```
  7   | <!        <meta content="text/html; charset=iso-8859-1" />
  8   | <!        <meta content="text/html; charset=iso-8859-1" />
  9   | <!        <meta content="text/html; charset=iso-8859-1" />
 10   | <!        <meta content="text/html; charset=iso-8859-1" />
 11   | <!        <meta content="text/html; charset=iso-8859-1" />
 12   | <!        <meta content="text/html; charset=iso-8859-1" />
 13   | <!        <meta content="text/html; charset=iso-8859-1" />
 14   | <!        <meta content="text/html; charset=iso-8859-1" />
 15   | <!        <meta content="text/html; charset=iso-8859-1" />
 16   | <!        <meta content="text/html; charset=iso-8859-1" />
 17   | <!        <meta content="text/html; charset=iso-8859-1" />
 18   | <!        <meta content="text/html; charset=iso-8859-1" />
 19   | <!        <meta content="text/html; charset=iso-8859-1" />
 21   | <!        <title>WebCGM 2.1 - Appendixes</title>
 22   | <!        <link href="WebCGM21.css" rel="stylesheet" type="text/css" />
 23   | <!        <!--
 24   | <!                <link rel="stylesheet" type="text/css" media="screen"
 25   | <!                href="http://www.w3.org/StyleSheets/TR/base.css" />
 26   | <!                <link href="OASIS_Specification_Template_v1-0.css" rel="stylesheet"
 27   | <!                type="text/css" />
 28   | <!              -->
      | !>        <title>WebCGM 2.0 - Appendixes</title>
      | !>        <!--link href="OASIS_Specification_Template_v1-0.css" rel="stylesheet"
      | !>                               type="text/css" /-->
      | !>        <link href="WebCGM20.css" rel="stylesheet" type="text/css" />
 30   | <!        href="http://www.w3.org/StyleSheets/TR/W3C-WD" />
      | !>        href="http://www.w3.org/StyleSheets/TR/W3C-REC" />
 37   | <!      href="WebCGM21-Config.html">Back to Application configuration</a></p>
      | !>      href="WebCGM20-ECMA.html">Back to ECMAScript binding</a></p>
 39   | <!      <h3>WebCGM 2.1 &mdash; Appendixes</h3>
      | !>      <h3>WebCGM 2.0 &mdash; Appendixes</h3>
 46   | <!        <li><a href="#webcgm_whatsnew">B. What's new in WebCGM 2.1</a></li>
      | !>        <li><a href="#webcgm_whatsnew">B. What's new in WebCGM 2</a></li>
 50   | <!        <li><a href="#webcgm_regexsearch">F. Example: regex search</a></li>
 61   | <!      to the present WebCGM 2.1 specification:</p>
      | !>      to the present WebCGM specification:</p>
 64   | <!        <li>David Cruikshank, The Boeing Company</li>
 (83)  | ->        <li>Kevin O'Kane, Auto-trol Technology</li>
 72   | <!      </ul>
 73   | <!
 74   | <!      <p>Additionally, the following individuals made signficant contributions to
 75   | <!      predecessor versions, WebCGM 2.0 and WebCGM 1.0:</p>
 76   | <!      <ul>
 83   | <-        <li>Kevin O'Kane, Auto-trol Technology</li>
 84   | <!      </ul>
      | !>      </ul>
      | !>
      | !>      <p>The following other individuals made significant contributions to WebCGM
      | !>      1.0:</p>
102   | <!      2.1</a></h1>
      | !>      2</a></h1>
107   | <!      <p>WebCGM 2.1 builds upon <a
108   | <!      href="http://docs.oasis-open.org/webcgm/v2.0/OS/webcgm-v2.0-index.html">WebCGM
109   | <!      2.0</a> and adds these features:</p>
111   | <!        <li>Geometric transform definition for objects, via DOM and XCF facilities,
112   | <!          plus getTransform() inquiry method.</li>
113   | <!        <li>getStyleProperty() inquiry method added to DOM.</li>
114   | <!        <li>a number of new Style Properties are added to the list of those
115   | <!          settable via the setStyleProperty() method.</li>
116   | <!        <li>Application configurable items: font mapping; defaults setting.</li>
117   | <!        <li>g-zip compression of whole metafiles.</li>
118   | <!        <li>new setRedraw() method on WebCGMMetafile allows postponement / control
119   | <!          of when redraws happen.</li>
120   | <!        <li>new setView() method on WebCGMPicture allows the picture view to be
121   | <!          defined via the DOM.</li>
122   | <!        <li>new getObjectExtent() method on WebCGMAppStructure facilitates getting
123   | <!          the bounding extent of one or more objects, for example to use with new
124   | <!          setView()</li>
```

```
125   <!      <li>Transparency Clarifications.</li>
126   <!      <li>A number of 2.0-deprecated items were made obsolete for 2.1.</li>
      !>      <li>WebCGM DOM. A major functional addition is a limited WebCGM Document
      !>        Object Model (DOM), carefully targeted at the WebCGM 2.0
      !>      requirements.</li>
      !>      <li>WebCGM XCF. The second major functional addition is the definition of a
      !>        standard XML Companion File for use by WebCGM (and related) applications,
      !>        closely integrated with WebCGM DOM.</li>
      !>      <li>Event model. As an adjunct to the DOM definition, a more detailed event
      !>        model has been specified, allowing definition and attachment of user
      !>        event handlers to objects, and specifying how "pick" events are handled
      !>        in a backward compatible way to WebCGM 1.0.</li>
      !>      <li>Complementing the event model, a new param sub-element is added to the
      !>        OBJECT element, to allow handling of onload events.</li>
