

# LinksPlatform's Platform.Communication Class Library

## 1.1 ./csharp/Platform.Communication/Protocol/Gexf/Edge.cs

```
1 using System.Globalization;
2 using System.Runtime.CompilerServices;
3 using System.Xml;
4 using System.Xml.Serialization;
5
6 #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member
7
8 namespace Platform.Communication.Protocol.Gexf
9 {
10     /// <summary>
11     /// <para>
12     /// Represents the edge.
13     /// </para>
14     /// <para></para>
15     /// </summary>
16     public class Edge
17     {
18         /// <summary>
19         /// <para>
20         /// The element name.
21         /// </para>
22         /// <para></para>
23         /// </summary>
24         public static readonly string ElementName = "edge";
25         /// <summary>
26         /// <para>
27         /// The id attribute name.
28         /// </para>
29         /// <para></para>
30         /// </summary>
31         public const string IdAttributeName = "id";
32         /// <summary>
33         /// <para>
34         /// The source attribute name.
35         /// </para>
36         /// <para></para>
37         /// </summary>
38         public const string SourceAttributeName = "source";
39         /// <summary>
40         /// <para>
41         /// The target attribute name.
42         /// </para>
43         /// <para></para>
44         /// </summary>
45         public const string TargetAttributeName = "target";
46         /// <summary>
47         /// <para>
48         /// The label attribute name.
49         /// </para>
50         /// <para></para>
51         /// </summary>
52         public const string LabelAttributeName = "label";
53
54         /// <summary>
55         /// <para>
56         /// Gets or sets the id value.
57         /// </para>
58         /// <para></para>
59         /// </summary>
60         [XmlAttribute(AttributeName = IdAttributeName)]
61         public long Id
62         {
63             [MethodImpl(MethodImplOptions.AggressiveInlining)]
64             get;
65             [MethodImpl(MethodImplOptions.AggressiveInlining)]
66             set;
67         }
68
69         /// <summary>
70         /// <para>
71         /// Gets or sets the source value.
72         /// </para>
73         /// <para></para>
74         /// </summary>
75         [XmlAttribute(AttributeName = SourceAttributeName)]
76         public long Source
77         {
```

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78         [MethodImpl(MethodImplOptions.AggressiveInlining)]
79         get;
80         [MethodImpl(MethodImplOptions.AggressiveInlining)]
81         set;
82     }
83
84     /// <summary>
85     /// <para>
86     /// Gets or sets the target value.
87     /// </para>
88     /// <para></para>
89     /// </summary>
90     [XmlAttribute(AttributeName = TargetAttributeName)]
91     public long Target
92     {
93         [MethodImpl(MethodImplOptions.AggressiveInlining)]
94         get;
95         [MethodImpl(MethodImplOptions.AggressiveInlining)]
96         set;
97     }
98
99     /// <summary>
100    /// <para>
101    /// Gets or sets the label value.
102    /// </para>
103    /// <para></para>
104    /// </summary>
105    [XmlAttribute(AttributeName = LabelAttributeName)]
106    public string Label
107    {
108        [MethodImpl(MethodImplOptions.AggressiveInlining)]
109        get;
110        [MethodImpl(MethodImplOptions.AggressiveInlining)]
111        set;
112    }
113
114    /// <summary>
115    /// <para>
116    /// Writes the xml using the specified writer.
117    /// </para>
118    /// <para></para>
119    /// </summary>
120    /// <param name="writer">
121    /// <para>The writer.</para>
122    /// <para></para>
123    /// </param>
124    [MethodImpl(MethodImplOptions.AggressiveInlining)]
125    public void WriteXml(XmlWriter writer) => WriteXml(writer, Id, Source, Target, Label);
126
127    /// <summary>
128    /// <para>
129    /// Writes the xml using the specified writer.
130    /// </para>
131    /// <para></para>
132    /// </summary>
133    /// <param name="writer">
134    /// <para>The writer.</para>
135    /// <para></para>
136    /// </param>
137    /// <param name="id">
138    /// <para>The id.</para>
139    /// <para></para>
140    /// </param>
141    /// <param name="sourceNodeId">
142    /// <para>The source node id.</para>
143    /// <para></para>
144    /// </param>
145    /// <param name="targetNodeId">
146    /// <para>The target node id.</para>
147    /// <para></para>
148    /// </param>
149    [MethodImpl(MethodImplOptions.AggressiveInlining)]
150    public static void WriteXml(XmlWriter writer, long id, long sourceNodeId, long
    ↪ targetNodeId) => WriteXml(writer, id, sourceNodeId, targetNodeId, null);
151
152    /// <summary>
153    /// <para>
154    /// Writes the xml using the specified writer.
155    /// </para>

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```

156     /// <para></para>
157     /// </summary>
158     /// <param name="writer">
159     /// <para>The writer.</para>
160     /// <para></para>
161     /// </param>
162     /// <param name="id">
163     /// <para>The id.</para>
164     /// <para></para>
165     /// </param>
166     /// <param name="sourceNodeId">
167     /// <para>The source node id.</para>
168     /// <para></para>
169     /// </param>
170     /// <param name="targetNodeId">
171     /// <para>The target node id.</para>
172     /// <para></para>
173     /// </param>
174     /// <param name="label">
175     /// <para>The label.</para>
176     /// <para></para>
177     /// </param>
178     [MethodImpl(MethodImplOptions.AggressiveInlining)]
179     public static void WriteXml(XmlWriter writer, long id, long sourceNodeId, long
180         ↪ targetNodeId, string label)
181     {
182         // <edge id="0" source="0" target="0" label="..." />
183         writer.WriteStartElement(ElementName);
184         writer.WriteAttributeString(IdAttributeName,
185             ↪ id.ToString(CultureInfo.InvariantCulture));
186         writer.WriteAttributeString(SourceAttributeName,
187             ↪ sourceNodeId.ToString(CultureInfo.InvariantCulture));
188         writer.WriteAttributeString(TargetAttributeName,
189             ↪ targetNodeId.ToString(CultureInfo.InvariantCulture));
190         if (!string.IsNullOrEmpty(label))
191         {
192             writer.WriteAttributeString(LabelAttributeName, label);
193         }
194         writer.WriteEndElement();
195     }
196 }

```

## 1.2 ./csharp/Platform.Communication/Protocol/Gexf/Gexf.cs

