FSDL 3.0 Recap – Elements and Attributes

This document provides a summary of the elements and attributes defined in the Frogans Slide Description Language 3.0. The elements and attributes described here are still subject to minor changes.

This document also describes (Appendix 3) how to upgrade Frogans sites created using Frogans Player for Developers (alpha) version 1.3.1.

Location

This document is accessible at the following permanent URL:
https://www.frogans.org/en/resources/fsdl/access.html

Copyright Statement

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Terminology

- **Frogans site**
  - A set of Frogans pages, called "slides", hyperlinked to each other, available online on the Internet or in an intranet, at a Frogans address.
  - A Frogans site can be published by any individual or organization, from anywhere in the world, in any language.
  - A Frogans site can contain an unlimited number of Frogans slides, which can be either static or generated dynamically (i.e. on the fly) by the server hosting the Frogans site.
- **Frogans address**
  - The Frogans technology introduces a new software layer on the Internet alongside existing layers such as E-mail or the Web.
  - Thus new Internet identifiers are required, just like the Web has URLs, and E-mail has specific addresses using the @ character.
  - A Frogans address is a string of characters serving as the identifier of a Frogans site. Frogans addresses feature an original, easy-to-identify address pattern with two main levels separated by the **asterisk** character: **network-name*site-name**. Frogans addresses may contain international characters and may be written either from left to right or from right to left, depending on the writing system.
  - Frogans addresses are registered with the Frogans Core Registry (FCR) and are resolved by the FCR Operator using the Frogans Network System (FNS). The address resolution process returns administrative as well as technical information about the Frogans site, including its location on the network.
  - Frogans addresses are grouped by their network name in Frogans networks.
- **Frogans Player**
  - Frogans Player is a free-of-charge, easy-to-use, secure, and fast-loading software that is used to browse Frogans sites.
  - Frogans Player is developed and updated by the OP3FT, a non-profit organization, for as many devices as possible that are connected to the Internet, such as desktop and laptops, tablets, and smartphones.
  - Frogans Player is available for download free of charge at **https://get.frogans/**. The OP3FT collects no personal data when end users download or use Frogans Player.
  - Currently the only version of Frogans Player is intended for developers and it is available for Windows, Mac OS X, and Linux only.

Key concepts

Frogans slide layout

- The **Frogans slide rendering canvas** is used to position the layers defined in a Frogans slide.
  - The size of the Frogans slide rendering canvas is 640 x 480 visible pixels.
  - Each pixel is represented using 32 bits: 8 bits each for the R, G, and B color components, plus 8 bits for transparency.
  - The visible pixels in the Frogans slide rendering canvas are referenced using an x,y coordinate system, where 0,0 refers to the pixel at the top-left corner and 639,479 refers to the pixel at the bottom-right corner.
  - Parts of resources used in layers can be positioned outside the Frogans slide rendering canvas.
- Each Frogans slide has two representations:
  - **Lead representation**: displayed when the end user resizes the Frogans slide to between 100% and 50% (inclusive) of its nominal size.
  - **Vignette representation**: displayed when the end user resizes the Frogans slide to between 50% and 25% of its nominal size.
- Both representations are made up of superimposed layers, each one being added on top of the others defined previously in the FSDL document. It is possible to select the representation(s) in which the layer appears (see the "leapout" attribute of the <layer> element in the FSDL document).
- Scaling factor
  - Frogans slides are rendered using the resolution of the Frogans slide rendering canvas. But different end-user devices can offer very different screen sizes with various pixel densities. Therefore Frogans Player automatically adapts the display of Frogans slides after rendering, by scaling both the width and height of the Frogans slides from 50% to 200%, depending on the device and the end user's preferences. Developers can disable the application of the scaling factor to facilitate the development of Frogans slides.

Frogans site root directory

- The Frogans site root directory contains all the FSDL documents and auxiliary files for all the Frogans slides in a given Frogans site.
- Each Frogans slide is made up of an **FSDL document** and its **auxiliary files** which, in FSDL 3.0, are image files.
- The Frogans site root directory can be located:
  - on a server accessible over the public Internet
  - for test purposes, on a local drive (see test Frogans addresses)
  - on a server accessible over an Intranet (corresponding Frogans addresses not yet available)
- The location of the Frogans site root directory is defined via a UCSR path in the settings of the Frogans address.
- All the FSDL documents located in the Frogans site root directory use the same version of the FSDL specification and the same character encoding method, which are defined in the settings of the Frogans address.
- The Frogans site root directory contains exactly one home slide, which is always rendered when the Frogans site is opened. The name of the home slide file is defined in the settings of the Frogans address.
- Since all the contents of given Frogans slide are located in the Frogans site root directory, any content aggregation from various sources must be carried out on the server hosting the Frogans site (the aggregation cannot be carried out on the end-user side, as can be done for Web pages), under the control and the responsibility of the Frogans site publisher. This includes advertising, images, etc.
- A Frogans site can include static slides, as well as dynamic slides which are generated on the fly by the server. For information on when and how data is sent by Frogans Player to the server hosting the Frogans site, see FSDL-Request documents.
- The file names of the FSDL documents and auxiliary files located in the Frogans site root directory are all relative to the Frogans site root directory. For the syntax of file names, see the "name" attribute of the <file> element in the FSDL document.
- The Frogans site root directory can contain subdirectories.