      !>      <li>Single picture. Whereas ISO CGM:1999 allows multiple independent
      !>        pictures in a metafile, and WebCGM 1.0 originally did, multiple pictures
      !>        were deemed not amongst the requirements for WebCGM. To simplify WebCGM,
      !>        they were deprecated in WebCGM 1.0 2nd Release, and are now removed from
      !>        WebCGM 2.0.</li>
      !>      <li>Fragment syntax. Small changes to allowable values, in order to embody
      !>        the single-picture rule, but the overall structure of the fragment is
      !>        unchanged for backward compatibility.</li>
      !>      <li>Fragment syntax and xcfterm. It is now possible in the link fragment to
      !>        specify to load-and-apply an XML companion file before first display of
      !>        the graphics of a targeted picture.</li>
      !>      <li>More object behaviors. The set of object behaviors that can be included
      !>        in the link fragment syntax has been expanded to give much more user
      !>        control. A set of behaviors is built from EBNF syntax, by combinations of
      !>        an orthogonal navigation term and highlighting term. The 3 behaviors of
      !>        WebCGM 1.0 are deprecated.</li>
      !>      <li>Grnode. WebCGM 2.0 defines a purely graphical grouping mechanism,
      !>        "graphical node", which groups graphical primitives as an Application
      !>        Structure, but disallows the attributes or properties that associate
      !>        intelligence with objects.</li>
      !>      <li>New APS attributes. WebCGM defines new APS attributes of type
      !>        'visibility' and 'interactivity' that may be applied to most object (APS)
      !>        types.</li>
      !>      <li>Style Properties. For use in DOM and XCF, WebCGM 2.0 defines a set of
      !>        Style Properties -- text color, stroke weight, etc -- that transiently
      !>        (for the duration of a DOM or viewing session) override the corresponding
      !>        CGM attributes for targeted picture and APS nodes.</li>
      !>      <li>URI versus IRI. Unifying different implementation interpretations of
      !>        WebCGM 1.0, WebCGM 2.0 clarifies that IRIs (Internationalized Resource
      !>        Identifiers) are used to reference resources, and describes how agents
      !>        handle them before passing to URI (Uniform Resource Identifier)
      !>      resolvers.</li>
      !>      <li>Obsolete features. A number of previously deprecated WebCGM 1.0
      !>        features are <a href="WebCGM20-Conf.html#obsolete">made obsolete</a>
      !>        (removed from WebCGM 2.0).</li>
      !>      <li>Deprecated features. A number WebCGM 1.0 features are <a
      !>        href="WebCGM20-Conf.html#deprecated">deprecated</a> in WebCGM 2.0 (may be
      !>        removed in a future revision).</li>
      !>      <li>Symbol Libraries. This capability was in WebCGM 1.0, but was removed
      !>        from WebCGM 2.0 because of lack of interest (POLYSYMBOL, several SYMBOL
      !>        LIBRARY elements, some registered ESCAPEs, etc).</li>
      !>      <li>2.0 and has added some graphical items that were deferred from WebCGM
      !>        1.0 (for expedience)
      !>        <ul>
      !>          <li>NUBS and NURBS</li>
      !>          <li>clipping to regions other than rectangles</li>
      !>          <li>increased sizes for Cell Array and Tile Array elements</li>
      !>          <li>Auxiliary Colour and Transparency</li>
      !>          <li>text-on-path (i.e., text layout along arbitrary paths)</li>
      !>          <li>increased sizes for Closed Figure elements</li>
(546) ->        </ul>
(547) ->      </li>
207   <!          href="WebCGM21-IC.html#webcgm_3_2_2_1">'region' APS Attribute</a>, then
      !>          href="WebCGM20-IC.html#webcgm_3_2_2_1">'region' APS Attribute</a>, then
```

```
240    <!           <dd>An Application Structure (grobject, para, subpara) or Picture in a
241    <!              WebCGM.</dd>
       !>           <dd>An Application Structure or Picture in a WebCGM.</dd>
288    <!      <p><em>Note: The following subsections list all significant changes applied
289    <!      to the WebCGM 2.0 specification to derive this draft of the WebCGM 2.1
290    <!      specification.</em></p>
291    <!
292    <!      <h2>D.1 Changes within W3C since OASIS Committee Specification</h2>
293    <!
294    <!      <p><span class="issue">---20080812 editors draft includes all of below
295    <!      changes---</span></p>
296    <!      <ul>
297    <!        <li>Fixed minor editorial errors in <a href="WebCGM21-Config.html">Chapter
298    <!          9</a> (Application Configurable Items)</li>
299    <!        <li>Fixed omission of David Cruikshank from <a
300    <!          href="#webcgm_acknowledgements">Acknowledgements</a>.</li>
301    <!        <li>Added Ch.8 subsections to <a href="WebCGM21-TOC.html">Detailed
302    <!        TOC</a>.</li>
303    <!        <li>Converted to W3C style sheets and cover page.</li>
304    <!      </ul>
305    <!
306    <!      <h2>D.2 Changes within OASIS since WebCGM 2.0 REC/OS</h2>
307    <!
308    <!      <h3><a id="changes-CD02" name="changes-CD02">D.2.1 Changes from CD01 to
309    <!      CD02/CS01 of WebCGM 2.1</a></h3>
310    <!