```

1  using System;
2  using System.Runtime.CompilerServices;
3  using System.Xml;
4  using System.Xml.Serialization;
5
6  #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member
7
8  namespace Platform.Communication.Protocol.Gexf
9  {
10     /// <summary>
11     /// <para>
12     /// Represents the gexf.
13     /// </para>
14     /// <para></para>
15     /// </summary>
16     [XmlRoot(ElementName = ElementName, Namespace = Namespace)]
17     public class Gexf
18     {
19         /// <summary>
20         /// <para>
21         /// The element name.
22         /// </para>
23         /// <para></para>
24         /// </summary>
25         public const string ElementName = "gexf";
26         /// <summary>
27         /// <para>
28         /// The namespace.
29         /// </para>
30         /// <para></para>
31         /// </summary>
32         public const string Namespace = "http://www.gexf.net/1.2draft";
33         /// <summary>
34         /// <para>

```

```

35     /// The version attribute name.
36     /// </para>
37     /// <para></para>
38     /// </summary>
39     public const string VersionAttributeName = "version";
40     /// <summary>
41     /// <para>
42     /// The graph element name.
43     /// </para>
44     /// <para></para>
45     /// </summary>
46     public const string GraphElementName = "graph";
47     /// <summary>
48     /// <para>
49     /// The current version.
50     /// </para>
51     /// <para></para>
52     /// </summary>
53     public static readonly string CurrentVersion = "1.2";
54
55     /// <summary>
56     /// <para>
57     /// Gets or sets the version value.
58     /// </para>
59     /// <para></para>
60     /// </summary>
61     [XmlAttribute(AttributeName = VersionAttributeName)]
62     public string Version
63     {
64         [MethodImpl(MethodImplOptions.AggressiveInlining)]
65         get;
66         [MethodImpl(MethodImplOptions.AggressiveInlining)]
67         set;
68     }
69
70     /// <summary>
71     /// <para>
72     /// Gets or sets the graph value.
73     /// </para>
74     /// <para></para>
75     /// </summary>
76     [XmlElement(ElementName = GraphElementName)]
77     public Graph Graph
78     {
79         [MethodImpl(MethodImplOptions.AggressiveInlining)]
80         get;
81         [MethodImpl(MethodImplOptions.AggressiveInlining)]
82         set;
83     }
84
85     /// <summary>
86     /// <para>
87     /// Initializes a new <see cref="Gexf"/> instance.
88     /// </para>
89     /// <para></para>
90     /// </summary>
91     [MethodImpl(MethodImplOptions.AggressiveInlining)]
92     public Gexf() => (Version, Graph) = (CurrentVersion, new Graph());
93
94     /// <summary>
95     /// <para>
96     /// Writes the xml using the specified writer.
97     /// </para>
98     /// <para></para>
99     /// </summary>
100    /// <param name="writer">
101    /// <para>The writer.</para>
102    /// <para></para>
103    /// </param>
104    [MethodImpl(MethodImplOptions.AggressiveInlining)]
105    public void WriteXml(XmlWriter writer) => WriteXml(writer, () => Graph.WriteXml(writer),
106        ↪ Version);
107
108    /// <summary>
109    /// <para>
110    /// Writes the xml using the specified writer.
111    /// </para>
112    /// <para></para>
113    /// </summary>

```

```

113     /// <param name="writer">
114     /// <para>The writer.</para>
115     /// <para></para>
116     /// </param>
117     /// <param name="writeGraph">
118     /// <para>The write graph.</para>
119     /// <para></para>
120     /// </param>
121     [MethodImpl(MethodImplOptions.AggressiveInlining)]
122     public static void WriteXml(XmlWriter writer, Action writeGraph) => WriteXml(writer,
    ↪ writeGraph, CurrentVersion);
123
124     /// <summary>
125     /// <para>
126     /// Writes the xml using the specified writer.
127     /// </para>
128     /// <para></para>
129     /// </summary>
130     /// <param name="writer">
131     /// <para>The writer.</para>
132     /// <para></para>
133     /// </param>
134     /// <param name="writeGraph">
135     /// <para>The write graph.</para>
136     /// <para></para>
137     /// </param>
138     /// <param name="version">
139     /// <para>The version.</para>
140     /// <para></para>
141     /// </param>
142     [MethodImpl(MethodImplOptions.AggressiveInlining)]
143     public static void WriteXml(XmlWriter writer, Action writeGraph, string version)
144     {
145         writer.WriteStartDocument();
146         writer.WriteStartElement(ElementName, Namespace);
147         writer.WriteAttributeString(VersionAttributeName, version);
148         writeGraph();
149         writer.WriteEndElement();
150         writer.WriteEndDocument();
151     }
152
153     /// <summary>
154     /// <para>
155     /// Writes the xml using the specified writer.
156     /// </para>
157     /// <para></para>
158     /// </summary>
159     /// <param name="writer">
160     /// <para>The writer.</para>
161     /// <para></para>
162     /// </param>
163     /// <param name="writeNodes">
164     /// <para>The write nodes.</para>
165     /// <para></para>
166     /// </param>
167     /// <param name="writeEdges">
168     /// <para>The write edges.</para>
169     /// <para></para>
170     /// </param>
171     [MethodImpl(MethodImplOptions.AggressiveInlining)]
172     public static void WriteXml(XmlWriter writer, Action writeNodes, Action writeEdges) =>
    ↪ WriteXml(writer, writeNodes, writeEdges, CurrentVersion, GraphMode.Static,
    ↪ GraphDefaultEdgeType.Directed);
173
174     /// <summary>
175     /// <para>
176     /// Writes the xml using the specified writer.
177     /// </para>
178     /// <para></para>
179     /// </summary>
180     /// <param name="writer">
181     /// <para>The writer.</para>
182     /// <para></para>
183     /// </param>
184     /// <param name="writeNodes">
185     /// <para>The write nodes.</para>
186     /// <para></para>
187     /// </param>

```

