouraged to provide the hash code of the invalidation range, which is "CXaroNQwQFYioA" (see the previous example, section 3.1).

Any arbitrary string is permitted for the value of *id* as long as the value is unique among all sibling elements.

```
<int2:intelligence
xmlns:int="http://schemas.microsoft.com/office/intelligence/2020/intelligence"
xmlns:oel="http://schemas.microsoft.com/office/2019/extlst">
  <int2:observations>
    <int2:bookmark int2:bookmarkName="_Int_12345" int2:hashCode="CXaroNQwQFYioA"
int2:id="abc">
      <int2:state int2:type="WritingAssistant" int2:value="Reviewed" />
    </int2:bookmark>
  </int2:observations>
</int2:intelligence>
```

```
</int2:bookmark >
</int2:observations>
</int2:intelligence>
```

3.3 Review Specific Observation With Invalidation Range

This example demonstrates when it might be appropriate to set the `invalidationBookmarkName` attribute on instances of `CT_Bookmark` (section [2.1.3.5](#)).

In this example, a hypothetical **workflow type** "GrammarChecker" produces an **observation** for the following paragraph. The observation applies to the **bold** text, and the invalidation range is underlined.

Lorem ipsum dolar sit amet. The quick brown fox **jump** over the lazy dog. Lorem ipsum dolar sit amet.

Logically, the reason this observation was produced is that "jump" should be changed to "jumped". However, this is not true in general; the word "jump" may be used without issue in many other possible sentences. This means that the observation may be rendered invalid if any portion of the sentence is modified. However, this does not extend to other sentences in the paragraph.

First, a bookmark ([\[ISO/IEC29500-1:2016\]](#) section 17.3.6) must be created around the word "jump" and the bookmark name must begin with "_Int_". For this example, the selected bookmark name is "_Int_12345". Next, a second bookmark ([\[ISO/IEC29500-1:2016\]](#) section 17.3.6) must be created around the sentence "The quick brown fox jump over the lazy dog." The second bookmark's name must also begin with "_Int_". For this example, the second bookmark's name is "_Int_67890". Finally, a hash code should be computed for the sentence "The quick brown fox jump over the lazy dog." The computed hash code is "PCRd4lSIx4R/A" (see section 3.1).

```
<int2:intelligence
xmlns:int="http://schemas.microsoft.com/office/intelligence/2020/intelligence"
xmlns:oel="http://schemas.microsoft.com/office/2019/extlst">
  <int2:observations>
    <int2:bookmark int2:bookmarkName="_Int_12345" int2:invalidationBookmarkName="_Int_67890"
int2:hashCode="PCRd4lSIx4R/A" int2:id="abc">
      <int2:state int2:type="GrammarChecker" int2:value="Reviewed" />
    </int2:bookmark >
  </int2:observations>
</int2:intelligence>
```

3.4 Workflow progress

This example shows a situation when `CT_OnDemandWorkflows` (section [2.1.3.13](#)) may be useful.

In this example, a hypothetical **workflow type** "DocumentProcessor" scans the document one paragraph at a time and does unspecified work. This scanning process takes a very long time, and it is very likely that the file will be saved while the scan is still in progress. If the scan restarts on each save, it might never have an opportunity to finish.

The `CT_OnDemandWorkflow` (section [2.1.3.14](#)) element can record which paragraphs have been scanned. Each paragraph is listed by its `paraId` ([\[MS-DOCX\]](#) section 2.6.2.3) and `textId` ([\[MS-DOCX\]](#) section 2.6.2.4). The `textId` ([\[MS-DOCX\]](#) section 2.6.2.4) value ensures that the scanning of a paragraph will be forgotten if that paragraph is modified.

This sample XML shows that the **workflow** has processed three paragraphs. There may or may not be more paragraphs that still need to be processed.

```
<int2:intelligence
xmlns:int="http://schemas.microsoft.com/office/intelligence/2020/intelligence"
xmlns:oel="http://schemas.microsoft.com/office/2019/extlst">
  <int2:onDemandWorkflows>
    <int2:onDemandWorkflow int2:type="DocumentProcessor" int2:paragraphVersions="11111111-
AAAAAAAA 22222222-BBBBBBBB 33333333-CCCCCCC" />
  </int2:onDemandWorkflows>
</int2:intelligence>
```

3.5 Goals setting

This example shows how to use the formality goal setting to control how many **observations** should be displayed.

The user decides that the least important observations should not be displayed. This decision can be stored with the following XML.

```
<int2:intelligence
xmlns:int="http://schemas.microsoft.com/office/intelligence/2020/intelligence"
xmlns:oel="http://schemas.microsoft.com/office/2019/extlst">
  <int2:intelligenceSettings>
    <int2:extLst>
      <oel:ext oel:uri="74B372B9-2EFF-4315-9A3F-32BA87CA82B1">
        <int2:goals int2:version="1" int2:formality="1" />
      </oel:ext>
    </int2:extLst>
  </int2:intelligenceSettings>
</int2:intelligence>
```


4 Security

4.1 Security Considerations for Implementers

Because hashing may be reversible, hash codes stored in this XML part should be assigned the same level of protection as the content that was hashed.

4.2 Index of Security Fields

None.