311    <!      <p><span class="issue">---20080625 draft (CD02) includes all of below
312    <!      changes---</span></p>
313    <!      <ul>
314    <!        <li>Update <a href="WebCGM21-ECMA.html">ECMAScript (Ch.8)</a> to align with
315    <!          Ch.5 DOM changes: WebCGMRect, WebCGMMatrix, float datatypes replacing
316    <!          some WebCGMString.</li>
317    <!        <li>Improve specifications of parameter in <a
318    <!          href="WebCGM21-Config.html">Chapter 9</a> with explicit "WebCGMString
319    <!          List-of-number subtype" statements.</li>
320    <!        <li>Added non-normative "<a
321    <!          href="WebCGM21-Config.html#ACI-association">9.2.3 Association of ACI
322    <!          files with viewers</a>" to ACI chapter.</li>
323    <!        <li>Rules in <a
324    <!          href="WebCGM21-IC.html#webcgm_substring_hotspot">3.2.1.7</a> that
325    <!          CGM:1999 layout rules take precedence over DOM geometric transform ("no
326    <!          effect") on substring APS</li>
327    <!        <li>Update <a href="WebCGM21-Config.html#ACI-dtd">section 9.4</a> (complete
328    <!          dtd of the ACI) and external DTD file <a
329    <!          href="webcgmConfig21.dtd">webcgmConfig21.dtd</a>.</li>
330    <!        <li>Update <a href="WebCGM21-XCF.html#complete-dtd">section 4.4</a>
331    <!          (complete dtd of the XCF) and external DTD file <a
332    <!          href="webcgm21.dtd">webcgm21.dtd</a>.</li>
333    <!        <li>Integrate executable example into <a href="#webcgm_regexsearch">Regex
334    <!          Example (Appendix F)</a>.</li>
335    <!        <li>Throughout <a href="WebCGM21-XCF.html">Chapter 4 (XCF)</a>, change
336    <!          "geometric transform style properties" to "geometric transform", and
337    <!          "geometricTransformSP" to "geometricTransform".</li>
338    <!        <li>In <a href="WebCGM21-XCF.html">Chapter 4 (XCF)</a> geometricTransform
339    <!          entity definition, change "matrix" to "setTransform".</li>
340    <!        <li>Adjust <a href="WebCGM21-XCF.html#attr-encoding">4.3.1</a> for new
341    <!          Float and WebCGMMatrix parameter types in DOM transform attributes and
342    <!          parameters (old DOM types were WebCGMString).</li>
343    <!        <li>Fixed examples in <a href="WebCGM21-XCF.html#attr-encoding">4.3.1</a>
344    <!          so that coordinates are proper NVDC (0.0-1.0).</li>
345    <!        <li>Clarify in <a href="WebCGM21-IC.html#webcgm_3_1_2_7">3.1.2.7</a> that
346    <!          RT/AT layout rules of CGM:1999 have precedence over possible
347    <!          substring-APS geometric transform.</li>
348    <!      </ul>
349    <!
350    <!      <p><span class="issue">---20080617 editor's draft includes all of below
351    <!      changes---</span></p>
352    <!      <ul>
```

```
353   <!        <li>(Partially) implemented <a
354   <!          href="http://lists.oasis-open.org/archives/cgmo-webcgm/200806/msg00029.html">Ne⌐
355   <!          agreements</a> on ACI font-sub capability.</li>
356   <!        <li>(Partially) implemented <a
357   <!          href="http://lists.oasis-open.org/archives/cgmo-webcgm/200806/msg00029.html">Ne⌐
358   <!          agreements</a> on ACI defaultAttributes capability.</li>
359   <!        <li>Implemented editorial and other corrections from <a
360   <!          href="http://lists.oasis-open.org/archives/cgmo-webcgm/200805/msg00005.html">Ch⌐
361   <!          9 partial review</a>.</li>
362   <!        <li>Corrected error in T.20.22 of <a
363   <!          href="WebCGM21-Profile.html#webcgm_4_9">Section 6.9</a> -- 'geometric
364   <!          pattern' is not a valid interior style.</li>
365   <!        <li>Improve the uniformity of style at the start of all Chapters.</li>
366   <!        <li>Implement <a
367   <!          href="http://lists.oasis-open.org/archives/cgmo-webcgm/200805/msg00040.html">no⌐
368   <!          reference comments</a> in Ch.1 (postpone Unicode/ISO10646 and W3C-related
369   <!          updates pending further expert input)</li>
370   <!        <li>ACI-file-reference is removed from the fragment grammar, in <a
371   <!          href="WebCGM21-IC.html#webcgm_3_1_1">section 3.1.1</a> and throughout
372   <!          Chapter 3.</li>
373   <!        <li>Retitle, " <a href="WebCGM21-DOM.html#L5010">5.7.1 Common
374   <!          definitions</a>", with former 5.7.1 WebCGMException becoming <a
375   <!          href="WebCGM21-DOM.html#webcgmexception">5.7.1.1 Exception
376   <!          WebCGMException</a></li>
377   <!        <li>Added new <a href="WebCGM21-DOM.html#webcgmrect">5.7.1.2 Interface
378   <!          WebCGMRect</a>; modified getObjectExtent() (<a
379   <!          href="WebCGM21-DOM.html#L5095">section 5.7.6</a>) and setView() (<a
380   <!          href="WebCGM21-DOM.html#L5070">section 5.7.5</a>) to use WebCGMRect.</li>
381   <!        <li>Added new <a href="WebCGM21-DOM.html#webcgmmatrix">5.7.1.3 Interface
382   <!          WebCGMMatrix</a>; modified getTransform() and setTransform() [formerly
383   <!          matrix()] accordingly on WebCGMAppStructure interface.</li>
384   <!        <li>Change <a href="WebCGM21-Profile.html#webcgm_4_21">section 6.18
385   <!          JPEG</a> to informative (it is redundant with the normative JPEG entry in
386   <!          the Graphical Register).</li>
387   <!        <li>Normalize the names and wording of new Style Properties in DOM <a
388   <!          href="WebCGM21-DOM.html#L5095">WebCGMpicture interface</a> (section
389   <!          5.7.5).</li>
390   <!        <li>Normalize the names and wording of new Style Properties in XCF <a
391   <!          href="WebCGM21-XCF.html#notation">section 4.3.2</a> and <a
392   <!          href="WebCGM21-XCF.html#complete-dtd">section 4.4</a>, and in the <a
393   <!          href="webcgm21.dtd">external DTD file</a>.</li>
394   <!        <li>Remove ACI Processing Instruction example (4.4) from <a
395   <!          href="WebCGM21-XCF.html#XCF-intro">Section 4.1</a>.</li>
396   <!        <li><span class="issue">Placeholder message in 3.2.1.7 about CGM:1999 RT/AT
397   <!          layout rules versus DOM manipulation on partial text elements.</span></li>
398   <!        <li>Add clarifying wording about 'grnode' permissibility to <a
399   <!          href="WebCGM21-DOM.html#L5061">section 5.7.4</a>, the WebCGMNode
400   <!          interface.</li>
401   <!        <li>Add detailed clarification of the effect (none) of invalid 'grnode' as
402   <!          the APS type in <a href="WebCGM21-DOM.html#L5061">WebCGMAppStructure
403   <!          interface</a> (5.7.6).</li>
404   <!        <li>In the <a href="WebCGM21-DOM.html#L5070">WebCGMPicture interface</a>,
405   <!          add clarification that 'grnode' returns null in getApsStructureById()
406   <!          method, and is invalid ("no effect") in the node list of highlight().</li>
407   <!        <li>Add note to <a href="WebCGM21-IC.html#webcgm_3_2_1_5">section
408   <!          3.1.2.5</a> 'grnode' about general exclusion from most DOM
409   <!        functionality.</li>
410   <!        <li>Clarify that 'grnode' is not valid in <a
411   <!          href="WebCGM21-XCF.html#bindById">bindById element</a>.</li>
412   <!      </ul>
413   <!