Going online via Frogans addresses

- Going online using a **Frogans address of a public Frogans network**
  - Pattern of a Frogans address of a public Frogans network: **network-name*site-name** where:
    - 'network-name' is either:
      - **"frogans"**, the network name of the public Frogans network, which is used for the languages of the Latin writing system, corresponding to the LC-Latin linguistic category, or
      - the **transcription** of the Frogans name into other writing systems or other languages, corresponding to the other available linguistic categories.
    - 'site-name' is compliant with the IFAP specification version 1.1 (https://www.frogans.org/en/resources/ifap/access.html). As a result of section 4.4. concerning connector characters:
      - '-' cannot be the first nor the last character of 'site-name'
      - Two or more consecutive '-' cannot be included in 'site-name'
  - The Frogans addresses of a public Frogans network are registered with the **Frogans Core Registry (FCR)** and are resolved using the **Frogans Network System (FNS)**.
  - The settings of each Frogans address are defined by the Frogans site publisher and are stored in the FCR. They include, among other things:
    - the intended audience of the Frogans site, in terms of age and location.
    - whether indexing is authorized for the Frogans site.
    - the location of the Frogans site root directory, provided as a UCSR path. Example:

```
<ucsr-path network='IP_DNS_TCP_HTTP'>
      <location>public</location>
      <domain-name>p7526.test.lab.op3ft.org</domain-name>
      <port>80</port>
     <directory>/public/op3ft/demo/helloworld-live</directory>
</ucsr-path>
```

    - the FSDL specification version of all the FSDL documents of the Frogans site.
    - the character encoding method used for all the FSDL documents of the Frogans site.
    - the file name of the home slide file in the Frogans site root directory. The syntax for name is the same as for the "name" attribute of the <file> element.

- Going online using a **test Frogans address**
  - Pattern of a test Frogans address: network-name*site-name where:
    - 'network-name' is '**Test**'
    - 'site-name' can contain up to 28 ASCII characters in the range from 'a' to 'z', from '0' to '9' (inclusive), and the '-' character (no spaces allowed)
    - 'site-name' is compliant with the IFAP specification version 1.1 (https://www.frogans.org/en/resources/ifap/access.html). As a result of section 4.4. concerning connector characters:
      - '-' cannot be the first nor the last character of 'site-name'
      - Two or more consecutive '-' cannot be included in 'site-name'
  - Test Frogans addresses are not registered in the FCR, and are not resolved using the Frogans Network System (FNS). They are stored locally in the **configuration-for-testing.xml** file located in the Frogans Player directory. They are used free of charge.
  - For more information on how to configure test Frogans addresses, see the guidelines in the detailed comments provided in this configuration file.

Rules for protecting the interests of end users

These rules are introduced so that:

- Frogans sites can be used on all end-user devices, from desktops to mobile phones, including devices with limited memory and processing capabilities.
- Frogans sites are easy to use and navigate for end users

Network usage rules

In order to limit the impact of Frogans sites on the end user's data plans, and to avoid slow navigation due to a low-speed network connection, the following limits are defined:

- Maximum size of an FSDL document: 64 KB
- Maximum size of an FSDL document and all its auxiliary files: 256 KB

Processor usage rules

In order to preserve the autonomy of mobile devices (and also to avoid overheating of battery-powered devices), limits related to the maximum number of different elements in an FSDL document are defined:

- See the <frogans-fsdl> and <button> elements

Memory usage rules

In order to limit the amount of memory required to render Frogans slides on end-user devices, and to increase the maximum number of applications or Frogans sites opened at the same time, the following limits are defined:

- Maximum width and height of a pre-authored image (in an image file): 1024x1024 pixels
- Maximum number of pixels in all the pre-authored images of a given Frogans slide: 3,072,000 pixels (=10*640*480).
- Total amount of memory required to render all the prepared resources, all the parts of all merge resources, and all the layers not used to assemble buttons in a given Frogans slide: 18,432,000 bytes (=15*4*640*480)
- Total amount of memory required to render all the layers used to assemble buttons in a given Frogans slide: 6,144,000 bytes (=5*4*640*480)

On-screen usability rules

In order to ensure that end users can easily see and interact with Frogans slides, the following rules are defined (these rules were formerly referred to as "Frogans slide rendering constraints").