5 Appendix A: Full XML Schemas

Schema name	Prefix	Section
http://schemas.microsoft.com/office/intelligence/2020/intelligence Schema	None.	5.1

5.1 http://schemas.microsoft.com/office/intelligence/2020/intelligence Schema

```
<xsd:schema xmlns:oel="http://schemas.microsoft.com/office/2019/extlst"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:w12="http://schemas.openxmlformats.org/wordprocessingml/2006/main"
elementFormDefault="qualified" blockDefault="#all"
xmlns="http://schemas.microsoft.com/office/intelligence/2020/intelligence"
targetNamespace="http://schemas.microsoft.com/office/intelligence/2020/intelligence">
  <xsd:import id="oel" namespace="http://schemas.microsoft.com/office/2019/extlst"
schemaLocation="officeextlst.xsd"/>
  <xsd:element name="intelligence" type="CT_Intelligence"/>
  <xsd:complexType name="CT_Intelligence">
    <xsd:sequence>
      <xsd:element name="observations" type="CT_Observations" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="intelligenceSettings" type="CT_IntelligenceSettings" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="onDemandWorkflows" type="CT_OnDemandWorkflows" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_Observations">
    <xsd:sequence>
      <xsd:element name="textHash" type="CT_TextHash" minOccurs="0" maxOccurs="unbounded"/>
      <xsd:element name="bookmark" type="CT_Bookmark" minOccurs="0" maxOccurs="unbounded"/>
      <xsd:element name="entireDocument" type="CT_EntireDocument" minOccurs="0"
maxOccurs="unbounded"/>
      <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_Content">
    <xsd:sequence>
      <xsd:element name="state" type="CT_State" minOccurs="0" maxOccurs="unbounded"/>
      <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="id" type="xsd:string" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_TextHash">
    <xsd:complexContent>
      <xsd:extension base="CT_Content">
        <xsd:attribute name="hashCode" type="xsd:string" use="required"/>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="CT_Bookmark">
    <xsd:complexContent>
      <xsd:extension base="CT_Content">
        <xsd:attribute name="bookmarkName" type="xsd:string" use="required"/>
        <xsd:attribute name="invalidationBookmarkName" type="xsd:string" use="optional"/>
        <xsd:attribute name="hashCode" type="xsd:string" use="optional"/>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="CT_EntireDocument">
    <xsd:complexContent>
      <xsd:extension base="CT_Content"/>
    </xsd:complexContent>
  </xsd:complexType>
```

```

<xsd:complexType name="CT_State">
  <xsd:sequence>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="type" type="xsd:string" use="required"/>
  <xsd:attribute name="value" type="xsd:string" use="required"/>
</xsd:complexType>
<xsd:complexType name="CT_IntelligenceSettings">
  <xsd:sequence>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="CT_OnDemandWorkflows">
  <xsd:sequence>
    <xsd:element name="onDemandWorkflow" type="CT_OnDemandWorkflow" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="CT_OnDemandWorkflow">
  <xsd:sequence>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="type" type="xsd:string" use="required"/>
  <xsd:attribute name="paragraphVersions" type="ST_ParagraphVersions" use="required"/>
</xsd:complexType>
<xsd:simpleType name="ST_ParagraphVersions">
  <xsd:list itemType="xsd:string"/>
</xsd:simpleType>
<xsd:element name="similarityCritique" type="CT_SimilarityCritique"/>
<xsd:complexType name="CT_SimilarityCritique">
  <xsd:sequence>
    <xsd:element name="source" type="CT_SimilaritySource" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="version" type="xsd:int"/>
  <xsd:attribute name="context" type="xsd:string"/>
</xsd:complexType>
<xsd:complexType name="CT_SimilaritySource">
  <xsd:sequence>
    <xsd:element name="suggestions" type="CT_SimilaritySuggestionsForType" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="sourceType" type="xsd:string"/>
  <xsd:attribute name="sourceTitle" type="xsd:string"/>
  <xsd:attribute name="sourceUrl" type="xsd:string"/>
  <xsd:attribute name="sourceSnippet" type="xsd:string"/>
</xsd:complexType>
<xsd:complexType name="CT_SimilaritySuggestionsForType">
  <xsd:sequence>
    <xsd:element name="suggestion" type="CT_SimilaritySuggestion" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="citationType" type="xsd:string"/>
</xsd:complexType>
<xsd:complexType name="CT_SimilaritySuggestion">
  <xsd:sequence>
    <xsd:element name="citationText" type="xsd:string"/>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="citationStyle" type="xsd:string"/>
  <xsd:attribute name="isIdentical" type="xsd:boolean"/>
</xsd:complexType>
<xsd:element name="similaritySummary" type="CT_SimilaritySummary"/>
<xsd:complexType name="CT_SimilaritySummary">
  <xsd:sequence>

```

```
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="version" type="xsd:int"/>
  <xsd:attribute name="runId" type="xsd:string"/>
  <xsd:attribute name="tilesCheckedInThisRun" type="xsd:int"/>
  <xsd:attribute name="totalNumOfTiles" type="xsd:int"/>
  <xsd:attribute name="similarityAnnotationCount" type="xsd:int"/>
  <xsd:attribute name="numWords" type="xsd:int"/>
  <xsd:attribute name="numFlaggedWords" type="xsd:int"/>
</xsd:complexType>
<xsd:element name="goals" type="CT_Goals"/>
<xsd:complexType name="CT_Goals">
  <xsd:sequence>
    <xsd:element name="extLst" type="oel:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="version" type="xsd:string"/>
  <xsd:attribute name="formality" type="xsd:string"/>
</xsd:complexType>
</xsd:schema>
```

6 Appendix B: Converting Text to Lowercase

CT_TextHash elements (section [2.1.3.4](#)) require a procedure to convert text to lowercase. Various programming languages and libraries provide “tolower” implementations which are compatible in most cases, but for full compatibility implementers SHOULD follow the documentation here.