414   <!      <p><span class="issue">---20080515 editor's draft includes all of below
415   <!      changes---</span></p>
416   <!      <ul>
417   <!        <li><span class="issue">General except-grnode wording in</span> <a
418   <!          href="WebCGM21-DOM.html#Fundamenta" class="issue">5.7.1 Common
419   <!          definitions</a><span class="issue">(new 5.7.1.4)?</span></li>
420   <!        <li>Fix wording of 'grnode' exception in <a
```

```
421    <!          href="WebCGM21-DOM.html#L32886">section 5.3</a>, item #2 in "<a
422    <!          href="WebCGM21-DOM.html#proc-child-elt">processing child elements</a>"
423    <!          list.</li>
424    <!        <li>Split <a href="WebCGM21-Conf.html#obsolete">7.2.1 Obsolete features</a>
425    <!          into two subsections, for 2.0-obsolete and 2.1-obsolete.</li>
426    <!        <li>Move compression types, 'viewport' param, and 3-object-behaviors from
427    <!          "deprecated" to <a
428    <!        href="WebCGM21-Conf.html#obsolete-21">2.1-obsolete</a>.</li>
429    <!        <li>Add deprecation message to <code>background</code> param element in <a
430    <!          href="WebCGM21-IC.html#webcgm_3_4">section 3.4</a>; add bullet to <a
431    <!          href="WebCGM21-Conf.html#deprecated">section 7.2.2 Deprecated
432    <!          features</a>; remove last paragraph of <a
433    <!          href="WebCGM21-Concepts.html#webcgm_2_2_3">section 2.2.3</a>.</li>
434    <!        <li>In <a href="WebCGM21-DOM.html#L5070">WebCGMPicture</a> and <a
435    <!          href="WebCGM21-ECMA.html">ECMAScript binding</a>, changed method name
436    <!          setViewPort() to setView(), parameter type from WebCGMString to four
437    <!          floats.</li>
438    <!        <li>Implemented many editorial changes from <a
439    <!          href="http://lists.oasis-open.org/archives/cgmo-webcgm/200805/msg00048.html">ed
440    <!          review</a> of <a href="WebCGM21-Intro.html">Ch.1 Introduction</a>.</li>
441    <!        <li>Implemented many editorial changes from <a
442    <!          href="http://lists.oasis-open.org/archives/cgmo-webcgm/200805/msg00069.html">ed
443    <!          review</a> of <a href="WebCGM21-Concepts.html">Ch.2 Concepts</a>.</li>
444    <!      </ul>
445    <!
446    <!      <h3><a id="changes-CD01" name="changes-CD01">D.2.2 Changes from WebCGM 2.0
447    <!      REC/OS to CD01 of WebCGM 2.1</a></h3>
448    <!
449    <!      <p><span class="issue">---20080327 draft (CD01) includes all of below
450    <!      changes---</span></p>
451    <!      <ul
452    <!        <li>(CD01 added Ch.9 ACI file format, aci access from frag syntax in Ch.3,
453    <!          aci-processing PI in Ch.4).</li>
454    <!        <li>(CD01 added new Style Properties to Ch.5 and Ch.4).</li>
455    <!        <li>Added geometric transform methods and getTransformSP to ECMAScript.</li>
456    <!        <li>Added getTransformSP() method to <a
457    <!          href="WebCGM21-DOM.html#L5095">WebCGMAppStructure interface</a>.</li>
458    <!        <li>Added entity geometricTransformSP to <a
459    <!          href="webcgm21.dtd">webcgm21.dtd</a>.</li>
460    <!        <li>Added geometric transform SP to <a href="WebCGM21-XCF.html">XCF</a>, as
461    <!          XML attributes, defining entity geometricTransformSP; description and
462    <!          order caveat in <a href="WebCGM21-XCF.html#attr-encoding">sec.
