```xml
1   <?xml version="1.0" encoding="UTF-8"?>
2   <!--
3   By Sheng Gao, April 2008
4
5   Submitted as additional material for the IJHG article
6
7   This document is our preliminary HERXML schema, designed using Altova XMLSpy. This XML schema covers the semantic, geometric and graphic representations
    of health information.
8   -->
9
10  <xs:schema xmlns:herxml="http://nblung.ca" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:gml="http://www.opengis.net/gml" xmlns:xlink="
    http://www.w3.org/1999/xlink" targetNamespace="http://nblung.ca" elementFormDefault="qualified" attributeFormDefault="unqualified">
11      <xs:import namespace="http://www.opengis.net/gml" schemaLocation="schema/gml/3.1.1/base/feature.xsd"/>
12      <xs:element name="HERXML">
13          <xs:annotation>
14              <xs:documentation>herxml schema root element</xs:documentation>
15          </xs:annotation>
16          <xs:complexType>
17              <xs:sequence>
18                  <xs:element name="Health" type="herxml:HealthType"/>
19                  <xs:element name="MappingData">
20                      <xs:complexType>
21                          <xs:sequence>
22                              <xs:element ref="herxml:BoundingBox"/>
23                              <xs:element name="SpatialData">
24                                  <xs:complexType>
25                                      <xs:sequence>
26                                          <xs:element ref="herxml:DataSource"/>
27                                          <xs:choice>
28                                              <xs:element name="WFS">
29                                                  <xs:complexType>
30                                                      <xs:sequence>
31                                                          <xs:element name="URL"/>
32                                                          <xs:element name="LayerName"/>
33                                                      </xs:sequence>
34                                                      <xs:attribute name="version"/>
35                                                  </xs:complexType>
36                                              </xs:element>
37                                              <xs:element name="Geometries">
38                                                  <xs:complexType>
39                                                      <xs:sequence>
40                                                          <xs:element name="Geometry" type="gml:AbstractGeometricPrimitiveType" maxOccurs="unbounded"/>
41                                                      </xs:sequence>
42                                                  </xs:complexType>
43                                              </xs:element>
44                                              <xs:element name="RemoteLink">
45                                                  <xs:complexType>
46                                                      <xs:attribute name="type" form="unqualified"/>
47                                                      <xs:attribute name="href"/>
48                                                  </xs:complexType>
49                                              </xs:element>
50                                          </xs:choice>
51                                      </xs:sequence>
52                                  </xs:complexType>
53                              </xs:element>
54                              <xs:element name="Relation">
55                                  <xs:complexType>
56                                      <xs:sequence>
57                                          <xs:element name="JoinAttribute" type="xs:string"/>
58                                          <xs:element name="MatchingValuePairs" maxOccurs="unbounded">
59                                              <xs:complexType>
60                                                  <xs:sequence>
61                                                      <xs:element name="SpatialIDValue" type="xs:string"/>
62                                                      <xs:element name="HealthIDValue" type="xs:string"/>
63                                                  </xs:sequence>
64                                              </xs:complexType>
65                                          </xs:element>
66                                      </xs:sequence>
67                                  </xs:complexType>
68                              </xs:element>
69                              <xs:element name="MappingValues">
70                                  <xs:complexType>
71                                      <xs:sequence>
72                                          <xs:element name="StatisticalMethod">
73                                              <xs:complexType>
74                                                  <xs:sequence>
```

```xml
75                              <xs:element ref="herxml:Name"/>
76                              <xs:element ref="herxml:Title"/>
77                              <xs:element ref="herxml:Description"/>
78                              <xs:element name="ParameterGroup" maxOccurs="unbounded">
79                                  <xs:complexType>
80                                      <xs:sequence>
81                                          <xs:element ref="herxml:parameter" maxOccurs="unbounded"/>