This appendix assumes that the unit of text to be converted is represented as a UTF-16 octet stream ([\[RFC3629\]](#)). Each character is converted independently of any other text in the unit. This conversion process does not consider the marked language of the text.

In this appendix, the word “between” means that the value must be greater than or equal to the specified lower bound and less than or equal to the upper bound.

6.1 Basic Multilingual Plane

This section describes how to convert characters which are represented by a single code point. Surrogate pairs MUST ignore this section and use section [6.2](#) instead.

Code points between 0x0041 and 0x005A SHOULD be increased by 0x20.

Code points between 0x00C0 and 0x00D6 SHOULD be increased by 0x20.

Code points between 0x00D8 and 0x00DE SHOULD be increased by 0x20.

Code points between 0x0100 and 0x0252 SHOULD use the table below.

Code points between 0x0386 and 0x03AB SHOULD use the table below.

Code points between 0x03D2 and 0x040F SHOULD use the table below.

Code points between 0x0410 and 0x042F SHOULD be increased by 0x20.

Code points between 0x0460 and 0x04CD SHOULD use the table below.

Code points between 0x04D0 and 0x0512 SHOULD use the table below.

Code points between 0x0531 and 0x0556 SHOULD be increased by 0x30.

Code points between 0x10A0 and 0x10C5 SHOULD be increased by 0x30.

Code points between 0x1E00 and 0x1EF8 SHOULD use the table below.

The code point 0x2132 SHOULD be increased by 0x1C.

The code point 0x2183 SHOULD be increased by 1.

Code points between 0x24B6 and 0x24CF SHOULD be increased by 0x1A.

Code points between 0x2C60 and 0x2C6B SHOULD use the table below.

The code point 0x2C75 SHOULD be increased by 1.

Code points between 0xFF21 and 0xFF3A SHOULD be increased by 0x20.

Any code point found in the “Original” columns of the following table SHOULD be replaced by the code point found in the “Lowercase” column immediately to the right.

Original	Lowercase	Original	Lowercase	Original	Lowercase	Original	Lowercase
0x0100	0x0101	0x0101	0x0101	0x0102	0x0103	0x0103	0x0103

Original	Lowercase	Original	Lowercase	Original	Lowercase	Original	Lowercase
0x0104	0x0105	0x0105	0x0105	0x0106	0x0107	0x0107	0x0107
0x0108	0x0109	0x0109	0x0109	0x010A	0x010B	0x010B	0x010B
0x010C	0x010D	0x010D	0x010D	0x010E	0x010F	0x010F	0x010F
0x0110	0x0111	0x0111	0x0111	0x0112	0x0113	0x0113	0x0113
0x0114	0x0115	0x0115	0x0115	0x0116	0x0117	0x0117	0x0117
0x0118	0x0119	0x0119	0x0119	0x011A	0x011B	0x011B	0x011B
0x011C	0x011D	0x011D	0x011D	0x011E	0x011F	0x011F	0x011F
0x0120	0x0121	0x0121	0x0121	0x0122	0x0123	0x0123	0x0123
0x0124	0x0125	0x0125	0x0125	0x0126	0x0127	0x0127	0x0127
0x0128	0x0129	0x0129	0x0129	0x012A	0x012B	0x012B	0x012B
0x012C	0x012D	0x012D	0x012D	0x012E	0x012F	0x012F	0x012F
0x0130	0x0069	0x0131	0x0131	0x0132	0x0133	0x0133	0x0133
0x0134	0x0135	0x0135	0x0135	0x0136	0x0137	0x0137	0x0137
0x0138	0x0138	0x0139	0x013A	0x013A	0x013A	0x013B	0x013C
0x013C	0x013C	0x013D	0x013E	0x013E	0x013E	0x013F	0x0140
0x0140	0x0140	0x0141	0x0142	0x0142	0x0142	0x0143	0x0144
0x0144	0x0144	0x0145	0x0146	0x0146	0x0146	0x0147	0x0148
0x0148	0x0148	0x0149	0x0149	0x014A	0x014B	0x014B	0x014B
0x014C	0x014D	0x014D	0x014D	0x014E	0x014F	0x014F	0x014F
0x0150	0x0151	0x0151	0x0151	0x0152	0x0153	0x0153	0x0153
0x0154	0x0155	0x0155	0x0155	0x0156	0x0157	0x0157	0x0157
0x0158	0x0159	0x0159	0x0159	0x015A	0x015B	0x015B	0x015B
0x015C	0x015D	0x015D	0x015D	0x015E	0x015F	0x015F	0x015F
0x0160	0x0161	0x0161	0x0161	0x0162	0x0163	0x0163	0x0163
0x0164	0x0165	0x0165	0x0165	0x0166	0x0167	0x0167	0x0167
0x0168	0x0169	0x0169	0x0169	0x016A	0x016B	0x016B	0x016B
0x016C	0x016D	0x016D	0x016D	0x016E	0x016F	0x016F	0x016F
0x0170	0x0171	0x0171	0x0171	0x0172	0x0173	0x0173	0x0173
0x0174	0x0175	0x0175	0x0175	0x0176	0x0177	0x0177	0x0177
0x0178	0x00FF	0x0179	0x017A	0x017A	0x017A	0x017B	0x017C
0x017C	0x017C	0x017D	0x017E	0x017E	0x017E	0x017F	0x017F
0x0180	0x0180	0x0181	0x0253	0x0182	0x0183	0x0183	0x0183

