



```

277 <! ignored.</li>
278 <! <li>The target APS must not be of type 'grnode'. Type 'grnode' elements are
279 <! not accessible via XCF. Nor are they accessible via most DOM calls, with
280 <! the principal exception of the <a href="#node">WebCGMNode interface</a>
281 <! (firstChild, nextSibling, etc).</li>
!> ignored. The target APS must not be of type 'grnode'. 'grnode' elements
!> are not accessible via DOM calls.</li>
329 <! <p>WebCGM user agents are required to support the inheritance model defined
330 <! in this section for <a href="#styleprop-table">eligible Style Properties</a>.
331 <! Once a user agent has loaded a document and constructed a document tree, it
332 <! must assign, for every Application Structure in the tree, a value to every
333 <! Style Property.</p>
!> <p>WebCGM 2.0 user agents are required to support the inheritance model of
!> Style Properties defined in this section. Once a user agent has loaded a
!> document and constructed a document tree, it must assign, for every
!> Application Structure in the tree, a value to every Style Property.</p>
403 <! <p>WebCGM user agents are required to support the inheritance model of
!> <p>WebCGM 2.0 user agents are required to support the inheritance model of
510 <! href="WebCGM21-ECMA.html#webcgm_ecma">ECMAScript binding</a>.</p>
!> href="WebCGM20-ECMA.html#webcgm_ecma">ECMAScript binding</a>.</p>
522 <! href="WebCGM21-ECMA.html#webcgm_ecma">ECMAScript binding</a> the
!> href="WebCGM20-ECMA.html#webcgm_ecma">ECMAScript binding</a> the
565 <! href="WebCGM21-ECMA.html#webcgm_ecma">ECMAScript binding</a>, the WebCGM
!> href="WebCGM20-ECMA.html#webcgm_ecma">ECMAScript binding</a>, the WebCGM
579 <! <p><strong><a id="number-subtype"
580 <! name="number-subtype">Number</a></strong></p>
!> <p><strong>Number</strong></p>
604 <! <p><strong><a id="list-of-number-subtype"
605 <! name="list-of-number-subtype">List-of-number</a></strong></p>
!> <p><strong>List-of-number</strong></p>
612 <! <p><em>(Note: <code>Wsp</code> matches the<a id="whitespace"
613 <! name="whitespace"
614 <! href="http://www.w3.org/TR/2004/REC-xml-20040204/#sec-common-syn">"Whitespace"
615 <! definition</a> of XML 1.0 [<a
616 <! href="WebCGM21-Intro.html#XML10">XML10</a>].)</em></p>
617 <!
638 <! href="WebCGM21-IC.html#webcgm_3_1_1_3">Character Repertoire rules</a> of
!> href="WebCGM20-IC.html#webcgm_3_1_1_3">Character Repertoire rules</a> of
641 <! <p>In the case of the <a href="WebCGM21-IC.html#webcgm_3_2_2_3">'linkuri' APS
!> <p>In the case of the <a href="WebCGM20-IC.html#webcgm_3_2_2_3">'linkuri' APS
677 <! <p>The <a href="WebCGM21-XCF.html">XML Companion File (XCF)</a> provides
!> <p>The <a href="WebCGM20-XCF.html">XML Companion File (XCF)</a> provides
687 <! <h2><a id="coordinate-and-transform" name="coordinate-and-transform">5.6
688 <! Coordinates and transforms</a></h2>
689 <!
690 <! <h3><a id="Coordinate" name="Coordinate">5.6.1 Coordinate values &mdash;
!> <h3><a id="Coordinate" name="Coordinate">5.6 Coordinate values &mdash;
758 <! <h3><a id="geometric-transform" name="geometric-transform">5.6.2 Geometric
759 <! transform</a></h3>
760 <!
761 <! <p>The following subsections define the conventions and rules associated with
762 <! the geometric transform, which are implemented in the DOM by methods on the
763 <! <a href="#L5095">WebCGMAppStructure interface</a>.</p>
764 <!
765 <! <h4><a id="transform-concepts" name="transform-concepts">5.6.2.1 Transform
766 <! basic concepts</a></h4>
767 <!
768 <! <p>A geometric transform may be attached to eligible APS nodes by a DOM call
769 <! or XCF data, and leads to transient visual modification of the displayed
770 <! image. Eligible APS nodes are: grobject, para, subpara, layer.</p>
771 <!
772 <! <p>Geometric transforms on nodes in the WebCGM object tree, whether the
773 <! default (Identity) or explicitly specified, compose or combine with the
774 <! transforms on ancestor and descendant nodes, to define a composite transform
775 <! &#x2014; the Current Transformation Matrix &#x2014; for every node in the
776 <! tree.</p>
777 <!
778 <! <p>Terminology: WebCGM geometric transforms are defined in the

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779 <! two-dimensional NVDC coordinate space. In principle, any rotate and scale
780 <! operations can be represented by a 2x2 matrix <strong>M</strong>, which is
781 <! multiplied by the 2x1 vector representation for of a point <strong>p</strong>
782 <! to apply the transform. A translation by <strong>d=(dx,dy)</strong> is
783 <! performed by adding <strong>d</strong> to <strong>p</strong>.</p>
784 <!
785 <! <p>WebCGM uses the homogeneous coordinate system to define and describe the
786 <! effect of transforms. In this system, the matrix representation
787 <! <strong>M</strong> is 3x3, with the six unique numbers associated with
788 <! rotation, scale, and translation comprising the first two rows, and the third
789 <! row always being (0,0,1). The point p is represented by the 3x1 vector
790 <! (x,y,1).</p>
791 <! <pre><strong>      a  c  e
792 <!
793 <!      b  d  f
794 <!
795 <!      0  0  1</strong></pre>
796 <!
797 <! <p></p>
798 <!
799 <! <p>For convenience, this matrix form <strong>M</strong> will be referred to
800 <! as: <strong>[a b c d e f]</strong>. The application of the transform
801 <! <strong>M</strong> to the point <strong>p</strong> is then defined by:</p>
802 <! <pre><strong>      p' = M * p</strong></pre>
803 <!
804 <! <p>The following definitions specify how to form <strong>M</strong>
805 <! cooresponding to basic operations such as translate, rotate, scale:</p>
806 <! <ol>
807 <!   <li>translate by <strong>(dx,dy)</strong>: <strong>M = [1 0 0 1 dx
808 <!       dy]</strong></li>
809 <!   <li>rotate around the origin <strong>(0,0)</strong> by angle
810 <!       <strong>a</strong>: <strong>M = [cos(a) sin(a) -sin(a) cos(a) 0
811 <!       0]</strong></li>
812 <!   <li>scale around the origin <strong>(0,0)</strong> by factors
813 <!       <strong>sx</strong> and <strong>sy</strong>: <strong>M = [sx 0 0 sy 0
814 <!       0]</strong></li>
815 <! </ol>
816 <!