463    <!        4.3.1</a>.</li>
464    <!        <li>Added more normative explanation and supporting material to "<a
465    <!          href="WebCGM21-DOM.html#geometric-transform">Geometric transform Style
466    <!          Property</a>"</li>
467    <!        <li>Added scale, translate, rotate, and matrix methods to <a
468    <!          href="WebCGM21-DOM.html#L5095">WebCGMAppStructure interface</a>.</li>
469    <!        <li>Added getStyleProperty() inquiry method to <a
470    <!          href="WebCGM21-DOM.html#L5070">Picture interface</a> and <a
471    <!          href="WebCGM21-DOM.html#L5095">WebCGMAppStructure interface</a>.</li>
472    <!        <li>Added getObjectExtent() to <a
473    <!          href="WebCGM21-DOM.html#L5095">WebCGMAppStructure interface</a>.</li>
474    <!        <li>Added setViewPort() to <a href="WebCGM21-DOM.html#L5070">Picture
475    <!          interface</a></li>
476    <!        <li>Added new style properties to <a href="WebCGM21-XCF.html#notation">sec.
477    <!          4.3.2</a> and <a href="WebCGM21-XCF.html#complete-dtd">sec.4.4</a>, along
478    <!          with <a href="WebCGM21-DOM.html#ipicture">sec 5.7.5</a> and the XCF
479    <!        DTD.</li>
480    <!        <li>Added GZIP requirement to <a
481    <!          href="WebCGM21-Profile.html#webcgm_4_2">Ch.6, Profile, T.13.1</a>.</li>
482    <!        <li>Added new <a href="WebCGM21-Config.html">Ch.9, "Application
483    <!          Configurable Items"</a>, fixed <a href="Overview.html#Contents">cover
484    <!          page TOC</a>, fixed <a href="WebCGM21-TOC.html">detailed TOC</a>, added
485    <!          description to end of <a href="WebCGM21-Concepts.html#webcgm_2_5_2">sec.
486    <!          2.5.2</a> and <a
487    <!        href="WebCGM21-Concepts.html#webcgm_2_5_4">2.5.4</a>.</li>
488    <!        <li>Added <a href="WebCGM21-Intro.html#ref-RFC1952">g-zip (RFC1952)</a> to
```

```
489   <!         normative references, added informative paragraph to <a
490   <!         href="WebCGM21-Concepts.html#webcgm_2_4">2.4 Encodings</a>.</li>
491   <!         <li>Implemented placeholder <a
492   <!         href="WebCGM21-DOM.html#geometric-transform">5.4.4 geometric
493   <!         transform</a> description.</li>
494   <!         <li>General makeover 2.0-to-2.1 of <a href="WebCGM21-DOM.html">Chapter 5,
495   <!         Document Object Model.</a></li>
496   <!         <li>General makeover 2.0-to-2.1 of <a href="WebCGM21-XCF.html">Chapter 4,
497   <!         XML Companion File</a> .</li>
498   <!         <li>General makeover 2.0-to-2.1 of <a href="WebCGM21-ECMA.html">Chapter 8,
499   <!         ECMAScript binding</a> .</li>
500   <!         <li>added setRedraw() method to <a
501   <!         href="WebCGM21-DOM.html#L5044">WebCGMMetafile interface</a>, and to the
502   <!         <a href="WebCGM21-ECMA.html">Ch.8 ECMAScript</a> binding.</li>
503   <!         <li>added HTML script code for regular expression searching to <a
504   <!         href="#webcgm_regexsearch">new Appendix F</a> and link to it from
505   <!         "Examples" in <a href="WebCGM21-DOM.html#L5095">5.7.6</a>.</li>
506   <!         <li>added getObjectExtent() method to <a
507   <!         href="WebCGM21-DOM.html#L5095">5.7.6 Interface WebCGMAppStructure</a> and
508   <!         the <a href="WebCGM21-ECMA.html">Ch.8 ECMAScript</a> binding.</li>
509   <!         <li>General makeover 2.0-to-2.1 of <a href="WebCGM21-IC.html">Chapter 3,
510   <!         Intelligent Content</a>.</li>
511   <!         <li>General makeover 2.0-to-2.1 of <a href="WebCGM21-Concepts.html">Chapter
512   <!         2, Concepts</a>.</li>
513   <!         <li>General makeover 2.0-to-2.1 of <a href="WebCGM21-Intro.html">Chapter 1,
514   <!         Introduction</a>.</li>
515   <!         <li>Integrated all <a
516   <!         href="http://www.w3.org/2006/WebCGM20-errata.html">2.0 Errata</a> (as of
517   <!         2008-03-03).</li>
518   <!         <li>General makeover 2.0-to-2.1 of <a href="WebCGM21-Profile.html">Ch.6
519   <!         PPF</a>.</li>
520   <!         <li>Implemented transparency clarifications: new text in <a
521   <!         href="WebCGM21-Concepts.html#webcgm_2_2_3">2.2.3</a>, reference 2.2.3
522   <!         from <a href="WebCGM21-IC.html#webcgm_3_4">3.4</a> 'background', add
523   <!         informative notes to <a href="WebCGM21-Profile.html#webcgm_4_7">T.18.3,
524   <!         T.18.4, T.18.16</a>, and <a
525   <!         href="WebCGM21-Profile.html#webcgm_4_10">T.21.1</a>.</li>
526   <!         <li>For sub-string hot spot clarification, modified text in <a
527   <!         href="WebCGM21-IC.html#webcgm_3_2_1_1">3.2.1.1</a>, <a
528   <!         href="WebCGM21-IC.html#webcgm_3_2_1_3">3.2.1.3</a>, <a
529   <!         href="WebCGM21-IC.html#webcgm_3_2_1_4">3.2.1.4</a>, and added new <a
530   <!         href="WebCGM21-IC.html#webcgm_substring_hotspot">3.2.1.7</a>.</li>
531   <!         <li>Added ISO/IEC 8632-1:1999/Cor 2:2007 (sub-string hotspot clarification)
532   <!         to <a href="WebCGM21-Intro.html#norm-ref">1.2 Normative
533   <!         references.</a></li>
534   <!         <li>Revised <a href="WebCGM21-Appendix.html">Appendixes</a> for general
535   <!         2.0-to-2.1 makeover, restart "D. Change log", restart "What's new in