Original	Lowercase	Original	Lowercase	Original	Lowercase	Original	Lowercase
0x0184	0x0185	0x0185	0x0185	0x0186	0x0254	0x0187	0x0188
0x0188	0x0188	0x0189	0x0256	0x018A	0x0257	0x018B	0x018C
0x018C	0x018C	0x018D	0x018D	0x018E	0x01DD	0x018F	0x0259
0x0190	0x025B	0x0191	0x0192	0x0192	0x0192	0x0193	0x0260
0x0194	0x0263	0x0195	0x0195	0x0196	0x0269	0x0197	0x0268
0x0198	0x0199	0x0199	0x0199	0x019A	0x019A	0x019B	0x019B
0x019C	0x026F	0x019D	0x0272	0x019E	0x019E	0x019F	0x0275
0x01A0	0x01A1	0x01A1	0x01A1	0x01A2	0x01A3	0x01A3	0x01A3
0x01A4	0x01A5	0x01A5	0x01A5	0x01A6	0x0280	0x01A7	0x01A8
0x01A8	0x01A8	0x01A9	0x0283	0x01AA	0x01AA	0x01AB	0x01AB
0x01AC	0x01AD	0x01AD	0x01AD	0x01AE	0x0288	0x01AF	0x01B0
0x01B0	0x01B0	0x01B1	0x028A	0x01B2	0x028B	0x01B3	0x01B4
0x01B4	0x01B4	0x01B5	0x01B6	0x01B6	0x01B6	0x01B7	0x0292
0x01B8	0x01B9	0x01B9	0x01B9	0x01BA	0x01BA	0x01BB	0x01BB
0x01BC	0x01BD	0x01BD	0x01BD	0x01BE	0x01BE	0x01BF	0x01BF
0x01C0	0x01C0	0x01C1	0x01C1	0x01C2	0x01C2	0x01C3	0x01C3
0x01C4	0x01C6	0x01C5	0x01C6	0x01C6	0x01C6	0x01C7	0x01C9
0x01C8	0x01C9	0x01C9	0x01C9	0x01CA	0x01CC	0x01CB	0x01CC
0x01CC	0x01CC	0x01CD	0x01CE	0x01CE	0x01CE	0x01CF	0x01D0
0x01D0	0x01D0	0x01D1	0x01D2	0x01D2	0x01D2	0x01D3	0x01D4
0x01D4	0x01D4	0x01D5	0x01D6	0x01D6	0x01D6	0x01D7	0x01D8
0x01D8	0x01D8	0x01D9	0x01DA	0x01DA	0x01DA	0x01DB	0x01DC
0x01DC	0x01DC	0x01DD	0x01DD	0x01DE	0x01DF	0x01DF	0x01DF
0x01E0	0x01E1	0x01E1	0x01E1	0x01E2	0x01E3	0x01E3	0x01E3
0x01E4	0x01E5	0x01E5	0x01E5	0x01E6	0x01E7	0x01E7	0x01E7
0x01E8	0x01E9	0x01E9	0x01E9	0x01EA	0x01EB	0x01EB	0x01EB
0x01EC	0x01ED	0x01ED	0x01ED	0x01EE	0x01EF	0x01EF	0x01EF
0x01F0	0x01F0	0x01F1	0x01F3	0x01F2	0x01F3	0x01F3	0x01F3
0x01F4	0x01F5	0x01F5	0x01F5	0x01F6	0x0195	0x01F7	0x01BF
0x01F8	0x01F9	0x01F9	0x01F9	0x01FA	0x01FB	0x01FB	0x01FB
0x01FC	0x01FD	0x01FD	0x01FD	0x01FE	0x01FF	0x01FF	0x01FF
0x0200	0x0201	0x0201	0x0201	0x0202	0x0203	0x0203	0x0203