Note: in these rules, "sufficiently opaque pixels" refers to pixels for which the value of the Alpha component is greater than or equal to 0x40 (64 decimal).

- **To make the Frogans slide easy to see:**

  Minimum number of sufficiently opaque pixels in the lead representation: 76,800 pixels (= 25% of 640*480)

  Minimum number of sufficiently opaque pixels in the vignette representation of a Frogans slide: 76,800 pixels (= 25% of 640*480)

- **To make the selection effect of a button easy to see:**

  Minimum number of sufficiently opaque pixels that change significantly when the button becomes selected: 307 pixels (= 0.1% of 640x480)

- **To make it easy to move the Frogans slide when using a pointing device:**

  In the lead representation: a 40x40 square of sufficiently opaque pixels must be available for moving the Frogans slide (in the part of the Frogans slide that is always accessible during any selection effect).

  In the vignette representation: an 80x80 square of sufficiently opaque pixels must be available for moving the Frogans slide.

- **To make it easy to select a button when using a pointing device:**

  In the lead representation: for each button, when the button is not selected, a 20x20 square of sufficiently opaque pixels must be available for selecting the button.

FSDL documents

FSDL documents are based on the Extensible Markup Language (XML) 1.0 Fifth Edition.

File encoding

FSDL documents are encoded using the character encoding method defined for the FSDL documents of the Frogans site (either UTF-8 or UTF-16) via its Frogans address. A Byte Order Mark (BOM) can be included at the start of the file.

When UTF-16 is used:

- if a BOM is included: both little-endian serialization (UTF-16LE) and big-endian serialization (UTF-16BE) are supported
- if no BOM is included: UTF-16LE is applied.

Depending on the encoding method used, the FSDL document starts with one of the following declarations (on the first line of the FSDL document):

- <?xml version='1.0' encoding='utf-8' ?>
- <?xml version='1.0' encoding='utf-16' ?>

File size limitations

See the Network usage rules.

Unique identifiers

A unique identifier is a case-sensitive string containing between 1 and 24 characters (inclusive).

Each character in the string is in the range from 'A' to 'Z' (inclusive), in the range from 'a' to 'z' (inclusive), in the range from '0' to '9' (inclusive), or is the '_' character. As a result, the string does not contain the ' ' (space) character.

Legend

The remainder of this section presents FSDL elements and attributes, using the following typographical convention:

<element>

Description of the element, if necessary

"*attribute*" *(mandatory | optional | applicable if <condition>)*

Description of the attribute, if necessary

- 'value' | description of a value (comment on the value, if necessary)

<frogans-fsdl>

The root element of the FSDL document.

Can contain a combined total of up to 128 of the following elements: <resimage>, <respixels>, <resdraw>, <respath>, <restext>, <resmerge>.

Can contain from 0 to 32 of each of the following elements: <setfont>, <setfilter>, <setrelief>, <setshadow>.

Can contain from 1 to 128 <layer> elements (including <layer> elements contained in <button> elements).

Can contain from 0 to 64 <file> elements.

Can contain from 0 to 32 <button> elements.

Can contain either 0 or 1 <next> elements.

Can contain from 0 to 32 <setdata> elements.

Can contain either 0 or 1 <session> element.

Can contain from 0 to 16 <setentry> elements.

Can contain exactly one <redirect> element.

Note: If the FSDL document contains a <redirect> element, then the Frogans slide is a **Frogans redirection slide** which is not rendered by Frogans Player. In that case, the <frogans-fsdl> element can only contain <file>, <setdata> and <session> elements.

"*version*" *(mandatory)*

- '3.0'

<file>

A file (an FSDL document or an image file) in the Frogans site root directory.

The content can optionally be the image file encoded in Base64 (if the value of the "nature" attribute equals 'embedded').

"*fileid*" *(mandatory)*

- unique identifier

"*nature*" *(mandatory)*

- 'static'
- 'dynamic'
- 'embedded'

"*name*" *(applicable if "nature"='static' or 'dynamic'; mandatory in that case)*

- complete name of the file in the Frogans site root directory

The file name is a UCSR target name, but where the number of characters is limited to 128.