817 <! <p>Successive basic operations are performed by left-multiplying the matrices
818 <! corresponding to the operations. For example, a translation by Mt followed by
819 <! a rotation by Ma is performed by:</p>
820 <! <pre><strong>      p' = Ma * Mt * p</strong></pre>
821 <!
822 <! <p>As another example, a rotation of angle <strong>a</strong> about an
823 <! arbitrary point <strong>c = (cx,cy)</strong> is performed by the sequence of
824 <! operations:</p>
825 <! <ul>
826 <!   <li><strong>M1</strong>: translate(-cx,-cy)</li>
827 <!   <li><strong>M2</strong>: rotate(a)</li>
828 <!   <li><strong>M3</strong>: translate(cx,cy)</li>
829 <! </ul>
830 <!
831 <! <p>Forming <strong>M1</strong>, <strong>M2</strong>, and <strong>M3</strong>
832 <! by the above rules, then the matix <strong>M</strong> for the rotation by
833 <! <strong>a</strong> about <strong>(cx,cy)</strong> is:</p>
834 <! <pre><strong>      M = M3 * M2 * M1</strong></pre>
835 <!
836 <! <p>The <a href="#L5095">WebCGMAppStructure Interface</a> contains methods for
837 <! applying scale, rotate, translate, and general matrix transforms to
838 <! Application Structures. Each of the methods has a parameter,
839 <! <em>replace</em>, whose values may be '<code>combine</code>' or
840 <! '<code>replace</code>'. These have the following meanings:</p>
841 <! <ul>
842 <!   <li><code>replace</code>: replace any existing, explicitly-defined
843 <!       transform on the APS with the new transform.</li>
844 <!   <li><code>combine</code>: combine the new transform with any existing
845 <!       explicitly-specified transform by left multiplying. If
846 <!       <strong>Mn</strong> is the newly specified transform, and

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847      <strong>Me</strong> is the existing explicitly-specified transform, then
848      the new explicitly-specified transform <strong>M</strong> is:
849      <pre><strong>M = Mn * Me</strong></pre>
850    </li>
851  </ul>
852
853  <h4><a id="transform-composition" name="transform-composition">5.6.2.2
854  Composition of transforms in the object tree</a></h4>
855
856  <p>Assume that an object tree has this structure, where A contains B, which
857  contains C and D:</p>
858
859  <p><strong>APS-A</strong></p>
860
861  <p><strong>...APS-B</strong></p>
862
863  <p><strong>.....APS-C</strong></p>
864
865  <p><strong>.....APS-D</strong></p>
866
867  <p>Placing a transform on node A transforms all of the geometry within A,
868  including the contents of B, C, and D. But it doesn't supersede any transform
869  that might be on B, C, and D. Rather, it combines with them &#x2014; you
870  post-multiply the matrix representations so that the various contents in the
871  tree are transformed as follows:</p>
872
873  <p><strong>Ma</strong> &#x2014; inside APS-A, but outside APS-B.</p>
874
875  <p><strong>Ma*Mb</strong> &#x2014; inside APS-B, but outside APS-C and
876  APS-D.</p>
877
878  <p><strong>Ma*Mb*Mc</strong> &#x2014; inside APS-C.</p>
879
880  <p><strong>Ma*Mb*Md</strong> &#x2014; inside APS-D.</p>
881
882  <p>The resultant composite transform as defined in these illustrations is
883  known as the <em><strong>Current Transformation Matrix</strong></em> (CTM)</em> of
884  the node. Every node in the object tree conceptually has an associated CTM,
885  even if it is just the Identity matrix.</p>
886
887  <p>There is a parameter associated with the WebCGM geometric transform that
888  determines, when the DOM method specifies a 'transform' on a node in the
889  object tree, whether it is defined in '<code>replace</code>' mode or
890  '<code>combine</code>' mode. But once that transform-specifying method has
891  been executed, then there is some well-defined explicitly-specified transform
892  on that node, and it combines with its ancestors and descendants according to
893  the usual rules to compute the CTM for each node.</p>
894
895  <pre>      href="WebCGM21-XCF.html#webcgm">webcgm</a></code> root element of the <a
896  href="WebCGM21-XCF.html">XML Companion File</a> (XCF), and the XCF design
897  !>      href="WebCGM20-XCF.html#webcgm">webcgm</a></code> root element of the <a
898  !>      href="WebCGM20-XCF.html">XML Companion File</a> (XCF), and the XCF design
899
900  <h3><a name="L5010" id="L5010">5.7.1 Common definitions</a></h3>
901
902  <h4><a id="webcgmexception" name="webcgmexception">5.7.1.1 Exception
903  WebCGMException</a></h4>
904  !> <h3><a name="L5010" id="L5010">5.7.1 Exception WebCGMException</a></h3>
905
906  <h4><a id="webcgmrect" name="webcgmrect">5.7.1.2 Interface WebCGMRect</a></h4>
907  <dl>
908  <dt>IDL Definition</dt>
909  <dd>
910    <table class="idl-table" width="100%" border="1">
911    <tbody>
912    <tr>
913    <td><pre>interface WebCGMRect {
914    attribute float xll; // x coordinate of the lower-left corner
915    attribute float yll; // y coordinate of the lower-left corner
916    attribute float xur; // x coordinate of the upper right corner

```

```

1073 <!      attribute float yur;  // y coordinate of the upper right corner
1074 <!
1075 <!      WebCGMRect union(in WebCGMRect r);
1076 <!
1077 <!    };</pre>
1078 <!      </td>
1079 <!    </tr>
1080 <!  </tbody>
1081 <! </table>
1082 <! </dd>
1083 <! </dl>
1084 <! <dl>
1085 <!   <dt>Attributes</dt>
1086 <!   <dd><dl>
1087 <!     <dt><span class="attribute-name">xll</span> of type float</dt>
1088 <!     <dd><p>x coordinate of the lower-left corner of the rectangle.</p>
1089 <!     </dd>
1090 <!     <dt><span class="attribute-name">yll</span> of type float</dt>
1091 <!     <dd><p>y coordinate of the lower-left corner of the rectangle.</p>
1092 <!     </dd>
1093 <!     <dt><span class="attribute-name">xur</span> of type float</dt>
1094 <!     <dd><p>x coordinate of the upper-right corner of the rectangle.</p>
1095 <!     </dd>
1096 <!     <dt><span class="attribute-name">yur</span> of type float</dt>
1097 <!     <dd><p>y coordinate of the upper-right corner of the rectangle.</p>
1098 <!     </dd>
1099 <!   </dl>
1100 <! </dd>
1101 <! </dl>
1102 <! <dl>
1103 <!   <dt>Methods</dt>
1104 <!   <dd><dl>
1105 <!     <dt><span class="method-name">union</span></dt>
1106 <!     <dd>Computes the union of the current rectangle with the input
1107 <!       rectangle r. Returns resulting new WebCGMRect.