Original	Lowercase	Original	Lowercase	Original	Lowercase	Original	Lowercase
0x0204	0x0205	0x0205	0x0205	0x0206	0x0207	0x0207	0x0207
0x0208	0x0209	0x0209	0x0209	0x020A	0x020B	0x020B	0x020B
0x020C	0x020D	0x020D	0x020D	0x020E	0x020F	0x020F	0x020F
0x0210	0x0211	0x0211	0x0211	0x0212	0x0213	0x0213	0x0213
0x0214	0x0215	0x0215	0x0215	0x0216	0x0217	0x0217	0x0217
0x0218	0x0219	0x0219	0x0219	0x021A	0x021B	0x021B	0x021B
0x021C	0x021D	0x021D	0x021D	0x021E	0x021F	0x021F	0x021F
0x0220	0x019E	0x0221	0x0221	0x0222	0x0223	0x0223	0x0223
0x0224	0x0225	0x0225	0x0225	0x0226	0x0227	0x0227	0x0227
0x0228	0x0229	0x0229	0x0229	0x022A	0x022B	0x022B	0x022B
0x022C	0x022D	0x022D	0x022D	0x022E	0x022F	0x022F	0x022F
0x0230	0x0231	0x0231	0x0231	0x0232	0x0233	0x0233	0x0233
0x0234	0x0234	0x0235	0x0235	0x0236	0x0236	0x0237	0x0237
0x0238	0x0238	0x0239	0x0239	0x023A	0x2C65	0x023B	0x023C
0x023C	0x023C	0x023D	0x019A	0x023E	0x2C66	0x023F	0x023F
0x0240	0x0240	0x0241	0x0242	0x0242	0x0242	0x0243	0x0180
0x0244	0x0289	0x0245	0x028C	0x0246	0x0247	0x0247	0x0247
0x0248	0x0249	0x0249	0x0249	0x024A	0x024B	0x024B	0x024B
0x024C	0x024D	0x024D	0x024D	0x024E	0x024F	0x024F	0x024F
0x0250	0x0250	0x0251	0x0251	0x0252	0x0252	0x0386	0x03AC
0x0387	0x0387	0x0388	0x03AD	0x0389	0x03AE	0x038A	0x03AF
0x038B	0x038B	0x038C	0x03CC	0x038D	0x038D	0x038E	0x03CD
0x038F	0x03CE	0x0390	0x0390	0x0391	0x03B1	0x0392	0x03B2
0x0393	0x03B3	0x0394	0x03B4	0x0395	0x03B5	0x0396	0x03B6
0x0397	0x03B7	0x0398	0x03B8	0x0399	0x03B9	0x039A	0x03BA
0x039B	0x03BB	0x039C	0x03BC	0x039D	0x03BD	0x039E	0x03BE
0x039F	0x03BF	0x03A0	0x03C0	0x03A1	0x03C1	0x03A2	0x03A2
0x03A3	0x03C3	0x03A4	0x03C4	0x03A5	0x03C5	0x03A6	0x03C6
0x03A7	0x03C7	0x03A8	0x03C8	0x03A9	0x03C9	0x03AA	0x03CA
0x03AB	0x03CB	0x03D2	0x03C5	0x03D3	0x03CD	0x03D4	0x03CB
0x03D5	0x03D5	0x03D6	0x03D6	0x03D7	0x03D7	0x03D8	0x03D8
0x03D9	0x03D9	0x03DA	0x03DB	0x03DB	0x03DB	0x03DC	0x03DD

Original	Lowercase	Original	Lowercase	Original	Lowercase	Original	Lowercase
0x03DD	0x03DD	0x03DE	0x03DF	0x03DF	0x03DF	0x03E0	0x03E1
0x03E1	0x03E1	0x03E2	0x03E3	0x03E3	0x03E3	0x03E4	0x03E5
0x03E5	0x03E5	0x03E6	0x03E7	0x03E7	0x03E7	0x03E8	0x03E9
0x03E9	0x03E9	0x03EA	0x03EB	0x03EB	0x03EB	0x03EC	0x03ED
0x03ED	0x03ED	0x03EE	0x03EF	0x03EF	0x03EF	0x03F0	0x03F0
0x03F1	0x03F1	0x03F2	0x03F2	0x03F3	0x03F3	0x03F4	0x03F4
0x03F5	0x03F5	0x03F6	0x03F6	0x03F7	0x03F7	0x03F8	0x03F8
0x03F9	0x03F9	0x03FA	0x03FA	0x03FB	0x03FB	0x03FC	0x03FC
0x03FD	0x03FD	0x03FE	0x03FE	0x03FF	0x03FF	0x0400	0x0450
0x0401	0x0451	0x0402	0x0452	0x0403	0x0453	0x0404	0x0454
0x0405	0x0455	0x0406	0x0456	0x0407	0x0457	0x0408	0x0458
0x0409	0x0459	0x040A	0x045A	0x040B	0x045B	0x040C	0x045C
0x040D	0x045D	0x040E	0x045E	0x040F	0x045F	0x0460	0x0461
0x0461	0x0461	0x0462	0x0463	0x0463	0x0463	0x0464	0x0465
0x0465	0x0465	0x0466	0x0467	0x0467	0x0467	0x0468	0x0469
0x0469	0x0469	0x046A	0x046B	0x046B	0x046B	0x046C	0x046D
0x046D	0x046D	0x046E	0x046F	0x046F	0x046F	0x0470	0x0471
0x0471	0x0471	0x0472	0x0473	0x0473	0x0473	0x0474	0x0475
0x0475	0x0475	0x0476	0x0477	0x0477	0x0477	0x0478	0x0479
0x0479	0x0479	0x047A	0x047B	0x047B	0x047B	0x047C	0x047D
0x047D	0x047D	0x047E	0x047F	0x047F	0x047F	0x0480	0x0481
0x0481	0x0481	0x0482	0x0482	0x0483	0x0483	0x0484	0x0484
0x0485	0x0485	0x0486	0x0486	0x0487	0x0487	0x0488	0x0488
0x0489	0x0489	0x048A	0x048B	0x048B	0x048B	0x048C	0x048D
0x048D	0x048D	0x048E	0x048F	0x048F	0x048F	0x0490	0x0491
0x0491	0x0491	0x0492	0x0493	0x0493	0x0493	0x0494	0x0495
0x0495	0x0495	0x0496	0x0497	0x0497	0x0497	0x0498	0x0499
0x0499	0x0499	0x049A	0x049B	0x049B	0x049B	0x049C	0x049D
0x049D	0x049D	0x049E	0x049F	0x049F	0x049F	0x04A0	0x04A1
0x04A1	0x04A1	0x04A2	0x04A3	0x04A3	0x04A3	0x04A4	0x04A5
0x04A5	0x04A5	0x04A6	0x04A7	0x04A7	0x04A7	0x04A8	0x04A9
0x04A9	0x04A9	0x04AA	0x04AB	0x04AB	0x04AB	0x04AC	0x04AD