```

188     /// <param name="writeEdges">
189     /// <para>The write edges.</para>
190     /// <para></para>
191     /// </param>
192     /// <param name="version">
193     /// <para>The version.</para>
194     /// <para></para>
195     /// </param>
196     [MethodImpl(MethodImplOptions.AggressiveInlining)]
197     public static void WriteXml(XmlWriter writer, Action writeNodes, Action writeEdges,
    ↪     string version) => WriteXml(writer, writeNodes, writeEdges, version,
    ↪     GraphMode.Static, GraphDefaultEdgeType.Directed);

198     /// <summary>
199     /// <para>
200     /// Writes the xml using the specified writer.
201     /// </para>
202     /// <para></para>
203     /// </summary>
204     /// <param name="writer">
205     /// <para>The writer.</para>
206     /// <para></para>
207     /// </param>
208     /// <param name="writeNodes">
209     /// <para>The write nodes.</para>
210     /// <para></para>
211     /// </param>
212     /// <param name="writeEdges">
213     /// <para>The write edges.</para>
214     /// <para></para>
215     /// </param>
216     /// <param name="version">
217     /// <para>The version.</para>
218     /// <para></para>
219     /// </param>
220     /// <param name="mode">
221     /// <para>The mode.</para>
222     /// <para></para>
223     /// </param>
224     [MethodImpl(MethodImplOptions.AggressiveInlining)]
225     public static void WriteXml(XmlWriter writer, Action writeNodes, Action writeEdges,
    ↪     string version, GraphMode mode) => WriteXml(writer, writeNodes, writeEdges, version,
    ↪     mode, GraphDefaultEdgeType.Directed);

227     /// <summary>
228     /// <para>
229     /// Writes the xml using the specified writer.
230     /// </para>
231     /// <para></para>
232     /// </summary>
233     /// <param name="writer">
234     /// <para>The writer.</para>
235     /// <para></para>
236     /// </param>
237     /// <param name="writeNodes">
238     /// <para>The write nodes.</para>
239     /// <para></para>
240     /// </param>
241     /// <param name="writeEdges">
242     /// <para>The write edges.</para>
243     /// <para></para>
244     /// </param>
245     /// <param name="version">
246     /// <para>The version.</para>
247     /// <para></para>
248     /// </param>
249     /// <param name="mode">
250     /// <para>The mode.</para>
251     /// <para></para>
252     /// </param>
253     /// <param name="defaultEdgeType">
254     /// <para>The default edge type.</para>
255     /// <para></para>
256     /// </param>
257     [MethodImpl(MethodImplOptions.AggressiveInlining)]
258

```

```

259         public static void WriteXml(XmlWriter writer, Action writeNodes, Action writeEdges,
        ↪         string version, GraphMode mode, GraphDefaultEdgeType defaultEdgeType) =>
        ↪         WriteXml(writer, () => Graph.WriteXml(writer, writeNodes, writeEdges, mode,
        ↪         defaultEdgeType), version);
260     }
261 }

```

### 1.3 ./csharp/Platform.Communication/Protocol/Gexf/Graph.cs

```

1  using System;
2  using System.Collections.Generic;
3  using System.Runtime.CompilerServices;
4  using System.Xml;
5  using System.Xml.Serialization;
6
7  #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member
8
9  namespace Platform.Communication.Protocol.Gexf
10 {
11     /// <summary>
12     /// <para>
13     /// Represents the graph.
14     /// </para>
15     /// <para></para>
16     /// </summary>
17     public class Graph
18     {
19         /// <summary>
20         /// <para>
21         /// The element name.
22         /// </para>
23         /// <para></para>
24         /// </summary>
25         public static readonly string ElementName = "graph";
26         /// <summary>
27         /// <para>
28         /// The mode attribute name.
29         /// </para>
30         /// <para></para>
31         /// </summary>
32         public const string ModeAttributeName = "mode";
33         /// <summary>
34         /// <para>
35         /// The default edge type attribute name.
36         /// </para>
37         /// <para></para>
38         /// </summary>
39         public const string DefaultEdgeTypeAttributeName = "defaultedgetype";
40         /// <summary>
41         /// <para>
42         /// The nodes element name.
43         /// </para>
44         /// <para></para>
45         /// </summary>
46         public const string NodesElementName = "nodes";
47         /// <summary>
48         /// <para>
49         /// The node element name.
50         /// </para>
51         /// <para></para>
52         /// </summary>
53         public const string NodeElementName = "node";
54         /// <summary>
55         /// <para>
56         /// The edges element name.
57         /// </para>
58         /// <para></para>
59         /// </summary>
60         public const string EdgesElementName = "edges";
61         /// <summary>
62         /// <para>
63         /// The edge element name.
64         /// </para>
65         /// <para></para>
66         /// </summary>
67         public const string EdgeElementName = "edge";
68
69         /// <summary>
70         /// <para>
71         /// Gets or sets the mode value.

```