1108 <!     <dl>
1109 <!       <dt>Parameters</dt>
1110 <!       <dd><dl>
1111 <!         <dt><span class="parameter-name">r</span> of type
1112 <!         WebCGMRect</dt>
1113 <!         <dd><p>The rectangle used to calculate the union with
1114 <!           the current rectangle.</p>
1115 <!         </dd>
1116 <!       </dl>
1117 <!     </dd>
1118 <!     <dt>Return value</dt>
1119 <!     <dd>WebCGMRect; The resulting rectangle.</dd>
1120 <!     <dt>Exceptions</dt>
1121 <!     <dd>No exceptions.</dd>
1122 <!   </dl>
1123 <! </dd>
1124 <! </dl>
1125 <! </dd>
1126 <! </dl>
1127 <!
1128 <! <p></p>
1129 <!
1130 <! <h4><a id="webcgmmatrix" name="webcgmmatrix">5.7.1.3 Interface
1131 <! WebCGMMatrix</a></h4>
1132 <! <dl>
1133 <!   <dt>IDL Definition</dt>
1134 <!   <dd>
1135 <!     <table class="idl-table" width="100%" border="1">
1136 <!       <tbody>
1137 <!         <tr>
1138 <!           <td><pre>interface WebCGMMatrix {
1139 <!             attribute float a;
1140 <!             attribute float b;

```

```

1141 <!      attribute float c;
1142 <!      attribute float d;
1143 <!      attribute float e;
1144 <!      attribute float f;
1145 <!
1146 <!      WebCGMMatrix multiply (in WebCGMMatrix m);
1147 <!      WebCGMMatrix inverse(); // raises exception
1148 <!      WebCGMMatrix translate( in float x, in float y );
1149 <!      WebCGMMatrix scale( in float sx, in float sy );
1150 <!      WebCGMMatrix rotate( in float angle, in float rx, in float ry );
1151 <!
1152 <!    };</pre>
1153 <!      </td>
1154 <!    </tr>
1155 <!  </tbody>
1156 <! </table>
1157 <! </dd>
1158 <! </dl>
1159 <! <dl>
1160 <!   <dt>Attributes</dt>
1161 <!   <dd><dl>
1162 <!     <dt><span class="attribute-name">a, b, c, d, e, f</span> of type
1163 <!     float</dt>
1164 <!     <dd><p>The a-f components of the matrix as defined in "<a
1165 <!       href="#transform-concepts">Transform basic concepts</a>"</p>
1166 <!     </dd>
1167 <!   </dl>
1168 <! </dd>
1169 <! </dl>
1170 <! <dl>
1171 <!   <dt>Methods</dt>
1172 <!   <dd><dl>
1173 <!     <dt><span class="method-name">multiply</span></dt>
1174 <!     <dd>Performs matrix multiplication. This matrix is post-multiplied
1175 <!       by another matrix, returning a new matrix.
1176 <!
1177 <!     <div class="boxed-example">
1178 <!       Example: newMatrix = thisMatrix x m. </div>
1179 <!     <dl>
1180 <!       <dt>Parameters</dt>
1181 <!       <dd><dl>
1182 <!         <dt><span class="parameter-name">m</span> of type
1183 <!         WebCGMMatrix</dt>
1184 <!         <dd><p>in WebCGMMatrix m The matrix which is
1185 <!           post-multiplied to this matrix.</p>
1186 <!         </dd>
1187 <!       </dl>
1188 <!       </dd>
1189 <!       <dt>Return value</dt>
1190 <!       <dd>WebCGMMatrix; The resulting matrix.</dd>
1191 <!       <dt>Exceptions</dt>
1192 <!       <dd>No exceptions.</dd>
1193 <!     </dl>
1194 <!   </dd>
1195 <!   <dt><span class="method-name">inverse</span></dt>
1196 <!   <dd>Returns the inverse as a new matrix.
1197 <!   <dl>
1198 <!     <dt>Parameters</dt>
1199 <!     <dd>No parameters.</dd>
1200 <!     <dt>Return value</dt>
1201 <!     <dd>WebCGMMatrix; The resulting matrix.</dd>
1202 <!     <dt>Exceptions</dt>
1203 <!     <dd>WebCGMException; INVALID_ACCESS_ERR: Raised if this
1204 <!       matrix is not invertable.</dd>
1205 <!   </dl>
1206 <! </dd>
1207 <!   <dt><span class="method-name">translate</span></dt>
1208 <!   <dd>Post-multiplies a translate transform on the current matrix and

```

```

1209      <!           returns a new matrix. Result: newMatrix = thisMatrix x
1210      <!           translateMatrix.
1211      <!           <dl>
1212      <!               <dt>Parameters</dt>
1213      <!               <dd><dl>
1214      <!                   <dt><span class="parameter-name">x, y</span> of type
1215      <!                   float</dt>
1216      <!                   <dd><p>The distances to translate respectively in the
1217      <!                       x-direction and y-direction. Units are NVDC.</p>
1218      <!                   </dd>
1219      <!               </dl>
1220      <!           </dd>
1221      <!           <dt>Return value</dt>
1222      <!           <dd>WebCGMMatrix; The resulting matrix.</dd>
1223      <!           <dt>Exceptions</dt>
1224      <!           <dd>No exceptions.</dd>
1225      <!       </dl>
1226      <!   </dd>
1227      <!   <dt><span class="method-name">scale</span></dt>
1228      <!   <dd>Post-multiplies a (possibly) non-uniform scaling transform on
1229      <!       the current matrix and returns a new matrix. Result: newMatrix =
1230      <!       thisMatrix x scaleMatrix.
1231      <!       <dl>
1232      <!           <dt>Parameters</dt>
1233      <!           <dd><dl>
1234      <!               <dt><span class="parameter-name">sx, sy</span> of type
1235      <!               float</dt>
1236      <!               <dd><p>The scale factors to apply respectively in the
1237      <!                   x-direction and y-direction.</p>
1238      <!               </dd>
1239      <!           </dl>
1240      <!           </dd>
1241      <!           <dt>Return value</dt>
1242      <!           <dd>WebCGMMatrix; The resulting matrix.</dd>
1243      <!           <dt>Exceptions</dt>
1244      <!           <dd>No exceptions.</dd>
1245      <!       </dl>
1246      <!   </dd>
1247      <!   <dt><span class="method-name">rotate</span></dt>
1248      <!   <dd>Post-multiplies a rotation transform on the current matrix and
1249      <!       returns a new matrix. The rotation transform allows for a point
1250      <!       of rotation to be specified. Result: newMatrix = thisMatrix x
1251      <!       translate(rx,ry) x rotate(angle) x translate(-rx,-ry).