536   <!         WebCGM 2.1".</li>
537   <!         <li>Revised <a href="WebCGM21-Conf.html">Ch.7 Conformance clause</a> so
538   <!         that it's appropriate for 2.1, including:
539   <!         <ul>
540   <!           <li>general 2.0-to-2.1 makeover;</li>
541   <!           <li>fixed test suite references in <a
542   <!           href="WebCGM21-Conf.html#webcgm_conformance_validation">section
543   <!           7.6</a></li>
544   <!           <li>preliminary rework of deprecation-obsoletion scheme for
545   <!           2.0-to-2.1</li>
546   <-         </ul>
547   <-         </li>
548   <!         <li>Remade document structure and file naming for WebCGM 2.1.</li>
549   <!       </ul>
      !>      <h2><a id="webcgm_changelog_post-pr" name="webcgm_changelog_post-pr">D.1
      !>      Changes to W3C Recommendation text since Proposed Recommendation</a></h2>
      !>      <ul>
      !>        <li>In section 1.9, "<a href="WebCGM20-Intro.html#webcgm_1_6">Roadmap to
      !>        this specification</a>", added guidance about viewing the WebCGM examples
      !>        in DOM chapter.</li>
      !>        <li>In <a href="WebCGM20-IC.html#webcgm_3_1_2_2">3.1.2.2</a>, editorial
```

```
         !>        clarification of description of _replace behavior (esp. removing wrong
         !>        implication that the concept is unique to WebCGM).</li>
         !>       <li>In <a href="WebCGM20-IC.html#webcgm_3_4">section 3.4</a>, remove
         !>        extraneous ";" in the two occurrences of the
         !>        <code>&lt;object...&gt;</code> element.</li>
         !>         <li>In <a href="#webcgm_acknowledgements">Appendix A.</a>, updated Acknowledger
         !>
         !>
         !>     </ul>
         !>
         !>     <p></p>
579      <!    href="WebCGM21-IC.html#webcgm_3_2_2_8">content</a>' on the para and subpara
580      <!    objects, that gives the text-string equivalent of the rendered graphical
581      <!    text.</p>
         !>    href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_3_2_2_8">content</a>'
         !>    on the para and subpara objects, that gives the text-string equivalent of the
         !>    rendered graphical text.</p>
596      <!    href="WebCGM21-Intro.html#UAAG10">UAAG10</a>] a WebCGM viewer is expected to
         !>    href="WebCGM20-Intro.html#UAAG10">UAAG10</a>] a WebCGM viewer is expected to
609      <!    href="WebCGM21-Intro.html#UAAG10">UAAG10</a>] <a
         !>    href="WebCGM20-Intro.html#UAAG10">UAAG10</a>] <a
629      <!    href="WebCGM21-XCF.html#extending">private-namespace extension feature</a> of
630      <!    the XCF can be used to introduce further intelligence associated with the
631      <!    contents of the metafile proper.</p>
         !>    href="http://www.w3.org/TR/webcgm20/WebCGM20-XCF.html#extending">private-namespace
         !>    extension feature</a> of the XCFcan be used to introduce further intelligence
         !>    associated with the contents of the metafile proper.</p>
637      <!    href="WebCGM21-Intro.html#WCAG10">WCAG10</a>] require that essential
         !>    href="WebCGM20-Intro.html#WCAG10">WCAG10</a>] require that essential
650      <!      <li>The '<a href="WebCGM21-IC.html#webcgm_3_2_2_8">content</a>' ensures
651      <!        that when there is text in a bitmap, the text content is available as
652      <!        computer text.</li>
653      <!      <li>The '<a href="WebCGM21-IC.html#webcgm_3_2_2_6">screentip</a>' attribute
654      <!        is allowed on all objects (APS) Its behavior and usage parallel that of
655      <!        the 'title' attribute in HTML.</li>
656      <!      <li>The '<a href="WebCGM21-IC.html#webcgm_3_2_2_5">layerdesc</a>' attribute
657      <!        is allowed on '<a href="WebCGM21-IC.html#webcgm_3_2_1_2">layer</a>' APS
658      <!        types.  This should be used roughly as the 'longdesc' attribute in
659      <!        HTML</li>
660      <!      <li>On hyperlinks ('<a href="WebCGM21-IC.html#webcgm_3_2_2_3">linkuri</a>'
         !>      <li>The '<a
         !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_3_2_2_8">content</a:
         !>        ensures that when there is text in a bitmap, the text content is
         !>        available as computer text.</li>
         !>      <li>The '<a
         !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_3_2_2_6">screentip<,
         !>        attribute is allowed on all objects (APS) Its behavior and usage parallel
         !>        that of the 'title' attribute in HTML.</li>
         !>      <li>The '<a
         !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_3_2_2_5">layerdesc<,
         !>        attribute is allowed on '<a
         !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_3_2_1_2">layer</a>'
         !>        APS types.  This should be used roughly as the 'longdesc' attribute
         !>        in HTML</li>
         !>      <li>On hyperlinks ('<a
         !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_3_2_2_3">linkuri</a:
662      <!        href="WebCGM21-IC.html#webcgm_3_2_2_3">Link Title</a>" (in metafile
663      <!        instances) or '<a href="WebCGM21-XCF.html#linkuri">desc</a>' (in XCF
664      <!        instances) provide a textual identification of where the link goes.