```

72     /// </para>
73     /// <para></para>
74     /// </summary>
75     [XmlAttribute(AttributeName = ModeAttributeName)]
76     public GraphMode Mode
77     {
78         [MethodImpl(MethodImplOptions.AggressiveInlining)]
79         get;
80         [MethodImpl(MethodImplOptions.AggressiveInlining)]
81         set;
82     }
83
84     /// <summary>
85     /// <para>
86     /// Gets or sets the default edge type value.
87     /// </para>
88     /// <para></para>
89     /// </summary>
90     [XmlAttribute(AttributeName = DefaultEdgeTypeAttributeName)]
91     public GraphDefaultEdgeType DefaultEdgeType
92     {
93         [MethodImpl(MethodImplOptions.AggressiveInlining)]
94         get;
95         [MethodImpl(MethodImplOptions.AggressiveInlining)]
96         set;
97     }
98
99     /// <summary>
100    /// <para>
101    /// Gets or sets the nodes value.
102    /// </para>
103    /// <para></para>
104    /// </summary>
105    [XmlArray(ElementName = NodesElementName)]
106    [XmlArrayItem(ElementName = NodeElementName)]
107    public List<Node> Nodes
108    {
109        [MethodImpl(MethodImplOptions.AggressiveInlining)]
110        get;
111        [MethodImpl(MethodImplOptions.AggressiveInlining)]
112        set;
113    }
114
115    /// <summary>
116    /// <para>
117    /// Gets or sets the edges value.
118    /// </para>
119    /// <para></para>
120    /// </summary>
121    [XmlArray(ElementName = EdgesElementName)]
122    [XmlArrayItem(ElementName = EdgeElementName)]
123    public List<Edge> Edges
124    {
125        [MethodImpl(MethodImplOptions.AggressiveInlining)]
126        get;
127        [MethodImpl(MethodImplOptions.AggressiveInlining)]
128        set;
129    }
130
131    /// <summary>
132    /// <para>
133    /// Initializes a new <see cref="Graph"/> instance.
134    /// </para>
135    /// <para></para>
136    /// </summary>
137    [MethodImpl(MethodImplOptions.AggressiveInlining)]
138    public Graph() => (Nodes, Edges) = (new List<Node>(), new List<Edge>());
139
140    /// <summary>
141    /// <para>
142    /// Writes the xml using the specified writer.
143    /// </para>
144    /// <para></para>
145    /// </summary>
146    /// <param name="writer">
147    /// <para>The writer.</para>
148    /// <para></para>
149    /// </param>
150    [MethodImpl(MethodImplOptions.AggressiveInlining)]

```



```

151 public void WriteXml(XmlWriter writer) => WriteXml(writer, () => WriteNodes(writer), ()
    ↳ => WriteEdges(writer), Mode, DefaultEdgeType);
152
153 /// <summary>
154 /// <para>
155 /// Writes the edges using the specified writer.
156 /// </para>
157 /// <para></para>
158 /// </summary>
159 /// <param name="writer">
160 /// <para>The writer.</para>
161 /// <para></para>
162 /// </param>
163 [MethodImpl(MethodImplOptions.AggressiveInlining)]
164 private void WriteEdges(XmlWriter writer)
165 {
166     for (var i = 0; i < Edges.Count; i++)
167     {
168         Edges[i].WriteXml(writer);
169     }
170 }
171
172 /// <summary>
173 /// <para>
174 /// Writes the nodes using the specified writer.
175 /// </para>
176 /// <para></para>
177 /// </summary>
178 /// <param name="writer">
179 /// <para>The writer.</para>
180 /// <para></para>
181 /// </param>
182 [MethodImpl(MethodImplOptions.AggressiveInlining)]
183 private void WriteNodes(XmlWriter writer)
184 {
185     for (var i = 0; i < Nodes.Count; i++)
186     {
187         Nodes[i].WriteXml(writer);
188     }
189 }
190
191 /// <summary>
192 /// <para>
193 /// Writes the xml using the specified writer.
194 /// </para>
195 /// <para></para>
196 /// </summary>
197 /// <param name="writer">
198 /// <para>The writer.</para>
199 /// <para></para>
200 /// </param>
201 /// <param name="writeNodes">
202 /// <para>The write nodes.</para>
203 /// <para></para>
204 /// </param>
205 /// <param name="writeEdges">
206 /// <para>The write edges.</para>
207 /// <para></para>
208 /// </param>
209 [MethodImpl(MethodImplOptions.AggressiveInlining)]
210 public static void WriteXml(XmlWriter writer, Action writeNodes, Action writeEdges) =>
    ↳ WriteXml(writer, writeNodes, writeEdges, GraphMode.Static,
    ↳ GraphDefaultEdgeType.Directed);
211
212 /// <summary>
213 /// <para>
214 /// Writes the xml using the specified writer.
215 /// </para>
216 /// <para></para>
217 /// </summary>
218 /// <param name="writer">
219 /// <para>The writer.</para>
220 /// <para></para>
221 /// </param>
222 /// <param name="writeNodes">
223 /// <para>The write nodes.</para>
224 /// <para></para>
225 /// </param>

```

```

226     /// <param name="writeEdges">
227     /// <para>The write edges.</para>
228     /// </para>
229     /// </param>
230     /// <param name="mode">
231     /// <para>The mode.</para>
232     /// <para></para>
233     /// </param>
234     [MethodImpl(MethodImplOptions.AggressiveInlining)]
235     public static void WriteXml(XmlWriter writer, Action writeNodes, Action writeEdges,
        ↪ GraphMode mode) => WriteXml(writer, writeNodes, writeEdges, mode,
        ↪ GraphDefaultEdgeType.Directed);

236     /// <summary>
237     /// <para>
238     /// Writes the xml using the specified writer.
239     /// </para>
240     /// <para></para>
241     /// </summary>
242     /// <param name="writer">
243     /// <para>The writer.</para>
244     /// <para></para>
245     /// </param>
246     /// <param name="writeNodes">
247     /// <para>The write nodes.</para>
248     /// <para></para>
249     /// </param>
250     /// <param name="writeEdges">
251     /// <para>The write edges.</para>
252     /// <para></para>
253     /// </param>
254     /// <param name="mode">
255     /// <para>The mode.</para>
256     /// <para></para>
257     /// </param>
258     /// <param name="defaultEdgeType">
259     /// <para>The default edge type.</para>
260     /// <para></para>
261     /// </param>
262     [MethodImpl(MethodImplOptions.AggressiveInlining)]
263     public static void WriteXml(XmlWriter writer, Action writeNodes, Action writeEdges,
        ↪ GraphMode mode, GraphDefaultEdgeType defaultEdgeType)
264     {
265         writer.WriteStartElement(ElementName);
266         writer.WriteAttributeString(ModeAttributeName, mode.ToString().ToLower());
267         writer.WriteAttributeString(DefaultEdgeTypeAttributeName,
        ↪ defaultEdgeType.ToString().ToLower());
268         writer.WriteStartElement(NodesElementName);
269         writeNodes();
270         writer.WriteEndElement();
271         writer.WriteStartElement(EdgesElementName);
272         writeEdges();
273         writer.WriteEndElement();
274         writer.WriteEndElement();
275     }
276 }
277
278 }

```

#### 1.4 ./csharp/Platform.Communication/Protocol/Gexf/GraphDefaultEdgeType.cs