1252      <!       <dl>
1253      <!           <dt>Parameters</dt>
1254      <!           <dd><dl>
1255      <!               <dt><span class="parameter-name">angle</span> of type
1256      <!               float</dt>
1257      <!               <dd><p>The rotation angle. Positive values correspond
1258      <!                   to counter-clockwise in NVDC space.</p>
1259      <!               </dd>
1260      <!               <dt><span class="parameter-name">rx, ry</span> of type
1261      <!               float</dt>
1262      <!               <dd><p>Respectively, the x-coordinate and the
1263      <!                   y-coordinate of the rotation point, in NVDC.</p>
1264      <!               </dd>
1265      <!           </dl>
1266      <!           </dd>
1267      <!           <dt>Return value</dt>
1268      <!           <dd>WebCGMMatrix; The resulting matrix.</dd>
1269      <!           <dt>Exceptions</dt>
1270      <!           <dd>No exceptions.</dd>
1271      <!       </dl>
1272      <!   </dd>
1273      <! </dl>
1274      <! </dd>
1275      <! </dl>
1276      <!

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```

1378      <!      void      setRedraw(in WebCGMString value);
1437      <!      defined in the <a href="WebCGM21-Profile.html#webcgm_4_5">WebCGM
1438      <!      PPF</a>. For example: "ProfileId:WebCGM" "ProfileEd:2.1" "Source:A
!>      defined in the <a href="WebCGM20-Profile.html#webcgm_4_5">WebCGM
!>      PPF</a>. For example: "ProfileId:WebCGM" "ProfileEd:2.0" "Source:A
1440      <!      specified by the <a href="WebCGM21-Profile.html">WebCGM PPF</a>,
!>      specified by the <a href="WebCGM20-Profile.html">WebCGM PPF</a>,
1451      <!      WebCGMPicture interface. A WebCGM document (version 2.0 and
1452      <!      later) contains exactly one WebCGMPicture. If no WebCGM document
1453      <!      is open in the viewer, <a href="#null-return-value">null</a> is
1454      <!      returned.</p>
!>      WebCGMPicture interface. A WebCGM 2.0 document contains exactly
!>      one WebCGMPicture. If no WebCGM document is open in the viewer,
!>      <a href="#null-return-value">null</a> is returned.</p>
1474      <!      href="WebCGM21-IC.html#webcgm_3_1_1">fragment identifier</a> (if
!>      href="WebCGM20-IC.html#webcgm_3_1_1">fragment identifier</a> (if
1476      <!      href="WebCGM21-IC.html#webcgm_3_1_2_2">Picture behaviors</a>"
!>      href="WebCGM20-IC.html#webcgm_3_1_2_2">Picture behaviors</a>"
1478      <!      href="WebCGM21-IC.html#webcgm_3_1_1">IRI fragment</a> contains a
!>      href="WebCGM20-IC.html#webcgm_3_1_1">IRI fragment</a> contains a
1483      <!      href="WebCGM21-IC.html#webcgm_3_1_2_2">_replace behavior</a> on a
!>      href="WebCGM20-IC.html#webcgm_3_1_2_2">_replace behavior</a> on a
1575      <!      <dt><span class="method-name">setRedraw</span></dt>
1576      <!      <dd>Disables or enables the redrawing of the metafile. The default
1577      <!      value is enableAll. Note when this interface is used and set to
1578      <!      enableAll a redraw of the picture automatically will occur. Care
1579      <!      should be used when disabling the redrawing function to insure it
1580      <!      is set back to enableAll
1581      <!      <dl>
1582      <!      <dt>Parameters</dt>
1583      <!      <dd><dl>
1584      <!      <dt><span class="parameter-name">value</span> of type
1585      <!      WebCGMString</dt>
1586      <!      <dd><p>Specifies the redraw mode of the metafile,
1587      <!      {enableAll | disableAll}.</p>
1588      <!      </dd>
1589      <!      </dl>
1590      <!      </dd>
1591      <!      <dt>Return value</dt>
1592      <!      <dd>No return value.</dd>
1593      <!      <dt>Exceptions</dt>
1594      <!      <dd>No exceptions.</dd>
1595      <!      </dl>
1596      <!      </dd>
1610      <!      methods to perform simple and generic tree traversal. For these attributes
1611      <!      and methods in particular, APS of type '<a
1612      <!      href="WebCGM21-IC.html#webcgm_grnode">grnode</a>' are DOM-visible and
1613      <!      DOM-accessible, unlike most other DOM interfaces.</p>
!>      methods to perform simple and generic tree traversal.</p>
1838      <!      if the WebCGMNode doesn't have any attributes. Always <a
1839      <!      href="#null-return-value">null</a> when nodeType is
1840      <!      APS_STRUCTURE_NODE and nodeName is 'grnode'. The 'apsid'
!>      if the WebCGMNode doesn't have any attributes. The 'apsid'
1999      <!      file elements (<a href="WebCGM21-XCF.html#extending">application
!>      file elements (<a href="WebCGM20-XCF.html#extending">application
2035      <!      also specifies how to load and apply an <a href="WebCGM21-XCF.html">XML
!>      also specifies how to load and apply an <a href="WebCGM20-XCF.html">XML
2057      <!      void      setView (in WebCGMRect viewRect);
2058      <!      WebCGMString      getStyleProperty(in WebCGMString style);
2142      <!      href="WebCGM21-XCF.html#extending">application-specific
!>      href="WebCGM20-XCF.html#extending">application-specific
2153      <!      href="WebCGM21-IC.html#webcgm_3_1_1_5">resolving relative
!>      href="WebCGM20-IC.html#webcgm_3_1_1_5">resolving relative
2155      <!      href="WebCGM21-IC.html#webcgm_3_1_1">IRI fragment syntax</a>,
!>      href="WebCGM20-IC.html#webcgm_3_1_1">IRI fragment syntax</a>,
2158      <!      <p>Please refer to the <cite><a href="#L32886">Relationship with
2159      <!      XML companion file</a></cite> section for more discussion.</p>
!>      <p>Please refer to the <cite><a href="#L32886">Relationship with XML cor

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!>          </cite> section for more discussion.</p>
2183 <!      <dd>Returns the Application Structure whose ID is given by
2184 <!      <code>apsId</code>. If no such Application Structure exists,
2185 <!      returns <a href="#null-return-value">null</a>. Returns <a
2186 <!      href="#null-return-value">null</a> if <code>apsid</code>
2187 <!      corresponds to an APS of type '<a
2188 <!      href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'. Behavior is
2189 <!      not defined if more than one element has this ID. Only WebCGM
2190 <!      Application Structures may be retrieved using
2191 <!      getAppStructureById, it does not retrieve foreign namespace
2192 <!      elements (<a
2193 <!      href="WebCGM21-XCF.html#extending">application-specific
!>      <dd>Returns the Application Structure whose ID is given by apsId.