82                                      </xs:sequence>
83                                  </xs:complexType>
84                              </xs:element>
85                          </xs:sequence>
86                      </xs:complexType>
87                  </xs:element>
88                  <xs:element ref="herxml:DataSource"/>
89                  <xs:element name="MappingValueGroup" maxOccurs="unbounded">
90                      <xs:complexType>
91                          <xs:sequence>
92                              <xs:element name="MappingValue" maxOccurs="unbounded">
93                                  <xs:complexType>
94                                      <xs:simpleContent>
95                                          <xs:extension base="xs:double">
96                                              <xs:attribute name="healthIDValue"/>
97                                          </xs:extension>
98                                      </xs:simpleContent>
99                                  </xs:complexType>
100                             </xs:element>
101                         </xs:sequence>
102                         <xs:attribute name="groupAttr"/>
103                     </xs:complexType>
104                 </xs:element>
105             </xs:sequence>
106             <xs:attribute name="attrName"/>
107         </xs:complexType>
108     </xs:element>
109     </xs:sequence>
110     </xs:complexType>
111   </xs:element>
112   <xs:element name="Representation">
113     <xs:complexType>
114       <xs:sequence>
115         <xs:element ref="herxml:BoundingBox"/>
116         <xs:element ref="herxml:Style"/>
117       </xs:sequence>
118     </xs:complexType>
119   </xs:element>
120   </xs:sequence>
121   <xs:attribute name="version" use="required"/>
122   </xs:complexType>
123 </xs:element>
124 <xs:element name="Name" type="xs:string"/>
125 <xs:element name="Title" type="xs:string"/>
126 <xs:element name="Description" type="xs:string"/>
127 <xs:element name="KeywordList">
128   <xs:complexType>
129     <xs:sequence>
130       <xs:element name="Keyword" type="xs:string" maxOccurs="unbounded"/>
131     </xs:sequence>
132   </xs:complexType>
133 </xs:element>
134 <xs:element name="BoundingBox" type="herxml:BoundingBoxType"/>
135 <xs:complexType name="BoundingBoxType">
136   <xs:sequence>
137     <xs:element name="Minx" type="xs:double"/>
138     <xs:element name="MinY" type="xs:double"/>
139     <xs:element name="MaxX" type="xs:double"/>
140     <xs:element name="MaxY" type="xs:double"/>
141   </xs:sequence>
142   <xs:attribute name="srsName" type="xs:string" use="required"/>
143 </xs:complexType>
144 <xs:element name="parameter" type="xs:string" abstract="true">
145   <xs:annotation>
146     <xs:documentation>abstract parameter element, used for the definition  of health infulential factors</xs:documentation>
147   </xs:annotation>
148 </xs:element>
149 <xs:element name="Geolayer" type="xs:string" substitutionGroup="herxml:parameter"/>
150 <xs:element name="AgeFrom" type="xs:string" substitutionGroup="herxml:parameter"/>
```

```xml
151    <xs:element name="AgeTo" type="xs:string" substitutionGroup="herxml:parameter"/>
152    <xs:element name="StartTime" type="xs:string" substitutionGroup="herxml:parameter"/>
153    <xs:element name="EndTime" type="xs:string" substitutionGroup="herxml:parameter"/>
154    <xs:element name="Gender" type="xs:string" substitutionGroup="herxml:parameter"/>
155    <xs:complexType name="StyleType">
156      <xs:annotation>
157        <xs:documentation>abstract representation style, used for the defintion of PointStyleType, ChartStyleType, LineStyleType, and PolygonStyleType</xs:documentation>
158      </xs:annotation>
159      <xs:sequence>
160        <xs:element ref="herxml:Name" minOccurs="0"/>
161        <xs:element ref="herxml:Title" minOccurs="0"/>
162        <xs:element ref="herxml:Description" minOccurs="0"/>
163      </xs:sequence>
164    </xs:complexType>
165    <xs:element name="Style" type="herxml:StyleType" abstract="true"/>
166    <xs:element name="PointStyle" type="herxml:PointStyleType" substitutionGroup="herxml:Style"/>
167    <xs:element name="ChartStyle" type="herxml:ChartStyleType" substitutionGroup="herxml:Style"/>
168    <xs:element name="LineStyle" type="herxml:LineStyleType" substitutionGroup="herxml:Style"/>
169    <xs:element name="PolygonStyle" type="herxml:PolygonStyleType" substitutionGroup="herxml:Style"/>
170    <xs:complexType name="PointStyleType">
171      <xs:complexContent>
172        <xs:extension base="herxml:StyleType">
173          <xs:sequence>
174            <xs:element name="PointSize" type="xs:double"/>
175            <xs:choice>
176              <xs:element ref="herxml:Color"/>
177              <xs:element name="Symbol">
178                <xs:complexType>
179                  <xs:sequence>
180                    <xs:element ref="herxml:Name"/>
181                    <xs:element name="URL" type="xs:string"/>
182                  </xs:sequence>
183                </xs:complexType>
184              </xs:element>
185            </xs:choice>
186          </xs:sequence>
187        </xs:extension>
188      </xs:complexContent>
189    </xs:complexType>
190    <xs:complexType name="LineStyleType">
191      <xs:complexContent>
192        <xs:extension base="herxml:StyleType">
193          <xs:sequence>
194            <xs:element ref="herxml:Color"/>
195            <xs:element name="LineWeight" type="xs:double"/>