Original	Lowercase	Original	Lowercase	Original	Lowercase	Original	Lowercase
0x04AD	0x04AD	0x04AE	0x04AF	0x04AF	0x04AF	0x04B0	0x04B1
0x04B1	0x04B1	0x04B2	0x04B3	0x04B3	0x04B3	0x04B4	0x04B5
0x04B5	0x04B5	0x04B6	0x04B7	0x04B7	0x04B7	0x04B8	0x04B9
0x04B9	0x04B9	0x04BA	0x04BB	0x04BB	0x04BB	0x04BC	0x04BD
0x04BD	0x04BD	0x04BE	0x04BF	0x04BF	0x04BF	0x04C0	0x04CF
0x04C1	0x04C2	0x04C2	0x04C2	0x04C3	0x04C4	0x04C4	0x04C4
0x04C5	0x04C6	0x04C6	0x04C6	0x04C7	0x04C8	0x04C8	0x04C8
0x04C9	0x04CA	0x04CA	0x04CA	0x04CB	0x04CC	0x04CC	0x04CC
0x04CD	0x04CE	0x04D0	0x04D1	0x04D1	0x04D1	0x04D2	0x04D3
0x04D3	0x04D3	0x04D4	0x04D5	0x04D5	0x04D5	0x04D6	0x04D7
0x04D7	0x04D7	0x04D8	0x04D9	0x04D9	0x04D9	0x04DA	0x04DB
0x04DB	0x04DB	0x04DC	0x04DD	0x04DD	0x04DD	0x04DE	0x04DF
0x04DF	0x04DF	0x04E0	0x04E1	0x04E1	0x04E1	0x04E2	0x04E3
0x04E3	0x04E3	0x04E4	0x04E5	0x04E5	0x04E5	0x04E6	0x04E7
0x04E7	0x04E7	0x04E8	0x04E9	0x04E9	0x04E9	0x04EA	0x04EB
0x04EB	0x04EB	0x04EC	0x04ED	0x04ED	0x04ED	0x04EE	0x04EF
0x04EF	0x04EF	0x04F0	0x04F1	0x04F1	0x04F1	0x04F2	0x04F3
0x04F3	0x04F3	0x04F4	0x04F5	0x04F5	0x04F5	0x04F6	0x04F7
0x04F7	0x04F7	0x04F8	0x04F9	0x04F9	0x04F9	0x04FA	0x04FB
0x04FB	0x04FB	0x04FC	0x04FD	0x04FD	0x04FD	0x04FE	0x04FF
0x04FF	0x04FF	0x0500	0x0501	0x0501	0x0501	0x0502	0x0503
0x0503	0x0503	0x0504	0x0505	0x0505	0x0505	0x0506	0x0507
0x0507	0x0507	0x0508	0x0509	0x0509	0x0509	0x050A	0x050B
0x050B	0x050B	0x050C	0x050D	0x050D	0x050D	0x050E	0x050F
0x050F	0x050F	0x0510	0x0511	0x0511	0x0511	0x0512	0x0513
0x1E00	0x1E01	0x1E01	0x1E01	0x1E02	0x1E03	0x1E03	0x1E03
0x1E04	0x1E05	0x1E05	0x1E05	0x1E06	0x1E07	0x1E07	0x1E07
0x1E08	0x1E09	0x1E09	0x1E09	0x1E0A	0x1E0B	0x1E0B	0x1E0B
0x1E0C	0x1E0D	0x1E0D	0x1E0D	0x1E0E	0x1E0F	0x1E0F	0x1E0F
0x1E10	0x1E11	0x1E11	0x1E11	0x1E12	0x1E13	0x1E13	0x1E13
0x1E14	0x1E15	0x1E15	0x1E15	0x1E16	0x1E17	0x1E17	0x1E17
0x1E18	0x1E19	0x1E19	0x1E19	0x1E1A	0x1E1B	0x1E1B	0x1E1B