!>      If no such Application Structure exists, returns <a
!>      href="#null-return-value">null</a>. Behavior is not defined if
!>      more than one element has this ID. Only WebCGM Application
!>      Structures may be retrieved using getAppStructureById, it does
!>      not retrieve foreign namespace elements (<a
!>      href="WebCGM20-XCF.html#extending">application-specific
2221 <!      href="WebCGM21-XCF.html#extending">application-specific
!>      href="WebCGM20-XCF.html#extending">application-specific
2243 <!      href="WebCGM21-IC.html#webcgm_3_1_1">IRI fragment syntax</a>. The
!>      href="WebCGM20-IC.html#webcgm_3_1_1">IRI fragment syntax</a>. The
2248 <!      WebCGMPicture nodes or XML Metadata nodes. APS of type '<a
2249 <!      href="WebCGM21-IC.html#webcgm_grnode">grnode</a>' are not valid
2250 <!      in the node list, and shall cause no change to the viewed image
2251 <!      or the DOM tree.
!>      WebCGMPicture nodes or XML Metadata nodes.
2264 <!      href="WebCGM21-IC.html#webcgm_3_1_2_4-addHighlight">highlig
!>      href="WebCGM20-IC.html#webcgm_3_1_2_4-addHighlight">highlig
2281 <!      href="WebCGM21-IC.html#enumeration">enumeration of behaviors</a>
!>      href="WebCGM20-IC.html#enumeration">enumeration of behaviors</a>
2409 <!      <tr>
2410 <!      <td><a href="#stroke-typ">stroke-type</a></td>
2411 <!      <td>yes</td>
2412 <!      <td>yes</td>
2413 <!      <td>name of line type or a negative integer</td>
2414 <!      <td>1</td>
2415 <!      <td>"solid" or "-3"</td>
2416 <!      </tr>
2417 <!      <tr>
2418 <!      <td><a href="#stroke-off">stroke-offset</a></td>
2419 <!      <td>yes</td>
2420 <!      <td>yes</td>
2421 <!      <td>relative distance (0..100%)</td>
2422 <!      <td>0%</td>
2423 <!      <td>"25%"</td>
2424 <!      </tr>
2425 <!      <tr>
2426 <!      <td><a href="#fill-style">interior-style</a></td>
2427 <!      <td>yes</td>
2428 <!      <td>yes</td>
2429 <!      <td>integer value (0,1,2,3,4,6)</td>
2430 <!      <td>0</td>
2431 <!      <td>"4"</td>
2432 <!      </tr>
2433 <!      <tr>
2434 <!      <td><a href="#hatch-typ">hatch-index</a></td>
2435 <!      <td>yes</td>
2436 <!      <td>yes</td>
2437 <!      <td>index value (1..6 and negative)</td>
2438 <!      <td>1</td>
2439 <!      <td>"1" or "-2"</td>
2440 <!      </tr>
2441 <!      <tr>
2442 <!      <td><a href="#pattern-typ">pattern-index</a></td>
2443 <!      <td>yes</td>
2444 <!      <td>yes</td>

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2445      <td>index value (>0)</td>
2446      <td>1</td>
2447      <td>"2"</td>
2448    </tr>
2449    <tr>
2450      <td><a href="#edge-vis">edge-visibility</a></td>
2451      <td>yes</td>
2452      <td>yes</td>
2453      <td>"on" or "off"</td>
2454      <td>"on"</td>
2455      <td>"off"</td>
2456    </tr>
2457    <tr>
2458      <td><a href="#fill-off">fill-offset</a></td>
2459      <td>yes</td>
2460      <td>yes</td>
2461      <td>NVDC point</td>
2462      <td>"0. 0."</td>
2463      <td>"0.2 0.5"</td>
2464    </tr>
2612    <p><strong><a name="stroke-typ"
2613    id="stroke-typ">stroke-type</a></strong> defines the line type
2614    within the target object (APS or picture) to which the property
2615    is applied. stroke-type overrides the CGM attribute elements LINE
2616    TYPE and EDGE TYPE. Valid values are: integers 1-6 (which
2617    correspond to solid, dash, dot, dash-dot, dash-dot-dot), integers
2618    6-15 (the registered or user defined values that are defined
2619    within the WebCGM.</p>
2620    <p><strong><a name="stroke-off"
2621    id="stroke-off">stroke-offset</a></strong> defines the percentage
2622    of the first cycle of the stroke type that is omitted when
2623    starting to draw a non-solid stroke. Stroke offset overrides the
2624    CGM attribute elements LINE TYPE INITIAL OFFSET and EDGE TYPE
2625    INITIAL OFFSET within the target object (APS or picture).</p>
2626    <p><strong><a name="fill-style"
2627    id="fill-style">interior-style</a></strong> determines which
2628    style of interior is used to draw a filled-areas. It corresponds
2629    to the CGM attribute element INTERIOR STYLE and will override the
2630    current values of that attribute within the target object (APS or
2631    picture). The valid Style Property values {0,1,2,3,4,6}
2632    corresponding respectively to {'hollow', 'solid',
2633    'pattern', 'hatch', 'empty',
2634    'interpolated'}.</p>
2635    <p><strong><a name="hatch-typ"
2636    id="hatch-typ">hatch-index</a></strong> determines which hatch to
2637    use within filled-area elements of the target object (APS or
2638    picture). Hatch-index corresponds to the CGM attribute element
2639    HATCH INDEX and overrides the current values of that attribute
2640    within the target object (APS or picture). It must refer to a
2641    CGM:1999 pre-defined hatch index or a negative hatch index that
2642    has been defined with a HATCH STYLE DEFINITION with the WebCGM.
2643    Note: valid pre-defined hatch indexes are 1-6 (corresponding to:
2644    horizontal, vertical, positive slope, negative slope,
2645    horizontal/vertical cross, positive/negative slope cross)</p>
2646    <p><strong><a name="pattern-typ"
2647    id="pattern-typ">pattern-index</a></strong> determines which of
2648    pattern to use within filled-area elements of the target object
2649    (APS or picture). Pattern-index corresponds to the CGM attribute
2650    element PATTERN INDEX and overrides the current values of that
2651    attribute within the target object (APS or picture). It must
2652    refer to a pattern that has been defined with a PATTERN TABLE
2653    with the WebCGM.</p>
2654    <p><strong><a name="edge-vis"
2655    id="edge-vis">edge-visibility</a></strong> determines if the edge
2656    of filled-area elements of the target object (APS or picture) are
2657    drawn. Edge visibility corresponds to the CGM attribute element
2658    EDGE VISIBILITY and overrides the current values of that
2659    attribute within the target object (APS or picture)</p>

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2660      <p><strong><a name="fill-off"
2661      id="fill-off">fill-offset</a></strong> sets a reference point for
2662      patterns or hatch fills within the target object (APS or
2663      picture). Fill-offset corresponds to the CGM attribute element
2664      FILL REFERENCE POINT and overrides the current values of that
2665      attribute within the target object (APS or picture)</p>
2699      <dt>Parameters</dt>
      <dt>Parameters<dt>
2701      <dt>Return value</dt>
2702      <dd>No return value.</dd>
2703      <dt>Exceptions</dt>
2704      <dd>No exceptions.</dd>
2705      </dl>
2706      </dd>
2707      <dt><span class="method-name">getStyleProperty</span></dt>
2708      <dd>Retrieves a style property by name on the given Picture. Please
2709      refer to the <a href="#styleprop-table">Style Properties
2710      Table</a> for more detailed information on retrievable and
2711      modifiable Style Properties.