```

1  using System.Xml.Serialization;
2
3  #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member
4
5  namespace Platform.Communication.Protocol.Gexf
6  {
7      /// <summary>
8      /// <para>
9      /// The graph default edge type enum.
10     /// </para>
11     /// <para></para>
12     /// </summary>
13     public enum GraphDefaultEdgeType
14     {
15         /// <summary>
16         /// <para>
17         /// The directed graph default edge type.
18         /// </para>
19         /// <para></para>

```

```

20     /// </summary>
21     [XmlEnum(Name = "directed")]
22     Directed
23 }
24 }

```

## 1.5 ./csharp/Platform.Communication/Protocol/Gexf/GraphMode.cs

```

1 using System.Xml.Serialization;
2
3 #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member
4
5 namespace Platform.Communication.Protocol.Gexf
6 {
7     /// <summary>
8     /// <para>
9     /// The graph mode enum.
10    /// </para>
11    /// <para></para>
12    /// </summary>
13    public enum GraphMode
14    {
15        /// <summary>
16        /// <para>
17        /// The static graph mode.
18        /// </para>
19        /// <para></para>
20        /// </summary>
21        [XmlEnum(Name = "static")]
22        Static,
23
24        /// <summary>
25        /// <para>
26        /// The dynamic graph mode.
27        /// </para>
28        /// <para></para>
29        /// </summary>
30        [XmlEnum(Name = "dynamic")]
31        Dynamic
32    }
33 }

```

## 1.6 ./csharp/Platform.Communication/Protocol/Gexf/Node.cs

```

1 using System.Globalization;
2 using System.Runtime.CompilerServices;
3 using System.Xml;
4 using System.Xml.Serialization;
5
6 #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member
7
8 namespace Platform.Communication.Protocol.Gexf
9 {
10    /// <summary>
11    /// <para>
12    /// Represents the node.
13    /// </para>
14    /// <para></para>
15    /// </summary>
16    public class Node
17    {
18        /// <summary>
19        /// <para>
20        /// The element name.
21        /// </para>
22        /// <para></para>
23        /// </summary>
24        public static readonly string ElementName = "node";
25
26        /// <summary>
27        /// <para>
28        /// The id attribute name.
29        /// </para>
30        /// <para></para>
31        /// </summary>
32        public const string IdAttributeName = "id";
33
34        /// <summary>
35        /// <para>
36        /// The label attribute name.
37        /// </para>
38        /// <para></para>
39        /// </summary>

```

```

38     public const string LabelAttributeName = "label";
39
40     /// <summary>
41     /// <para>
42     /// Gets or sets the id value.
43     /// </para>
44     /// <para></para>
45     /// </summary>
46     [XmlAttribute(AttributeName = IdAttributeName)]
47     public long Id
48     {
49         [MethodImpl(MethodImplOptions.AggressiveInlining)]
50         get;
51         [MethodImpl(MethodImplOptions.AggressiveInlining)]
52         set;
53     }
54
55     /// <summary>
56     /// <para>
57     /// Gets or sets the label value.
58     /// </para>
59     /// <para></para>
60     /// </summary>
61     [XmlAttribute(AttributeName = LabelAttributeName)]
62     public string Label
63     {
64         [MethodImpl(MethodImplOptions.AggressiveInlining)]
65         get;
66         [MethodImpl(MethodImplOptions.AggressiveInlining)]
67         set;
68     }
69
70     /// <summary>
71     /// <para>
72     /// Writes the xml using the specified writer.
73     /// </para>
74     /// <para></para>
75     /// </summary>
76     /// <param name="writer">
77     /// <para>The writer.</para>
78     /// <para></para>
79     /// </param>
80     [MethodImpl(MethodImplOptions.AggressiveInlining)]
81     public void WriteXml(XmlWriter writer) => WriteXml(writer, Id, Label);
82
83     /// <summary>
84     /// <para>
85     /// Writes the xml using the specified writer.
86     /// </para>
87     /// <para></para>
88     /// </summary>
89     /// <param name="writer">
90     /// <para>The writer.</para>
91     /// <para></para>
92     /// </param>
93     /// <param name="id">
94     /// <para>The id.</para>
95     /// <para></para>
96     /// </param>
97     /// <param name="label">
98     /// <para>The label.</para>
99     /// <para></para>
100    /// </param>
101    [MethodImpl(MethodImplOptions.AggressiveInlining)]
102    public static void WriteXml(XmlWriter writer, long id, string label)
103    {
104        // <node id="0" label="..." />
105        writer.WriteStartElement(ElementName);
106        writer.WriteString(IdAttributeName,
107            ↪ id.ToString(CultureInfo.InvariantCulture));
107        writer.WriteString(LabelAttributeName, label);
108        writer.WriteEndElement();
109    }
110 }
111 }

```

## 1.7 ./csharp/Platform.Communication/Protocol/Udp/UdpClientExtensions.cs

```

1 using System.Net;
2 using System.Net.Sockets;

```

```

3 using System.Runtime.CompilerServices;
4 using System.Text;
5
6 #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member
7
8 namespace Platform.Communication.Protocol.Udp
9 {
10     /// <summary>
11     /// <para>
12     /// Represents the udp client extensions.
13     /// </para>
14     /// <para></para>
15     /// </summary>
16     public static class UdpClientExtensions
17     {
18         /// <summary>
19         /// <para>
20         /// The utf.
21         /// </para>
22         /// <para></para>
23         /// </summary>
24         public static readonly Encoding DefaultEncoding = Encoding.UTF8;
25
26         /// <summary>
27         /// <para>
28         /// Sends the string using the specified udp.
29         /// </para>
30         /// <para></para>
31         /// </summary>
32         /// <param name="udp">
33         /// <para>The udp.</para>
34         /// <para></para>
35         /// </param>
36         /// <param name="ipEndPoint">
37         /// <para>The ip end point.</para>
38         /// <para></para>
39         /// </param>
40         /// <param name="message">
41         /// <para>The message.</para>
42         /// <para></para>
43         /// </param>
44         /// <returns>
45         /// <para>The int</para>
46         /// <para></para>
47         /// </returns>
48         [MethodImpl(MethodImplOptions.AggressiveInlining)]
49         public static int SendString(this UdpClient udp, IPEndPoint ipEndPoint, string message)
50         {
51             var bytes = DefaultEncoding.GetBytes(message);
52             return udp.Send(bytes, bytes.Length, ipEndPoint);
53         }
54
55         /// <summary>
56         /// <para>
57         /// Receives the string using the specified udp.
58         /// </para>
59         /// <para></para>
60         /// </summary>
61         /// <param name="udp">
62         /// <para>The udp.</para>
63         /// <para></para>
64         /// </param>
65         /// <returns>
66         /// <para>The string</para>
67         /// <para></para>
68         /// </returns>
69         [MethodImpl(MethodImplOptions.AggressiveInlining)]
70         public static string ReceiveString(this UdpClient udp)
71         {
72             IPEndPoint remoteEndPoint = default;
73             return DefaultEncoding.GetString(udp.Receive(ref remoteEndPoint));
74         }
75     }
76 }

```

## 1.8 ./csharp/Platform.Communication/Protocol/Udp/UdpReceiver.cs