Original	Lowercase	Original	Lowercase	Original	Lowercase	Original	Lowercase
0x1E1C	0x1E1D	0x1E1D	0x1E1D	0x1E1E	0x1E1F	0x1E1F	0x1E1F
0x1E20	0x1E21	0x1E21	0x1E21	0x1E22	0x1E23	0x1E23	0x1E23
0x1E24	0x1E25	0x1E25	0x1E25	0x1E26	0x1E27	0x1E27	0x1E27
0x1E28	0x1E29	0x1E29	0x1E29	0x1E2A	0x1E2B	0x1E2B	0x1E2B
0x1E2C	0x1E2D	0x1E2D	0x1E2D	0x1E2E	0x1E2F	0x1E2F	0x1E2F
0x1E30	0x1E31	0x1E31	0x1E31	0x1E32	0x1E33	0x1E33	0x1E33
0x1E34	0x1E35	0x1E35	0x1E35	0x1E36	0x1E37	0x1E37	0x1E37
0x1E38	0x1E39	0x1E39	0x1E39	0x1E3A	0x1E3B	0x1E3B	0x1E3B
0x1E3C	0x1E3D	0x1E3D	0x1E3D	0x1E3E	0x1E3F	0x1E3F	0x1E3F
0x1E40	0x1E41	0x1E41	0x1E41	0x1E42	0x1E43	0x1E43	0x1E43
0x1E44	0x1E45	0x1E45	0x1E45	0x1E46	0x1E47	0x1E47	0x1E47
0x1E48	0x1E49	0x1E49	0x1E49	0x1E4A	0x1E4B	0x1E4B	0x1E4B
0x1E4C	0x1E4D	0x1E4D	0x1E4D	0x1E4E	0x1E4F	0x1E4F	0x1E4F
0x1E50	0x1E51	0x1E51	0x1E51	0x1E52	0x1E53	0x1E53	0x1E53
0x1E54	0x1E55	0x1E55	0x1E55	0x1E56	0x1E57	0x1E57	0x1E57
0x1E58	0x1E59	0x1E59	0x1E59	0x1E5A	0x1E5B	0x1E5B	0x1E5B
0x1E5C	0x1E5D	0x1E5D	0x1E5D	0x1E5E	0x1E5F	0x1E5F	0x1E5F
0x1E60	0x1E61	0x1E61	0x1E61	0x1E62	0x1E63	0x1E63	0x1E63
0x1E64	0x1E65	0x1E65	0x1E65	0x1E66	0x1E67	0x1E67	0x1E67
0x1E68	0x1E69	0x1E69	0x1E69	0x1E6A	0x1E6B	0x1E6B	0x1E6B
0x1E6C	0x1E6D	0x1E6D	0x1E6D	0x1E6E	0x1E6F	0x1E6F	0x1E6F
0x1E70	0x1E71	0x1E71	0x1E71	0x1E72	0x1E73	0x1E73	0x1E73
0x1E74	0x1E75	0x1E75	0x1E75	0x1E76	0x1E77	0x1E77	0x1E77
0x1E78	0x1E79	0x1E79	0x1E79	0x1E7A	0x1E7B	0x1E7B	0x1E7B
0x1E7C	0x1E7D	0x1E7D	0x1E7D	0x1E7E	0x1E7F	0x1E7F	0x1E7F
0x1E80	0x1E81	0x1E81	0x1E81	0x1E82	0x1E83	0x1E83	0x1E83
0x1E84	0x1E85	0x1E85	0x1E85	0x1E86	0x1E87	0x1E87	0x1E87
0x1E88	0x1E89	0x1E89	0x1E89	0x1E8A	0x1E8B	0x1E8B	0x1E8B
0x1E8C	0x1E8D	0x1E8D	0x1E8D	0x1E8E	0x1E8F	0x1E8F	0x1E8F
0x1E90	0x1E91	0x1E91	0x1E91	0x1E92	0x1E93	0x1E93	0x1E93
0x1E94	0x1E95	0x1E95	0x1E95	0x1E96	0x1E96	0x1E97	0x1E97
0x1E98	0x1E98	0x1E99	0x1E99	0x1E9A	0x1E9A	0x1E9B	0x1E9B