As a result:

> The string contains at least 2 characters. Each of the characters is either in the range from 'a' to 'z' (inclusive), in the range from '0' to '9' (inclusive), or is any of the following characters: the '_' character, the '-' character, the '.' character, or the '/' character. The string starts with the '/' character. The string cannot end with any of the following characters: '_' character, '-' character, '.' character, '/' character. The string cannot contain any of the following sequences: two successive '.' characters, a '.' character followed by a '/' character, a '/' character followed by a '.' character, or two successive '/' characters. The string cannot contain the ' ' (space) character or the '\' character.

"*cache*" *(applicable if "nature"='static'; optional in that case)*

- 'on'
- 'off' (default value)

"*dataref*" *(applicable if "nature"='dynamic'; optional in that case)*

- "dataid" of a previously defined <setdata>; default value: '' (the empty string)

<resimage>

Defines a resource based on a jpeg, png, or gif image file. Maximum dimensions of the pre-authored image (in pixels): 1,024 x 1,024.

"*resid*" *(mandatory)*

- unique identifier

"*size*" *(mandatory)*

- width,height width from 1 to 640, height from 1 to 480

"*fileref*" *(mandatory)*

- "fileid" of a previously defined <file>

"*selection*" *(optional)*

- 'entire' (default value)
- 'extract'

"*bounds*" *(applicable if "selection"='extract'; mandatory in that case)*

- left,top,right,bottom
  left,top from 0 to 1023, right,bottom from 1 to 1024

"*aspect*" *(optional)*

- 'base' (default value)
- 'spread'
- 'zoom'
- 'echo'
- 'tile'

"*adjust*" *(applicable if "aspect"='base', 'zoom' or 'echo'; optional in that case)*

- integer from -100 to 100; default value: '0'

"*origin*" *(applicable if "aspect"='tile'; optional in that case)*

- x,y x from 0 to 1023, y from 0 to 1023; default value: '0,0'

<respixels>

The content is a list of (columns*rows) semi-colon-separated values in the following patterns (depending on the value of the "pix" attribute):

- if "pix"='rgba': #rrggbbaa
- if "pix"='rgb': #rrggbb
- if "pix"='a': #aa
- if "pix"='y': #yy
- if "pix"='ya': #yyaa

"*resid*" *(mandatory)*

- unique identifier

"*size*" *(mandatory)*

- width,height width from 1 to 640, height from 1 to 480

"*columns*" *(mandatory)*

- integer from 1 to 16

"*rows*" *(mandatory)*

- integer from 1 to 16

"*pix*" *(mandatory)*

- 'rgba'
- 'rgb'
- 'a'
- 'y'
- 'ya'

"*color*" *(applicable if "pix"='a': optional in that case)*

- #rrggbb '#' followed by 3 pairs of hexadecimal digits;
  default value: '#0000ff'

"*alpha*" *(applicable if "pix"='rgb' or 'y'; optional in that case)*

- #aa '#' followed by 1 pair of hexadecimal digits;
  default value: '#ff'

<resdraw>

"*resid*" *(mandatory)*

- unique identifier

"*size*" *(mandatory)*

- width,height width from 1 to 640, height from 1 to 480

"*figure*" *(mandatory)*

- 'rect'
- 'roundrect'
- 'ellipse'

"*stroke*" *(mandatory)*

- 'on'
- 'off'

"*thick*" *(applicable if "stroke"='on'; optional in that case)*

- integer from 1 to 64; default value: '8'

"*round*" *(applicable if "figure"='roundrect'; optional in that case)*

- width,height width from 1 to 640, height from 1 to 480;
  default value: '16,16'

"*color*" *(optional)*

- #rrggbb '#' followed by 3 pairs of hexadecimal digits;
  default value: '#0000ff'

<respath>

The content is a list of between 2 and 512 semi-colon-separated items in any of the following patterns, where each x,y coordinate is between 0 and 2048:

- Ju:xp,yp jump item, which corresponds to the starting point of a simple or composite Bezier curve, where xp,yp are the coordinates of the starting point. This item is the first item in the list; it cannot be the last item in the list; and there cannot be two consecutive jump items in the list.
- Li:xp,yp linear item, which corresponds to the ending point of a linear Bezier curve, where xp,yp are the coordinates of the ending point.
- Co:xp,yp,x1,y1 conic item, which corresponds to the ending point of a conic Bezier curve, where xp,yp are the coordinates of the ending point and x1,y1 are the coordinates of the control point.
- Cu:xp,yp,x1,y1,x2,y2 cubic item, which corresponds to the ending point of a cubic Bezier curve, where xp,yp are the coordinates of the ending point, and x1,y1 and x2,y2 are the coordinates of the first and second control points, respectively.