```

1 using System;
2 using System.Net.Sockets;
3 using System.Runtime.CompilerServices;

```

```

4 using System.Threading;
5 using Platform.Disposables;
6 using Platform.Exceptions;
7 using Platform.Threading;
8
9 #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member
10
11 namespace Platform.Communication.Protocol.Udp
12 {
13     /// <summary>
14     /// <para>
15     /// The message handler callback.
16     /// </para>
17     /// <para></para>
18     /// </summary>
19     public delegate void MessageHandlerCallback(string message);
20
21     /// <summary>
22     /// <para>Represents the receiver of messages transfered via UDP protocol.</para>
23     /// <para>Представляет получателя сообщений по протоколу UDP.</para>
24     /// </summary>
25     public class UdpReceiver : DisposableBase //-V3073
26     {
27         /// <summary>
28         /// <para>
29         /// The default port.
30         /// </para>
31         /// <para></para>
32         /// </summary>
33         private const int DefaultPort = 15000;
34
35         /// <summary>
36         /// <para>
37         /// The receiver running.
38         /// </para>
39         /// <para></para>
40         /// </summary>
41         private bool _receiverRunning;
42         /// <summary>
43         /// <para>
44         /// The thread.
45         /// </para>
46         /// <para></para>
47         /// </summary>
48         private Thread _thread;
49         /// <summary>
50         /// <para>
51         /// The udp.
52         /// </para>
53         /// <para></para>
54         /// </summary>
55         private readonly UdpClient _udp;
56         /// <summary>
57         /// <para>
58         /// The message handler.
59         /// </para>
60         /// <para></para>
61         /// </summary>
62         private readonly MessageHandlerCallback _messageHandler;
63
64         /// <summary>
65         /// <para>
66         /// Gets the available value.
67         /// </para>
68         /// <para></para>
69         /// </summary>
70         public bool Available
71         {
72             [MethodImpl(MethodImplOptions.AggressiveInlining)]
73             get => _udp.Available > 0;
74         }
75
76         /// <summary>
77         /// <para>
78         /// Initializes a new <see cref="UdpReceiver"/> instance.
79         /// </para>
80         /// <para></para>
81         /// </summary>
82         /// <param name="listenPort">

```

```

83     /// <para>A listen port.</para>
84     /// <para></para>
85     /// </param>
86     /// <param name="autoStart">
87     /// <para>A auto start.</para>
88     /// <para></para>
89     /// </param>
90     /// <param name="messageHandler">
91     /// <para>A message handler.</para>
92     /// <para></para>
93     /// </param>
94     [MethodImpl(MethodImplOptions.AggressiveInlining)]
95     public UdpReceiver(int listenPort, bool autoStart, MessageHandlerCallback messageHandler)
96     {
97         _udp = new UdpClient(listenPort);
98         _messageHandler = messageHandler;
99         if (autoStart)
100         {
101             Start();
102         }
103     }
104
105     /// <summary>
106     /// <para>
107     /// Initializes a new <see cref="UdpReceiver"/> instance.
108     /// </para>
109     /// <para></para>
110     /// </summary>
111     /// <param name="listenPort">
112     /// <para>A listen port.</para>
113     /// <para></para>
114     /// </param>
115     /// <param name="messageHandler">
116     /// <para>A message handler.</para>
117     /// <para></para>
118     /// </param>
119     [MethodImpl(MethodImplOptions.AggressiveInlining)]
120     public UdpReceiver(int listenPort, MessageHandlerCallback messageHandler) :
121         ↪ this(listenPort, true, messageHandler) { }
122
123     /// <summary>
124     /// <para>
125     /// Initializes a new <see cref="UdpReceiver"/> instance.
126     /// </para>
127     /// <para></para>
128     /// </summary>
129     /// <param name="messageHandler">
130     /// <para>A message handler.</para>
131     /// <para></para>
132     /// </param>
133     [MethodImpl(MethodImplOptions.AggressiveInlining)]
134     public UdpReceiver(MessageHandlerCallback messageHandler) : this(DefaultPort, true,
135         ↪ messageHandler) { }
136
137     /// <summary>
138     /// <para>
139     /// Initializes a new <see cref="UdpReceiver"/> instance.
140     /// </para>
141     /// <para></para>
142     /// </summary>
143     [MethodImpl(MethodImplOptions.AggressiveInlining)]
144     public UdpReceiver() : this(DefaultPort, true, message => { }) { }
145
146     /// <summary>
147     /// <para>
148     /// Starts this instance.
149     /// </para>
150     /// <para></para>
151     /// </summary>
152     [MethodImpl(MethodImplOptions.AggressiveInlining)]
153     public void Start()
154     {
155         if (!_receiverRunning && _thread == null)
156         {
157             _receiverRunning = true;
158             _thread = new Thread(Receiver);
159             _thread.Start();
160         }
161     }

```