196            <xs:element name="LineStyle" type="xs:string"/>
197          </xs:sequence>
198        </xs:extension>
199      </xs:complexContent>
200    </xs:complexType>
201    <xs:complexType name="ChartStyleType">
202      <xs:complexContent>
203        <xs:extension base="herxml:StyleType">
204          <xs:sequence>
205            <xs:element name="ChartMethod" type="xs:string"/>
206            <xs:element name="ChartSize" type="xs:double"/>
207            <xs:element name="ChartVariation" type="xs:boolean"/>
208            <xs:element name="ChartColorScheme" maxOccurs="unbounded">
209              <xs:complexType>
210                <xs:sequence>
211                  <xs:element name="ChartField" type="xs:string"/>
212                  <xs:element ref="herxml:Color"/>
213                </xs:sequence>
214              </xs:complexType>
215            </xs:element>
216          </xs:sequence>
217        </xs:extension>
218      </xs:complexContent>
219    </xs:complexType>
220    <xs:complexType name="PolygonStyleType">
221      <xs:complexContent>
222        <xs:extension base="herxml:StyleType">
223          <xs:sequence>
224            <xs:element ref="herxml:Fill"/>
225            <xs:element name="Border" type="herxml:LineStyleType"/>
```

```xml
226          </xs:sequence>
227        </xs:extension>
228      </xs:complexContent>
229    </xs:complexType>
230    <xs:complexType name="FillType">
231      <xs:sequence>
232        <xs:element ref="herxml:Description" minOccurs="0"/>
233      </xs:sequence>
234    </xs:complexType>
235    <xs:element name="Fill" type="herxml:FillType"/>
236    <xs:element name="RangeFill" type="herxml:RangeFillType" substitutionGroup="herxml:Fill"/>
237    <xs:element name="GradientFill" type="herxml:GradientFillType" substitutionGroup="herxml:Fill"/>
238    <xs:complexType name="GradientFillType">
239      <xs:complexContent>
240        <xs:extension base="herxml:FillType">
241          <xs:sequence>
242            <xs:element name="FromColor" type="xs:string"/>
243            <xs:element name="ToColor" type="xs:string"/>
244            <xs:element name="NumOfClasses" type="xs:int"/>
245          </xs:sequence>
246        </xs:extension>
247      </xs:complexContent>
248    </xs:complexType>
249    <xs:complexType name="RangeFillType">
250      <xs:complexContent>
251        <xs:extension base="herxml:FillType">
252          <xs:choice>
253            <xs:element name="SingleRange" maxOccurs="unbounded">
254              <xs:complexType>
255                <xs:sequence>
256                  <xs:element name="RangeValue" type="xs:double"/>
257                  <xs:element ref="herxml:FillMethod"/>
258                </xs:sequence>
259              </xs:complexType>
260            </xs:element>
261            <xs:element name="DoubleRange" maxOccurs="unbounded">
262              <xs:complexType>
263                <xs:sequence>
264                  <xs:element name="MinValue" type="xs:double"/>
265                  <xs:element name="MaxValue" type="xs:double"/>
266                  <xs:element ref="herxml:FillMethod"/>
267                </xs:sequence>
268              </xs:complexType>
269            </xs:element>
270          </xs:choice>
271        </xs:extension>
272      </xs:complexContent>
273    </xs:complexType>
274    <xs:element name="Color" type="xs:string">
275      <xs:annotation>
276        <xs:documentation>e.g., 0x######</xs:documentation>
277      </xs:annotation>
278    </xs:element>
279    <xs:element name="Texure"/>
280    <xs:element name="Pattern"/>
281    <xs:complexType name="FillMethodType">
282      <xs:choice>
283        <xs:element ref="herxml:Color"/>
284        <xs:element ref="herxml:Texure"/>
285        <xs:element ref="herxml:Pattern"/>
286      </xs:choice>
287    </xs:complexType>
288    <xs:element name="FillMethod" type="herxml:FillMethodType"/>
289    <xs:complexType name="DataSourceType">
290      <xs:sequence>
291        <xs:element name="Contact">
292          <xs:complexType>
293            <xs:sequence>
294              <xs:element name="ContactName" type="xs:string"/>
295              <xs:element name="Address" type="xs:string"/>
296              <xs:element name="Phone" type="xs:string"/>
297            </xs:sequence>
298          </xs:complexType>
299        </xs:element>
300        <xs:element name="DataSourceDescription" type="xs:string"/>
301        <xs:element name="DataSourceTime" type="xs:string"/>
```

```xml
302            </xs:sequence>
303        </xs:complexType>
304        <xs:element name="DataSource" type="herxml:DataSourceType"/>
305        <xs:complexType name="HealthType" abstract="true">
306            <xs:sequence>
307                <xs:element ref="herxml:Name"/>
308                <xs:element ref="herxml:Title"/>
309                <xs:element ref="herxml:Description"/>
310                <xs:element ref="herxml:KeywordList" minOccurs="0"/>
311            </xs:sequence>
312            <xs:attribute name="type" type="xs:string" use="optional"/>
313        </xs:complexType>
314        <xs:complexType name="DiseaseObservationType">
315            <xs:complexContent>
316                <xs:extension base="herxml:HealthType">
317                    <xs:sequence>
318                        <xs:element name="Code" type="xs:string"/>
319                    </xs:sequence>
320                </xs:extension>
321            </xs:complexContent>
322        </xs:complexType>
323    </xs:schema>
324
```