Original	Lowercase	Original	Lowercase	Original	Lowercase	Original	Lowercase
0x1E9C	0x1E9C	0x1E9D	0x1E9D	0x1E9E	0x1E9E	0x1E9F	0x1E9F
0x1EA0	0x1EA1	0x1EA1	0x1EA1	0x1EA2	0x1EA3	0x1EA3	0x1EA3
0x1EA4	0x1EA5	0x1EA5	0x1EA5	0x1EA6	0x1EA7	0x1EA7	0x1EA7
0x1EA8	0x1EA9	0x1EA9	0x1EA9	0x1EAA	0x1EAB	0x1EAB	0x1EAB
0x1EAC	0x1EAD	0x1EAD	0x1EAD	0x1EAE	0x1EAF	0x1EAF	0x1EAF
0x1EB0	0x1EB1	0x1EB1	0x1EB1	0x1EB2	0x1EB3	0x1EB3	0x1EB3
0x1EB4	0x1EB5	0x1EB5	0x1EB5	0x1EB6	0x1EB7	0x1EB7	0x1EB7
0x1EB8	0x1EB9	0x1EB9	0x1EB9	0x1EBA	0x1EBB	0x1EBB	0x1EBB
0x1EBC	0x1EBD	0x1EBD	0x1EBD	0x1EBE	0x1EBF	0x1EBF	0x1EBF
0x1EC0	0x1EC1	0x1EC1	0x1EC1	0x1EC2	0x1EC3	0x1EC3	0x1EC3
0x1EC4	0x1EC5	0x1EC5	0x1EC5	0x1EC6	0x1EC7	0x1EC7	0x1EC7
0x1EC8	0x1EC9	0x1EC9	0x1EC9	0x1ECA	0x1ECB	0x1ECB	0x1ECB
0x1ECC	0x1ECD	0x1ECD	0x1ECD	0x1ECE	0x1ECF	0x1ECF	0x1ECF
0x1ED0	0x1ED1	0x1ED1	0x1ED1	0x1ED2	0x1ED3	0x1ED3	0x1ED3
0x1ED4	0x1ED5	0x1ED5	0x1ED5	0x1ED6	0x1ED7	0x1ED7	0x1ED7
0x1ED8	0x1ED9	0x1ED9	0x1ED9	0x1EDA	0x1EDB	0x1EDB	0x1EDB
0x1EDC	0x1EDD	0x1EDD	0x1EDD	0x1EDE	0x1EDF	0x1EDF	0x1EDF
0x1EE0	0x1EE1	0x1EE1	0x1EE1	0x1EE2	0x1EE3	0x1EE3	0x1EE3
0x1EE4	0x1EE5	0x1EE5	0x1EE5	0x1EE6	0x1EE7	0x1EE7	0x1EE7
0x1EE8	0x1EE9	0x1EE9	0x1EE9	0x1EEA	0x1EEB	0x1EEB	0x1EEB
0x1EEC	0x1EED	0x1EED	0x1EED	0x1EEE	0x1EEF	0x1EEF	0x1EEF
0x1EF0	0x1EF1	0x1EF1	0x1EF1	0x1EF2	0x1EF3	0x1EF3	0x1EF3
0x1EF4	0x1EF5	0x1EF5	0x1EF5	0x1EF6	0x1EF7	0x1EF7	0x1EF7
0x1EF8	0x1EF9	0x2C60	0x2C61	0x2C61	0x2C61	0x2C62	0x026B
0x2C63	0x1D7D	0x2C64	0x027D	0x2C65	0x2C65	0x2C66	0x2C66
0x2C67	0x2C68	0x2C68	0x2C68	0x2C69	0x2C6A	0x2C6A	0x2C6A
0x2C6B	0x2C6C						

6.2 Surrogate Pairs

Case conversions are defined for surrogate pairs which have the following leading surrogate values.

Leading surrogate 0xD801: Trailing code points between 0xDC00 and 0xDC27 SHOULD be increased by 0x0028. Trailing code points between 0xDCB0 and 0xDCD3 SHOULD be increased by 0x0028.

Leading surrogate 0xD803: Trailing code points between 0xDC80 and 0xDCB2 SHOULD be increased by 0x0040.

Leading surrogate 0xD806: Trailing code points between 0xDCA0 and 0xDCBF SHOULD be increased by 0x0020.

Leading surrogate 0xD81B: Trailing code points between 0xDE40 and 0xDE5F SHOULD be increased by 0x0020.

Leading surrogate 0xD83A: Trailing code points between 0xDD00 and 0xDD21 SHOULD be increased by 0x0022.

All other surrogate pairs not mentioned here SHOULD NOT be modified.

7 Appendix C: 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.

- Microsoft Word Online
- Microsoft Word 2021
- Microsoft Word LTSC 2024

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.

8 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements.
- A document revision that captures changes to protocol functionality.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

The changes made to this document are listed in the following table. For more information, please contact dochelp@microsoft.com.

Section	Description	Revision class
6 Appendix B: Converting Text to Lowercase	Added new Appendix B: Converting Text to Lowercase.	Major

9 Index

A

[Applicability](#) 7

C

[Change tracking](#) 39

E

Examples

[Goals setting](#) 24

[Ignore All](#) 22

[Review Specific Observation](#) 22

[Review Specific Observation With Invalidation Range](#) 23

[Workflow progress](#) 23

F

[Fields - security index](#) 25

[Fields - vendor-extensible](#) 8

[Full XML schema](#) 26

G

[Glossary](#) 5

[Goals setting example](#) 24

I

[Ignore All example](#) 22

[Implementer - security considerations](#) 25

[Index of security fields](#) 25

[Informative references](#) 6

[Introduction](#) 5

L

[Localization](#) 7

N

[Normative references](#) 5

O

[Overview \(synopsis\)](#) 6

P

[Product behavior](#) 38

R

[References](#) 5

[informative](#) 6

[normative](#) 5

[Relationship to protocols and other structures](#) 7

[Review Specific Observation example](#) 22

[Review Specific Observation With Invalidation Range example](#) 23

S

Security

[field index](#) 25

[implementer considerations](#) 25

T

[Tracking changes](#) 39

V

[Vendor-extensible fields](#) 8

[Versioning](#) 7

W

[Workflow progress example](#) 23

X

[XML schema](#) 26