2712      <dl>
2713      <dt>Parameters</dt>
2714      <dd><dl>
2715      <dt><span class="parameter-name">style</span> of type
2716      WebCGMString</dt>
2717      <dd><p>The name of the style property to retrieve.</p>
2718      </dd>
2719      </dl>
2720      </dd>
2721      <dt>Return value</dt>
2722      <dd>WebCGMString; the Style Property value as a string, or
2723      the <a href="#empty-string">empty string</a> if that
2724      attribute does not have an explicitly set value (see the
2725      inheritance model for further related discussion). The value
2726      may be a Delimited String.</dd>
2727      <dt>Exceptions</dt>
2728      <dd>No exceptions.</dd>
2729      </dl>
2730      </dd>
2731      <dt><span class="method-name">setView</span></dt>
2732      <dd>Sets a view to the specified rectangle expressed in NVDC units.
2733      <p>WebCGMAppStructure::getObjectExtent and WebCGMRect::union can
2734      be used to set the view around more than one APS.</p>
2735      <dl>
2736      <dt>Parameters</dt>
2737      <dd><dl>
2738      <dt><span class="parameter-name">viewRect</span> of type
2739      WebCGMRect</dt>
2740      <dd><p>The view rectangle in NVDC.</p>
2741      </dd>
2742      </dl>
2743      </dd>
2765      <p>sub-regions. The WebCGMAppStructure interface has limited impact on APS of
2766      type '<a href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'. See the
2767      particular methods and attributes for details.</p>
      <p>sub-regions.</p>
2786      <td><a href="WebCGM21-IC.html#webcgm_3_2_2_8">content</a></td>
      <td><a href="WebCGM20-IC.html#webcgm_3_2_2_8">content</a></td>
2793      <td><a href="WebCGM21-IC.html#webcgm_interactivity">interactivity</a></td>
      <td><a href="WebCGM20-IC.html#webcgm_interactivity">interactivity</a></td>
2799      <td><a href="WebCGM21-IC.html#webcgm_3_2_2_5">layerdesc</a></td>
      <td><a href="WebCGM20-IC.html#webcgm_3_2_2_5">layerdesc</a></td>
2805      <td><a href="WebCGM21-IC.html#webcgm_3_2_2_4">layername</a></td>
      <td><a href="WebCGM20-IC.html#webcgm_3_2_2_4">layername</a></td>
2811      <td><a href="WebCGM21-IC.html#webcgm_3_2_2_3">linkuri</a></td>
      <td><a href="WebCGM20-IC.html#webcgm_3_2_2_3">linkuri</a></td>
2817      <td><a href="WebCGM21-IC.html#webcgm_3_2_2_7">name</a></td>
      <td><a href="WebCGM20-IC.html#webcgm_3_2_2_7">name</a></td>
2823      <td><a href="WebCGM21-IC.html#webcgm_3_2_2_1">region</a></td>

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!>         <td><a href="WebCGM20-IC.html#webcgm_3_2_2_1">region</a></td>
2829 <!         <td><a href="WebCGM21-IC.html#webcgm_3_2_2_6">screentip</a></td>
!>         <td><a href="WebCGM20-IC.html#webcgm_3_2_2_6">screentip</a></td>
2835 <!         <td><a href="WebCGM21-IC.html#webcgm_3_2_2_2">viewcontext</a></td>
!>         <td><a href="WebCGM20-IC.html#webcgm_3_2_2_2">viewcontext</a></td>
2841 <!         <td><a href="WebCGM21-IC.html#webcgm_visibility">visibility</a></td>
!>         <td><a href="WebCGM20-IC.html#webcgm_visibility">visibility</a></td>
2877 <! WebCGMRect getObjectExtent();
2878 <! WebCGMString getStyleProperty(in WebCGMString style);
2879 <! void translate(in WebCGMString dx, in WebCGMString dy, in WebCGMString rej
2880 <! void rotate(in WebCGMString angle, in WebCGMString rx, in WebCGMString ry
2881 <! void scale(in WebCGMString sx, in WebCGMString sy, in WebCGMString replac
2882 <! void setTransform(in WebCGMmatrix matrix, in WebCGMString replace);
2883 <! WebCGMMatrix getTransform(in WebCGMString type);
2892 <! <dt>Examples</dt>
!> <dt>Basic example</dt>
2938 <! <div class="boxed-example">
2939 <! <p><strong>EXAMPLE:</strong></p>
2940 <! <p>The more advanced example in <a
2941 <! href="WebCGM21-Appendix.html#webcgm_regexsearch">Appendix F</a> shows how to
2942 <! of the WebCGMAppStructure interface from HTML &amp; ECMAScript to
2943 <! perform a regular expression searching based on the contents of APS
2944 <! attributes.</p>
2945 <! </div>
2953 <! <dd><p>The unique identifier of the Application Structure. Always
2954 <! the <a href="#empty-string">empty string</a> if the APS is of
2955 <! type '<a href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'.</p>
!> <dd><p>The unique identifier of the Application Structure.</p>
2960 <! this Application Structure. Always zero if the APS is of type '<a
2961 <! href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'.</p>
!> this Application Structure.</p>
2966 <! on this Application Structure. Always zero if the APS is of type
2967 <! '<a href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'.</p>
!> on this Application Structure.</p>
2996 <! href="#Basic">Delimited String</a>. Always the <a
2997 <! href="#empty-string">empty string</a> if the APS is of type
2998 <! '<a href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'.</dd>
!> href="#Basic">Delimited String</a>.</dd>
3009 <! Application Structure attributes. If the APS is of type '<a
3010 <! href="WebCGM21-IC.html#webcgm_grnode">grnode</a>', this method
3011 <! shall have no effect, neither on the viewed image nor the DOM
3012 <! tree.</p>
!> Application Structure attributes.</p>
3039 <! modifiable Application Structure attributes. If the APS is of
3040 <! type '<a href="WebCGM21-IC.html#webcgm_grnode">grnode</a>', this
3041 <! method shall have no effect, neither on the viewed image nor the
3042 <! DOM tree.</p>
!> modifiable Application Structure attributes.</p>
3064 <! properties. If the APS is of type '<a
3065 <! href="WebCGM21-IC.html#webcgm_grnode">grnode</a>', this method
3066 <! shall have no effect, neither on the viewed image nor the DOM
3067 <! tree.</p>
!> properties.</p>
3095 <! Application Structure. Always <a
3096 <! href="#null-return-value">null</a> if the APS is of type
3097 <! '<a href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'.</dd>
3098 <! <dt>Exceptions</dt>
3099 <! <dd>No exceptions.</dd>
3100 <! </dl>
3101 <! </dd>
3102 <! <dt><span class="method-name">getObjectExtent</span></dt>
3103 <! <dd><p>Retrieves the axis-aligned bounding box rectangle of the
3104 <! Graphical Primitive elements within an APS. The bounding box
3105 <! calculation is based on the abstract locus of the primitives
3106 <! within the APS. Other than text attributes and Style Properties,
