XEP-0110: Generic Maps

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A protocol for transport of generic maps (graphical displays of specific subsets of buddies).
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1 Introduction

Generic maps provide a way to extending the roster into a general display showing contacts (JIDs) together with further additional information. The further information is provided by the position in the map (and possibly by the dot type - e.g. shape or colour). In addition to showing people belonging to one roster group, it is possible to cluster people, use more detailed inset maps etc. each of these features providing a unique context.

The motivations for this document are:

- It is faster and easier to find people using a rich graphical view as compared to linear lists/trees
- Maps provide easily understandable further information (context) about the contact
- Maps show relations among JIDs and give better idea about their distribution in a given space (e.g. geographic region, company, campus)

2 Requirements

The requirements for the protocol are:

- General definition of projection based on some attribute(s) of particular JIDs
- Scaleability - in display size and size of transmitted data

3 Use Cases

Generic Map is actually XML description of a graphical display, which can then be sent as a part of <message/> or <iq/> packet together with information about how to obtain attributes needed for its display (other resources required).

3.1 Generic Map message

Example 1 shows a typical message containing simple Generic Map.

Listing 1: Generic map message

```xml
<message to='joe@domain.com' from='john@domain.com' id='map1'>
  <subject>Map of our office</subject>
  <body>Cool stuff, I can see you on-line in the map.</body>
  <map xmlns='http://jabber.org/protocol/map' id='map1.ygf'>
    <layer id='inset_1' offset_x='0' offset_y='0' scale='1'>
      <img src='ortho_0.gif' width='242' height='243'/>
    </layer>
  </map>
</message>
```
Each map consists of one or more layers. The main purpose of layers is to combine maps and views to deliver information suitable for a particular context, and to offer greater flexibility to the user in respect to customization.

Layers can be defined either inline or by a reference to another map. Each layer has a specified position in the map, a scale and a priority. The maps defined inline contain also projection, underlying image and a list of entities lying inside it (i.e. typically JIDs or clusters of JIDs). The underlying images are sent out of band using the jabber:x:oob namespace or possibly defined in some other way (e.g. xml-based SVG).

The map in Example 1 uses an implicit map projection assuming that attributes x and y are directly the co-ordinates of a particular entity (e.g. buddy1@jabber.org) in the image (ortho_0.gif) expressed in pixels.

### 3.2 Definition of projection

A similar map with coordinates specified using geographic latitude + longitude (possibly obtained using Geographic Location Information \(^1\) extension) is shown in Example 2 (only the map tag is shown).

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\(^1\)XEP-0080: Geographic Location Information [http://www.xmpp.org/extensions/xep-0080.html](http://www.xmpp.org/extensions/xep-0080.html)
3.3 Scaleability

Another important feature of this proposal is scaleability, which is achieved by grouping the individual JIDs with similar properties (e.g. 'near' locations) into clusters. Cluster is basically a list of constituting entities (JIDs) that share similar values of specified attribute (e.g. JIDs that are co-located in the same town/region/country). The size of clusters may depend on the resolution and intended scale of the map. In the map clusters can be displayed using a distinctive icon.

Listing 3: Generic map tag with clustered items

```xml
<map xmlns='http://jabber.org/protocol/map' id='map3.ygf'>
  <layer id='inset_1' offset_x='0' offset_y='0' scale='1'>
    <img src='ortho_0.gif' width='242' height='243'/>
    <item jid='buddy1@jabber.org' long='9' lat='51'/>
    <cluster size='10' x='38' y='135' size='5'>
      <item jid='buddy2@jabber.org'/>
      <item jid='buddy3@jabber.org'/>
    </cluster>
  </layer>
</map>
```

4 Implementation Notes

The following guidelines may assist the developers of a mapping plug-in in the Jabber clients.

4.1 Parsing equations for map projections

The expression in the `<projection/>` tag uses values of different attributes specified for the JID either directly in the `<map/>` tag or elsewhere in the environment.

4.2 Transfering image files

The image files (maps) are transferred as an extra extension of packet using the filename as a unique id.

4.3 Attributes for determination of coordinates

The attributes are either specified in the `<map/>` tag or known in the environment (e.g. presence), but they could be also provided by a subscribed service using Publish-Subscribe ²

²XEP-0060: Publish-Subscribe http://www.xmpp.org/extensions/xep-0060.html
(e.g. GPS or LBS from a mobile operator).

4.4 Clusters - accumulation of attribute values

The clustering of items can be specified directly in the map tag or done using a pixel resolution of the display available.

5 Security Considerations

No security features or concerns related to this proposal.

6 IANA Considerations

No IANA interaction required.

7 XMPP Registrar Considerations

The XMPP Registrar will need to register the new namespace of "http://jabber.org/protocol/map".

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3The XMPP Registrar maintains a list of reserved protocol namespaces as well as registries of parameters used in the context of XMPP extension protocols approved by the XMPP Standards Foundation. For further information, see <https://xmpp.org/registrar/>.