```

159     }
160
161     /// <summary>
162     /// <para>
163     /// Stops this instance.
164     /// </para>
165     /// <para></para>
166     /// </summary>
167     [MethodImpl(MethodImplOptions.AggressiveInlining)]
168     public void Stop()
169     {
170         if (_receiverRunning && _thread != null)
171         {
172             _receiverRunning = false;
173             _thread.Join();
174             _thread = null;
175         }
176     }
177
178     /// <summary>
179     /// <para>
180     /// Receives this instance.
181     /// </para>
182     /// <para></para>
183     /// </summary>
184     /// <returns>
185     /// <para>The string</para>
186     /// <para></para>
187     /// </returns>
188     [MethodImpl(MethodImplOptions.AggressiveInlining)]
189     public string Receive() => _udp.ReceiveString();
190
191     /// <summary>
192     /// <para>
193     /// Receives the and handle.
194     /// </para>
195     /// <para></para>
196     /// </summary>
197     [MethodImpl(MethodImplOptions.AggressiveInlining)]
198     public void ReceiveAndHandle() => _messageHandler(Receive());
199
200     /// <remarks>
201     /// <para>The method receives messages and runs in a separate thread.</para>
202     /// <para>Метод получает сообщения и работает в отдельном потоке.</para>
203     /// </remarks>
204     [MethodImpl(MethodImplOptions.AggressiveInlining)]
205     private void Receiver()
206     {
207         while (_receiverRunning)
208         {
209             try
210             {
211                 if (Available)
212                 {
213                     ReceiveAndHandle();
214                 }
215                 else
216                 {
217                     ThreadHelpers.Sleep();
218                 }
219             }
220             catch (Exception exception)
221             {
222                 exception.Ignore();
223             }
224         }
225     }
226
227     /// <summary>
228     /// <para>
229     /// Disposes the manual.
230     /// </para>
231     /// <para></para>
232     /// </summary>
233     /// <param name="manual">
234     /// <para>The manual.</para>
235     /// <para></para>
236     /// </param>

```



```

237     /// <param name="wasDisposed">
238     /// <para>The was disposed.</para>
239     /// <para></para>
240     /// </param>
241     [MethodImpl(MethodImplOptions.AggressiveInlining)]
242     protected override void Dispose(bool manual, bool wasDisposed)
243     {
244         if (!wasDisposed)
245         {
246             Stop();
247             _udp.DisposeIfPossible();
248         }
249     }
250 }
251 }

```

## 1.9 ./csharp/Platform.Communication/Protocol/Udp/UdpSender.cs

```

1  using System.Net;
2  using System.Net.Sockets;
3  using System.Runtime.CompilerServices;
4  using Platform.Disposables;
5
6  #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member
7
8  namespace Platform.Communication.Protocol.Udp
9  {
10     /// <summary>
11     /// <para>Represents the sender of messages transfered via UDP protocol.</para>
12     /// <para>Представляет отправителя сообщений по протоколу UDP.</para>
13     /// </summary>
14     public class UdpSender : DisposableBase //-V3073
15     {
16         /// <summary>
17         /// <para>
18         /// The udp.
19         /// </para>
20         /// <para></para>
21         /// </summary>
22         private readonly UdpClient _udp;
23         /// <summary>
24         /// <para>
25         /// The ipendpoint.
26         /// </para>
27         /// <para></para>
28         /// </summary>
29         private readonly IPEndPoint _ipendpoint;
30
31         /// <summary>
32         /// <para>
33         /// Initializes a new <see cref="UdpSender"/> instance.
34         /// </para>
35         /// <para></para>
36         /// </summary>
37         /// <param name="ipendpoint">
38         /// <para>A ipendpoint.</para>
39         /// <para></para>
40         /// </param>
41         [MethodImpl(MethodImplOptions.AggressiveInlining)]
42         public UdpSender(IPEndPoint ipendpoint) => (_udp, _ipendpoint) = (new UdpClient(),
43             ↪ ipendpoint);
44
45         /// <summary>
46         /// <para>
47         /// Initializes a new <see cref="UdpSender"/> instance.
48         /// </para>
49         /// <para></para>
50         /// </summary>
51         /// <param name="address">
52         /// <para>A address.</para>
53         /// <para></para>
54         /// </param>
55         /// <param name="port">
56         /// <para>A port.</para>
57         /// <para></para>
58         /// </param>
59         [MethodImpl(MethodImplOptions.AggressiveInlining)]
60         public UdpSender(IPAddress address, int port) : this(new IPEndPoint(address, port)) { }
61
62         /// <summary>

```

```

62     /// <para>
63     /// Initializes a new <see cref="UdpSender"/> instance.
64     /// </para>
65     /// </summary>
66     /// <param name="hostname">
67     /// <para>A hostname.</para>
68     /// </param>
69     /// <param name="port">
70     /// <para>A port.</para>
71     /// </param>
72     [MethodImpl(MethodImplOptions.AggressiveInlining)]
73     public UdpSender(string hostname, int port) : this(IPAddress.Parse(hostname), port) { }
74
75     /// <summary>
76     /// <para>
77     /// Initializes a new <see cref="UdpSender"/> instance.
78     /// </para>
79     /// </summary>
80     /// <param name="port">
81     /// <para>A port.</para>
82     /// </param>
83     [MethodImpl(MethodImplOptions.AggressiveInlining)]
84     public UdpSender(int port) : this(IPAddress.Loopback, port) { }
85
86     /// <summary>
87     /// <para>
88     /// Sends the message.
89     /// </para>
90     /// </summary>
91     /// <param name="message">
92     /// <para>The message.</para>
93     /// </param>
94     /// <returns>
95     /// <para>The int</para>
96     /// </returns>
97     [MethodImpl(MethodImplOptions.AggressiveInlining)]
98     public int Send(string message) => _udp.SendString(_ipendpoint, message);
99
100     /// <summary>
101     /// <para>
102     /// Disposes the manual.
103     /// </para>
104     /// </summary>
105     /// <param name="manual">
106     /// <para>The manual.</para>
107     /// </param>
108     /// <param name="wasDisposed">
109     /// <para>The was disposed.</para>
110     /// </param>
111     [MethodImpl(MethodImplOptions.AggressiveInlining)]
112     protected override void Dispose(bool manual, bool wasDisposed)
113     {
114         if (!wasDisposed)
115         {
116             _udp.DisposeIfPossible();
117         }
118     }
119 }
120
121 }
122
123 }
124
125 }
126
127 }
128
129 }
130
131 }

```

## 1.10 ./csharp/Platform.Communication/Protocol/XML/Serializer.cs