3107 <! the calculation is not affected by CGM Primitive Attribute (such
3108 <! as line width) or Control elements, nor by <a href="#">APS
3109 <! Attributes</a> or <a href="#">Style Properties</a>. It is

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3110      <!-- affected by <a href="#">geometric transform</a> &mdash; the
3111      <!-- defining coordinates of the WebCGMRect return value are expressed
3112      <!-- in NVDC, computed after the application of the <a
3113      <!-- href="#">Current Transformation Matrix</a>, to the object's
3114      <!-- contents.</p>
3115      <!-- <p>The contribution of text elements to the object extent is
3116      <!-- conceptually calculated from the containing parallelogram of the
3117      <!-- displayed text, defined as follows. The length of the side in the
3118      <!-- text-up direction is the bottomline-to-topline distance of the
3119      <!-- font, after computation of the effective font size that reflects
3120      <!-- all text attributes, the height of the Restricted Text box, the
3121      <!-- Restricted Text Type, and the Style Properties text-size and
3122      <!-- text-font. The length of the side in the text-baseline direction
3123      <!-- is the length of the restricted text box if the entire Restricted
3124      <!-- Text element is contained within the object, or the sum of the
3125      <!-- glyph widths if only an Append Text element is within the
3126      <!-- object.</p>
3127      <!-- <dl>
3128      <!-- <dt>Parameters</dt>
3129      <!-- <dd>No parameters.</dd>
3130      <!-- <dt>Return value</dt>
3131      <!-- <dd>WebCGMRect; the bounding rectangle of the APS, or <a
3132      <!-- href="#null-return-value">null</a> if the APS has no
3133      <!-- Graphical Primitive elements. Always the <a
3134      <!-- href="#null-return-value">null</a> if the APS is of type
3135      <!-- '<a href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'.</dd>
3136      <!-- <dt>Exceptions</dt>
3137      <!-- <dd>No exceptions.</dd>
3138      <!-- </dl>
3139      <!-- </dd>
3140      <!-- <dt><span class="method-name">getStyleProperty</span></dt>
3141      <!-- <dd>Retrieves a style property by name on the given Application
3142      <!-- Structure. Please refer to the <a href="#styleprop-table">Style
3143      <!-- Properties Table</a> for more detailed information on retrievable
3144      <!-- and modifiable Style Properties.
3145      <!-- <dl>
3146      <!-- <dt>Parameters</dt>
3147      <!-- <dd><dl>
3148      <!-- <dt><span class="parameter-name">style</span> of type
3149      <!-- WebCGMString</dt>
3150      <!-- <dd><p>The name of the style property to retrieve.
3151      <!-- Always the <a href="#empty-string">empty string</a>
3152      <!-- if the APS is of type '<a
3153      <!-- href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'.</p>
3154      <!-- </dd>
3155      <!-- </dl>
3156      <!-- </dd>
3157      <!-- <dt>Return value</dt>
3158      <!-- <dd>WebCGMString; the Style Property value as a string, or
3159      <!-- the <a href="#empty-string">empty string</a> if that
3160      <!-- attribute does not have an explicitly set value (see the
3161      <!-- inheritance model for further related discussion). The value
3162      <!-- may be a Delimited String. Always the <a
3163      <!-- href="#empty-string">empty string</a> if the APS is of type
3164      <!-- '<a href="WebCGM21-IC.html#webcgm_grnode">grnode</a>'.</dd>
3165      <!-- <dt>Exceptions</dt>
3166      <!-- <dd>No exceptions.</dd>
3167      <!-- </dl>
3168      <!-- </dd>
3169      <!-- <dt><span class="method-name">translate</span></dt>
3170      <!-- <dd><p>Defines on the APS a new geometric transform that consists
3171      <!-- of a translate operation. Please refer to <a
3172      <!-- href="#geometric-transform">"Geometric transform"</a> for more
3173      <!-- detailed information about geometric transforms and the
3174      <!-- parameters of this method. If the APS is of type '<a
3175      <!-- href="WebCGM21-IC.html#webcgm_grnode">grnode</a>', this method
3176      <!-- shall have no effect, neither on the viewed image nor the DOM
3177      <!-- tree.</p>

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3178      <dl>
3179          <dt>Parameters</dt>
3180          <dd><dl>
3181              <dt><span class="parameter-name">dx</span> of type
3182              WebCGMString</dt>
3183              <dd><p>The displacement of the translate operation in
3184              the <strong>x</strong> direction, as a <a
3185              href="#number-subtype">number</a> in NVDC.</p>
3186              </dd>
3187              <dt><span class="parameter-name">dy</span> of type
3188              WebCGMString</dt>
3189              <dd><p>The displacement of the translate operation in
3190              the <strong>y</strong> direction (NVDC), as a <a
3191              href="#number-subtype">number</a> in NVDC.</p>
3192              </dd>
3193              <dt><span class="parameter-name">replace</span> of type
3194              WebCGMString</dt>
3195              <dd><p>How to apply the new transform, {combine |
3196              replace}</p>
3197              </dd>
3198          </dl>
3199          </dd>
3200          <dt>Return value</dt>
3201          <dd>No return value.</dd>
3202          <dt>Exceptions</dt>
3203          <dd>No exceptions.</dd>
3204      </dl>
3205  </dd>
3206  <dt><span class="method-name">rotate</span></dt>
3207  <dd><p>Defines on the APS a new geometric transform that consists
3208  of a rotate operation. Please refer to <a
3209  href="#geometric-transform">"Geometric transform"</a> for more
3210  detailed information about geometric transforms and the
3211  parameters of this method. If the APS is of type '<a
3212  href="WebCGM21-IC.html#webcgm_grnode">grnode</a>', this method
3213  shall have no effect, neither on the viewed image nor the DOM
3214  tree.</p>
3215  <dl>
3216      <dt>Parameters</dt>
3217      <dd><dl>
3218          <dt><span class="parameter-name">angle</span> of type
3219          WebCGMString</dt>
3220          <dd><p>The angle of the rotation operation, in degrees,
3221          as a <a href="#number-subtype">number</a> sub-type.