665      <!         Creators of WebCGM instances should ensure that the content
         !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_3_2_2_3">Link
         !>        Title</a>" (in metafile instances) or '<a
         !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-XCF.html#linkuri">desc</a>'
         !>        (in XCF instances) provide a textual identification of where the link
         !>        goes.  Creators of WebCGM instances should ensure that the content
672      <!    href="WebCGM21-Intro.html#UAAG10">UAAG10</a>], <a
         !>    href="WebCGM20-Intro.html#UAAG10">UAAG10</a>], <a
681      <!    href="WebCGM21-Intro.html#UAAG10">UAAG10</a>], <a
```

```
      !>        href="WebCGM20-Intro.html#UAAG10">UAAG10</a>], <a
686   <!        href="WebCGM21-IC.html#webcgm_3_2_2_7">name</a>' APS attribute could or
687   <!        should be used in a manner like 'alt' on 'img' in HTML. This is not the
688   <!        design intent of the 'name' attribute. It has well-defined category, not
689   <!        instance, semantics and associated categorical navigation behavior.</em></p>
      !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_3_2_2_7">name</a>'
      !>        APS attribute could or should be used in a manner like 'alt' on 'img' in
      !>        HTML. This is not the design intent of the 'name' attribute. It has
      !>        well-defined category, not instance, semantics and associated categorical
      !>        navigation behavior.</em></p>
694   <!        <p>WebCGM versions 2.0 and higher support transient, display-time control of
695   <!        <a href="WebCGM21-DOM.html#styleprop-table">a number of display
696   <!        properties</a> of objects. These can be manipulated via the WebCGM DOM, and
697   <!        are also available via the XCF mechanism. Although WebCGM does not support <a
      !>        <p>WebCGM 2.0 supports transient, display-time control of <a
      !>        href="WebCGM20-DOM.html#styleprop-table">a number of display properties</a>
      !>        of objects. These can be manipulated via the WebCGM DOM, and are also
      !>        available via the XCF mechanism. Although WebCGM does not support <a
700   <!        accessibility, WebCGM viewers should provide some user control of rendering.
701   <!        Use of these mechanisms partially supports the recommendations of [<a
702   <!        href="WebCGM21-Intro.html#WCAG10">WCAG10</a>], <a
      !>        accessibility, WebCGM 2.0 viewers should provide some user control of
      !>        rendering. Use of these mechanisms partially supports the recommendations of
      !>        [<a href="WebCGM20-Intro.html#WCAG10">WCAG10</a>], <a
704   <!        [<a href="WebCGM21-Intro.html#UAAG10">UAAG10</a>], <a
      !>        [<a href="WebCGM20-Intro.html#UAAG10">UAAG10</a>], <a
713   <!        href="WebCGM21-IC.html#webcgm_visibility">visibility</a>' attribute is 'on').
714   <!        Objects which are not visible do not display tooltips (the 'screentip' APS
715   <!        attribute), may not be highlighted without making them visible, and may not
716   <!        be navigated to via the picture behaviors (whether in picture fragments or
717   <!        DOM src parameter).</p>
      !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_visibility">visibility<,
      !>        attribute is 'on'). Objects which are not visible do not display tooltips
      !>        (the 'screentip' APS attribute), may not be highlighted without making them
      !>        visible, and may not be navigated to via the picture behaviors (whether in
      !>        picture fragments or DOM src parameter).</p>
720   <!        '<a href="WebCGM21-IC.html#webcgm_visibility">visibility</a>' attribute is
721   <!        ignored, for accessibility or debugging support. It meets a requirement of
722   <!        [<a href="WebCGM21-Intro.html#UAAG10">UAAG10</a>], <a
      !>        '<a
      !>        href="http://www.w3.org/TR/webcgm20/WebCGM20-IC.html#webcgm_visibility">visibility<,
      !>        attribute is ignored, for accessibility or debugging support. It meets a
      !>        requirement of [<a href="WebCGM20-Intro.html#UAAG10">UAAG10</a>], <a
725   <!        <hr />
726   <!
727   <!        <h1><a id="webcgm_regexsearch" name="webcgm_regexsearch">F. Regex
728   <!        search</a></h1>
729   <!
730   <!        <p><em>This section is informative (non-normative).</em></p>
731   <!
732   <!        <p>The advanced example in this section shows how the functionality of the <a
733   <!        href="WebCGM21-DOM.html#L5095">WebCGMAppStructure interface</a> can be used
734   <!        to build useful convenience functions, in this case a function to search a
735   <!        WebCGM instance for all APS that contain an APS Attribute of a given type,
736   <!        whose value matches a given regular expression (regex).</p>
737   <!
738   <!        <div class="boxed-example">
739   <!        <p><em></em></p>
740   <!
741   <!        <p><strong>EXAMPLE:</strong></p>
742   <!        <pre>&lt;!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"&gt;
743   <!        &lt;html&gt;
744   <!        &lt;head&gt;
745   <!          &lt;meta http-equiv="content-type" content="text/html; charset=iso-8859-1"&gt;
746   <!          &lt;title&gt;WebCGM 2.0 regex example&lt;/title&gt;
747   <!          &lt;script type="text/ecmascript"&gt;
748   <!            var cgm;
749   <!            var pic;
```

```
750    <!          var mydiv;
751    <!          var o;
752    <!          var nl;
753    <!          var res;
754    <!
