XPression Maps Touch API

In this document we propose a simple and standard method of communication between Touch Factory and XPression Maps applications.

We consider 3 communication methods:

- The definition of Touch Event Messages from Touch Factory to XPression Maps when a new touch event occurs
- The definition of a Datalinq from XPression Maps to XPression
- The definition of Texture Request Messages to retrieve specific information from XPression Maps

Touch Event Messages from Touch Factory to XPression Maps

- For sending simple commands we recommend the use of the TCP protocol.
- For sending real-time touch event data for dragging or multi-touch actions we recommend UDP streams for better performance.
- By default the communication protocol will use port 7077 (supporting both TCP and UDP).
- Touch Factory does not expect any response from XPression Maps per message.
- We consider the following data structure types depending on specific events:
  › Single touch event with coordinates:

    Sends a touch event code along with the integer X and Y coordinate values scaled to 1920 x 1080. The possible touch event codes are "ENTER", "LEAVE" or "MOVE".
    A session ID long value is automatically created when touching starts.
    <touch event="EEE" sess="SSSSSSSSS" x="XXXX" y="YYYY" />

  › Multi-touch event with values:

    Sends a multi-touch event message when 2 fingers are simultaneously touching the screen, that includes 1 integer value "d", with the current straight pixel distance difference between current position and initial position, and 1 decimal value "r", with the corresponding rotation angle in degrees. Values can be positive or negative.
    A session ID long value is automatically created when touching starts.
    <mtouch sess="SSSSSSSSS" d="DDDDDDDDD" r="DDDDDDDDD" />

  › Map action command without values:

    Sends a direct command to be executed on the Maps side. The following commands are initially supported: PLAY and STOP.
    <map action="AAAA" />

  › Map action command with values:

    Sends a command to Maps that includes geographical coordinates and a camera tilt angle in degrees. The FLYTO command is initially supported to automatically go to a specific geographical coordinate. The coordinate value is WGS84 datum double latitude and longitude numbers.
    <map action="AAAA" lat=" AAAA.AAAAA" lon="BBBB.BBBBB" tilt="TTTT" roll="RRRR"/>

  › Map action command with ID:

    Sends a command to Maps that includes an integer identification code. The FLYTO command is initially supported to automatically go to a specific flight point.
    <map action="AAAA" id="BBBBBBB" />

  › Map action command with search text:

    Sends a command to Maps that includes a search string. The FLYTO command is initially supported.
    The search is sent to the gegraphical search engine and the longitude, latitude, and zoom values of the first result is taken for the FLYTO command in point 1.5.
    <map action="AAAA" search="free text to search for"/>

Datalinq from XPression Maps to XPression

A Coiron idea is to enable an XML datalinq source on the XPression Maps side using an internal webserver, for sharing some useful information with XPression. Initially we recommend enabling a list of possible "Flight Points", including ID, NAME, CITY, REGION (State), and COUNTRY.

The following format is accepted as an XPression datalinq xml source.

This file should also be created physically as a file and saved on a shared network folder:

```
<?xml version="1.0" encoding="utf-8"?>
<points>
<point id="1" name="Coiron, Inc" city="Irvine" region="California" country="United States" />
<point id="2" name="Coiron Graphics" city="Santiago" region="Metropolitana" country="Chile" />
</points>
```

Texture Request Messages

We propose to enable MAP images requests, using an internal webserver on MAPS that accepts HTTP GET methods, for downloading specific map images from Maps to XPression, and using them as Texture or Bump Map images. The texture files would be square shaped with a resolution of 2048 x 2048 pixels.

Type code is "TEXTURE" for Texture images and "BUMP" for Bump Map images.

Request a specific map image, with the geographical center (latitude and longitude) in WGS84 datum and the maximum integer distance in meters. The image:

/GetImage?type=TTTT&lat=AAAA.AAAAA&lon=BBBB.BBBBB&radius=RRRRRRR