3222          The positive angular direction is counterclockwise in
3223          NVDC space.</p>
3224          </dd>
3225          <dt><span class="parameter-name">rx</span> of type
3226          WebCGMString</dt>
3227          <dd><p>The <strong>x</strong> coordinate (NVDC) of the
3228          center point about which the rotation is defined, as
3229          a <a href="#number-subtype">number</a> in NVDC.</p>
3230          </dd>
3231          <dt><span class="parameter-name">ry</span> of type
3232          WebCGMString</dt>
3233          <dd><p>The <strong>y</strong> coordinate (NVDC) of the
3234          center point about which the rotation is defined, as
3235          a <a href="#number-subtype">number</a> in NVDC.</p>
3236          </dd>
3237          <dt><span class="parameter-name">replace</span> of type
3238          WebCGMString</dt>
3239          <dd><p>How to apply the new transform, {combine |
3240          replace}</p>
3241          </dd>
3242      </dl>
3243      </dd>
3244      <dt>Return value</dt>
3245      <dd>No return value.</dd>

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3246      <dt>Exceptions</dt>
3247      <dd>No exceptions.</dd>
3248    </dl>
3249  </dd>
3250  <dt><span class="method-name">scale</span></dt>
3251  <dd><p>Defines on the APS a new geometric transform that consists
3252  <!-- of a scale operation. Please refer to <a
3253  <!-- href="#geometric-transform">"Geometric transform"</a> for more
3254  <!-- detailed information about geometric transforms and the
3255  <!-- parameters of this method. If the APS is of type '<a
3256  <!-- href="WebCGM21-IC.html#webcgm_grnode">grnode</a>', this method
3257  <!-- shall have no effect, neither on the viewed image nor the DOM
3258  <!-- tree.</p>
3259  <dl>
3260  <!-- <dt>Parameters</dt>
3261  <!-- <dd><dl>
3262  <!-- <dt><span class="parameter-name">sx</span> of type
3263  <!-- WebCGMString</dt>
3264  <!-- <dd><p>The <strong>x</strong> coordinate (NVDC) of the
3265  <!-- reference point about which the scaling operation is
3266  <!-- defined, as a <a href="#number-subtype">number</a> in
3267  <!-- NVDC.</p>
3268  <!-- </dd>
3269  <!-- <dt><span class="parameter-name">sy</span> of type
3270  <!-- WebCGMString</dt>
3271  <!-- <dd><p>The <strong>y</strong> coordinate (NVDC) of the
3272  <!-- reference point about which the scaling operation is
3273  <!-- defined, as a <a href="#number-subtype">number</a> in
3274  <!-- NVDC.</p>
3275  <!-- </dd>
3276  <!-- <dt><span class="parameter-name">replace</span> of type
3277  <!-- WebCGMString</dt>
3278  <!-- <dd><p>How to apply the new transform, {combine |
3279  <!-- replace}</p>
3280  <!-- </dd>
3281  <!-- </dl>
3282  <!-- </dd>
3283  <dt>Return value</dt>
3284  <!-- <dd>No return value.</dd>
3285  <dt>Exceptions</dt>
3286  <!-- <dd>No exceptions.</dd>
3287  <!-- </dl>
3288  <!-- </dd>
3289  <dt><span class="method-name">setTransform</span></dt>
3290  <dd><p>Defines on the APS a new local geometric transform by
3291  <!-- specifying the contents of the transform matrix. Please refer to
3292  <!-- <a href="#geometric-transform">"Geometric transform"</a> for more
3293  <!-- detailed information about geometric transforms and the
3294  <!-- parameters of this method. If the APS is of type '<a
3295  <!-- href="WebCGM21-IC.html#webcgm_grnode">grnode</a>', this method
3296  <!-- shall have no effect, neither on the viewed image nor the DOM
3297  <!-- tree.</p>
3298  <!-- <dl>
3299  <!-- <dt>Parameters</dt>
3300  <!-- <dd><dl>
3301  <!-- <dt><span class="parameter-name">matrix</span> of type
3302  <!-- WebCGMMatrix</dt>
3303  <!-- <dd><p>The matrix used to determine the new local
3304  <!-- transform on the node, as described in "<a
3305  <!-- href="#transform-concepts">Transform basic
3306  <!-- concepts</a>".</p>
3307  <!-- </dd>
3308  <!-- <dt><span class="parameter-name">replace</span> of type
3309  <!-- WebCGMString</dt>
3310  <!-- <dd><p>How to apply the matrix to determine the new
3311  <!-- local transform, {combine | replace}, as described in
3312  <!-- "<a href="#transform-concepts">Transform basic
3313  <!-- concepts</a>".</p>

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<dt>Return value</dt>  
 <dd>No return value.</dd>  
 <dt>Exceptions</dt>  
 <dd>No exceptions.</dd>  
 </dl>  
 </dd>  
 <dt><span class="method-name">getTransform</span></dt>  
 <dd><p>Returns current geometric transform information for the APS. Please refer to <a href="#geometric-transform">"Geometric transform"</a> for more detailed information about geometric transforms and the parameters of this method.</p>  
 <dl>  
 <dt>Parameters</dt>  
 <dd><dl>  
 <dt><span class="parameter-name">type</span> of type WebCGMString</dt>  
 <dd><p>Determines which matrix to return, {local | ctm}.</p>  
 <p>When type is "ctm", the <a href="#transform-composition">Current Transformation Matrix</a> for this APS is returned. i.e., the accumulation of all transformations that have been defined on this node and all its ancestors, up to the Picture's normalized coordinate system.</p>  
 <p>When type is "local", the transformation defined on this APS only is returned; ancestor transformations are ignored. Note: the returned matrix must respect previous transform operation modes (replace | combine), if any.</p>  
 </dd>  
 </dl>  
 </dd>  
 <dt>Return value</dt>  
 <dd><p>WebCGMMatrix; The matrix corresponding to the requested tranform on the node.</p>  
 </dd>  
 <!-- -->  
 Application Structure.</dd>  
 whose <em><a href="WebCGM21-Appendix.html#webcgm\_glossary">interactive  
 whose <em><a href="WebCGM20-Appendix.html#webcgm\_glossary">interactive  
 href="WebCGM21-Appendix.html#webcgm\_glossary">interactive region</a></em>  
 href="WebCGM20-Appendix.html#webcgm\_glossary">interactive region</a></em>  
 href="WebCGM21-IC.html#webcgm\_3\_2\_1\_1">grobjct</a>, <a  
 href="WebCGM21-IC.html#webcgm\_grnode">grnode</a>, <a  
 href="WebCGM21-IC.html#webcgm\_3\_2\_1\_3">para</a> or <a  
 href="WebCGM21-IC.html#webcgm\_3\_2\_1\_4">subpara</a>, for related specifics.</p>  
 href="WebCGM20-IC.html#webcgm\_3\_2\_1\_1">grobjct</a>, <a  
 href="WebCGM20-IC.html#webcgm\_grnode">grnode</a>, <a  
 href="WebCGM20-IC.html#webcgm\_3\_2\_1\_3">para</a> or <a  
 href="WebCGM20-IC.html#webcgm\_3\_2\_1\_4">subpara</a>, for related specifics.</p>  
 href="WebCGM21-IC.html#webcgm\_3\_2\_2\_3">hyperlink processing</a>. If a  
 href="WebCGM20-IC.html#webcgm\_3\_2\_2\_3">hyperlink processing</a>. If a