```

1 using System.IO;
2 using System.Runtime.CompilerServices;
3 using System.Text;
4 using System.Xml.Serialization;
5
6 #pragma warning disable CS1591 // Missing XML comment for publicly visible type or member

```

```

7
8 namespace Platform.Communication.Protocol.Xml
9 {
10     /// <summary>
11     /// <para>
12     /// Represents the serializer.
13     /// </para>
14     /// <para></para>
15     /// </summary>
16     public static class Serializer<T>
17     {
18         /// <summary>
19         /// <para>
20         /// The .
21         /// </para>
22         /// <para></para>
23         /// </summary>
24         public static readonly XmlSerializer Instance = new XmlSerializer(typeof(T));
25
26         /// <summary>
27         /// <para>
28         /// Creates the file using the specified path.
29         /// </para>
30         /// <para></para>
31         /// </summary>
32         /// <param name="path">
33         /// <para>The path.</para>
34         /// <para></para>
35         /// </param>
36         /// <returns>
37         /// <para>The</para>
38         /// <para></para>
39         /// </returns>
40         [MethodImpl(MethodImplOptions.AggressiveInlining)]
41         public static T FromFile(string path)
42         {
43             using var stream = File.OpenRead(path);
44             return (T)Instance.Deserialize(stream);
45         }
46
47         /// <summary>
48         /// <para>
49         /// Creates the string using the specified xml.
50         /// </para>
51         /// <para></para>
52         /// </summary>
53         /// <param name="xml">
54         /// <para>The xml.</para>
55         /// <para></para>
56         /// </param>
57         /// <returns>
58         /// <para>The</para>
59         /// <para></para>
60         /// </returns>
61         [MethodImpl(MethodImplOptions.AggressiveInlining)]
62         public static T FromString(string xml)
63         {
64             using var reader = new StringReader(xml);
65             return (T)Instance.Deserialize(reader);
66         }
67
68         /// <summary>
69         /// <para>
70         /// Returns the file using the specified object.
71         /// </para>
72         /// <para></para>
73         /// </summary>
74         /// <param name="@object">
75         /// <para>The object.</para>
76         /// <para></para>
77         /// </param>
78         /// <param name="path">
79         /// <para>The path.</para>
80         /// <para></para>
81         /// </param>
82         [MethodImpl(MethodImplOptions.AggressiveInlining)]
83         public static void ToFile(T @object, string path)
84         {

```

```

85         using var stream = File.OpenWrite(path);
86         Instance.Serialize(stream, @object);
87     }
88
89     /// <summary>
90     /// <para>
91     /// Returns the string using the specified object.
92     /// </para>
93     /// <para></para>
94     /// </summary>
95     /// <param name="@object">
96     /// <para>The object.</para>
97     /// <para></para>
98     /// </param>
99     /// <returns>
100    /// <para>The string</para>
101    /// <para></para>
102    /// </returns>
103    [MethodImpl(MethodImplOptions.AggressiveInlining)]
104    public static string ToString(T @object)
105    {
106        var sb = new StringBuilder();
107        using (var writer = new StringWriter(sb))
108        {
109            Instance.Serialize(writer, @object);
110        }
111        return sb.ToString();
112    }
113 }
114 }

```

### 1.11 ./csharp/Platform.Communication.Tests/SerializerTests.cs

```

1  using System;
2  using System.IO;
3  using Xunit;
4  using Platform.Singletons;
5  using Platform.Communication.Protocol.Xml;
6
7  namespace Platform.Communication.Tests
8  {
9      /// <summary>
10     /// <para>
11     /// Represents the serializer tests.
12     /// </para>
13     /// <para></para>
14     /// </summary>
15     public static class SerializerTests
16     {
17         /// <summary>
18         /// <para>
19         /// Tests that serialize to file test.
20         /// </para>
21         /// <para></para>
22         /// </summary>
23         [Fact]
24         public static void SerializeToFileTest()
25         {
26             var tempFilename = Path.GetTempFileName();
27             Serializer<object>.ToFile(Default<object>.Instance, tempFilename);
28             Assert.Equal(File.ReadAllText(tempFilename), $"<?xml
29                 ↪ version=\"1.0\"?>{Environment.NewLine}<anyType
30                 ↪ xmlns:xsi=\"http://www.w3.org/2001/XMLSchema-instance\"
31                 ↪ xmlns:xsd=\"http://www.w3.org/2001/XMLSchema\" />");
32             File.Delete(tempFilename);
33         }
34
35         /// <summary>
36         /// <para>
37         /// Tests that serialize as xml string test.
38         /// </para>
39         /// <para></para>
40         /// </summary>
41         [Fact]
42         public static void SerializeAsXmlStringTest()
43         {
44             var serializedObject = Serializer<object>.ToString(Default<object>.Instance);

```

```

42         Assert.Equal(serializedObject, $"<?xml version=\"1.0\"
        ↳ encoding=\"utf-16\"?>{Environment.NewLine}<anyType
        ↳ xmlns:xsi=\"http://www.w3.org/2001/XMLSchema-instance\"
        ↳ xmlns:xsd=\"http://www.w3.org/2001/XMLSchema\" />");
43     }
44 }
45 }

```

### 1.12 ./csharp/Platform.Communication.Tests/UdpReceiverTests.cs

```

1  using Xunit;
2  using Platform.Communication.Protocol.Udp;
3
4  namespace Platform.Communication.Tests
5  {
6      /// <summary>
7      /// <para>
8      /// Represents the udp receiver tests.
9      /// </para>
10     /// <para></para>
11     /// </summary>
12     public static class UdpReceiverTests
13     {
14         /// <summary>
15         /// <para>
16         /// Tests that disposal test.
17         /// </para>
18         /// <para></para>
19         /// </summary>
20         [Fact]
21         public static void DisposalTest()
22         {
23             using var receiver = new UdpReceiver();
24         }
25     }
26 }

```

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