755    <!          function loadCGM(fname) {
756    <!            try {
757    <!              var obj = document.getElementById('image');
758    <!              obj.innerHTML = "&lt;object id='cgm' type='image/cgm;Version=4;ProfileId=Wel
759    <!              document.getElementById('cgm').getWebCGMDocument().src = fname;
760    <!              cgm = document.getElementById('cgm').getWebCGMDocument();
761    <!              pic = cgm.firstPicture;
762    <!              mydiv = '&lt;h2&gt;Looking at file '+fname+'&lt;/h2&gt;\n';
763    <!              mydiv += '&lt;p&gt;Enter an attribute and regular expression then click the
764    <!              mydiv += '&lt;form name="myform"&gt;\n';
765    <!                mydiv += '&lt;select name="attr"&gt;\n';
766    <!                  mydiv += '&lt;option value="content"&gt;content&lt;/option&gt;\n';
767    <!                  mydiv += '&lt;option value="interactivity"&gt;interactivity&lt;/option&g
768    <!                  mydiv += '&lt;option value="layerdesc"&gt;layerdesc&lt;/option&gt;\n';
769    <!                  mydiv += '&lt;option value="layername"&gt;layername&lt;/option&gt;\n';
770    <!                  mydiv += '&lt;option value="linkuri"&gt;linkuri&lt;/option&gt;\n';
771    <!                  mydiv += '&lt;option value="name"&gt;name&lt;/option&gt;\n';
772    <!                  mydiv += '&lt;option value="region"&gt;region&lt;/option&gt;\n';
773    <!                  mydiv += '&lt;option value="screentip"&gt;screentip&lt;/option&gt;\n';
774    <!                  mydiv += '&lt;option value="viewcontext"&gt;viewcontext&lt;/option&gt;\n
775    <!                  mydiv += '&lt;option value="visibility"&gt;visibility&lt;/option&gt;\n'
776    <!                mydiv += '&lt;/select&gt;\n';
777    <!              mydiv += '&lt;input type="text" name="regex" size="20"&gt;&lt;/input&gt;\n
778    <!              mydiv += '&lt;input type="button" value="Submit" onclick="processAttr(att
779    <!            mydiv += '&lt;/form&gt;\n';
780    <!            var t =  document.getElementById('attinput');
781    <!            t.innerHTML = mydiv;
782    <!          } catch (e) {
783    <!            alert("loadCGM error " + e);
784    <!          }
785    <!        }
786    <!
787    <!        function processAttr(att, val) {
788    <!          try {
789    <!            o = '&lt;p&gt;Searching APS for attribute '+att + ' containing '+val+'&lt;/p
790    <!            // Create a list of nodes and print out the attribute
791    <!            // This part is not really needed it is mostly here as
792    <!            // a sanity check.
793    <!            nl = listNodes(pic.firstChild);
794    <!            o+='&lt;p&gt;List of all nodes in the DOM tree.  A "" implies normally mean
795    <!            for(i=0; i&lt; nl.length; i++){
796    <!              o+='&lt;li&gt;'+nl[i].apsId+' ('+att+'="'+nl[i].getAppStructureAttr(att)+
797    <!            }
798    <!            o+='&lt;/ul&gt;';
799    <!
800    <!            // Now we just run through the list and remove nodes that do not match
801    <!            res = new Array();
802    <!            for(i=0; i&lt;nl.length;i++) {
803    <!              attVal = nl[i].getAppStructureAttr(att);
804    <!              if(attVal.match(val)) {
805    <!                res.push(nl[i]);
806    <!              }
807    <!            }
808    <!
809    <!            if( res.length &lt; 1) {
810    <!              o += '&lt;p&gt;No nodes found matching that regular expression&lt;/p&gt;\n
811    <!            } else {
812    <!              o+= '&lt;p&gt;The following nodes match the regular expression&lt;/p&gt;&l
813    <!              for(i=0; i&lt; res.length; i++){
814    <!                o+='&lt;li&gt;'+res[i].apsId+' ('+att+'="'+res[i].getAppStructureAttr(a
815    <!              }
816    <!              o+='&lt;/ul&gt;';
817    <!            }
```

```
818   <!                var t = document.getElementById('attout');
819   <!                t.innerHTML = o;
820   <!             } catch(e) {
821   <!                alert("processAttr error " + e);
822   <!             }
823   <!          }
824   <!
825   <!       // These are helper functions that I found on the web
826   <!       // http://www.ibm.com/developerworks/xml/library/x-matters41.html
827   <!       //
828   <!       // They are needed because you need to walk the tree to
829   <!       // create a list of all of the nodes in the tree.
830   <!
831   <!       // return next node in document order
832   <!       function nextNode(node) {
833   <!           if (!node) return null;
834   <!           if (node.firstChild){
835   <!               return node.firstChild;
836   <!           } else {
837   <!               return nextWide(node);
838   <!           }
839   <!       }
840   <!       // helper function for nextNode()
841   <!       function nextWide(node) {
842   <!           if (!node) return null;
843   <!           if (node.nextSibling) {
844   <!               return node.nextSibling;
845   <!           } else {
846   <!               return nextWide(node.parentNode);
847   <!           }
848   <!       }
849   <!
850   <!       // return an WebCGMNodeList of all nodes, starting at startNode and
851   <!       // continuing through the rest of the DOM tree
852   <!       function listNodes(startNode) {
853   <!           var node = startNode;
854   <!           var list = new Array();
855   <!           while(node) {
856   <!               list[list.length] =node;
857   <!               node = nextNode(node);
858   <!           }
859   <!           return list;
860   <!       }
861   <!
862   <!         &lt;/script&gt;
863   <!       &lt;/head&gt;
864   <!
865   <!       &lt;body&gt;
866   <!       &lt;h1&gt;WebCGM 2.0 regex example&lt;/h1&gt;
867   <!       &lt;table&gt;
868   <!         &lt;tr&gt;
869   <!            &lt;td id="image"&gt;Select a CGM image...&lt;/td&gt;
870   <!         &lt;/tr&gt;
871   <!       &lt;/table&gt;
872   <!       &lt;br&gt;
873   <!       &lt;input size="60" type="file" name="cgmfile" onChange="loadCGM(this.value)"/&gt;
874   <!       &lt;div id="attinput"&gt;
875   <!       &lt;/div&gt;
876   <!       &lt;div id="attout"&gt;
877   <!       &lt;/div&gt;
878   <!       &lt;/body&gt;
879   <!       &lt;/html&gt;</pre>
880   <!
881   <!       <p class="extExampleLink"><em><a href="ex_CGMregex.html" target="_blank">View
882   <!       this example as HTML-CGM (WebCGM-DOM-enabled browsers only.)</a></em></p>
883   <!       </div>
```