"*resid*" *(mandatory)*

- unique identifier

"*size*" *(mandatory)*

- width,height width from 1 to 640, height from 1 to 480

"*crop*" *(mandatory)*

- 'none'
- 'auto'
- 'custom'

"*corners*" *(applicable if "crop"='custom'; mandatory in that case)*

- xtl,ytl,xbr,ybr each of the top-left and bottom-right coordinates is from 0 to 2048

"*stroke*" *(mandatory)*

- 'on'
- 'off'

"*thick*" *(applicable if "stroke"='on'; optional in that case)*

- integer from 1 to 64; default value: '8'

"*close*" *(applicable if "stroke"='on'; optional in that case)*

- 'on'
- 'off' (default value)

"*fill*" *(applicable if "stroke"='off'; optional in that case)*

- 'non-zero' (default value)
- 'even-odd'

"*spread*" *(mandatory)*

- 'on'
- 'off'

"*adjust*" *(applicable if "spread"='off'; optional in that case)*

- integer from -100 to 100; default value: '0'

"*color*" *(optional)*

- #rrggbb '#' followed by 3 pairs of hexadecimal digits; default value: '#0000ff'

<setfont> and <font>

<setfont>

Can contain from 1 to 16 <font> elements.

The value of the "scripts" attribute of the first <font> element equals 'default'.

In any given <setfont> element, each script included in the comma-separated list in the value of the "scripts" attribute of all <font> elements is unique.

"*fontid*" *(mandatory)*

- unique identifier

<font>

"*scripts*" *(mandatory)*

- either 'default' or a comma-separated list of between 1 and 16 script names. For a list of available script names, see Appendix 1: "scripts" attribute of the <font> element.

"*pfont*" *(mandatory)*

- name of the physical font. For a list of all available physical fonts, see Appendix 2: "pfont" attribute of the <font> element.

"*height*" *(mandatory)*

- numeric with one optional digit after the decimal point, from 8.0 to 72.0

"*spacing*" *(optional)*

- integer from -100 to 100; default value: '0'

"*stretching*" *(optional)*

- integer from -100 to 100; default value: '0'

"*xbold*" *(optional)*

- integer from 0 to 100; default value: '0'

"*xitalic*" *(optional)*

- integer from -100 to 100; default value: '0'

"*underline*" *(optional)*

- 'on'
- 'off' (default value)

"*strikeout*" *(optional)*

- 'on'
- 'off' (default value)

"*opacity*" *(optional)*

- integer from 0 to 100; default value: '100'

"*color*" *(optional)*

- #rrggbb '#' followed by 3 pairs of hexadecimal digits; default value: '#0000ff'

<restext> and <text>

<restext>

Can contain from 1 to 16 <text> elements.

"*resid*" *(mandatory)*

- unique identifier

"*size*" *(mandatory)*

- width,height width from 1 to 640, height from 1 to 480

"*orientation*" *(mandatory)*

- 'h-ttb-ltr'
- 'h-ttb-rtl'
- 'h-btt-ltr'
- 'h-btt-rtl'
- 'v-ltr-ttb'
- 'v-ltr-btt'
- 'v-rtl-ttb'
- 'v-rtl-btt'

"*fontref*" *(mandatory)*

- "fontid" of a previously defined <setfont>

"*talign*" *(optional)*

- 'begin' (default value)
- 'end'
- 'center'
- 'justify'

"*linespace*" *(optional)*

- integer from -100 to 100; default value: '0'

"*vstyle*" *(applicable if "orientation" starts with 'v-'; optional in that case)*

- 'natural' (default value)
- 'opposite'
- 'upright'

"*join*" *(optional)*

- 'none' (default value)
- 'space'
- 'nospace'

<text>

The content is a string of up to 768 Unicode characters representing the text.

"*fontref*" *(optional)*

- "fontid" of a previously defined <setfont>

default value: the "fontref" attribute value of the parent

"*talign*" *(optional)*

- 'begin'
- 'end'
- 'center'
- 'justify'

default value: the "talign" attribute value of the parent

"*linespace*" *(optional)*

integer from -100 to 100; default value: the "linespace" attribute value of the parent

"*vstyle*" *(applicable if the "orientation" attribute value of the parent starts with 'v-'; optional in that case)*

- 'natural'
- 'opposite'
- 'upright'

default value: the "vstyle" attribute value of the parent

"*join*" *(optional)*

- 'none'
- 'space'
- 'nospace'

default value: the "join" attribute value of the parent

<setfilter> and <filter>

<setfilter>

Can contain from 1 to 8 <filter> elements.

"*filterid*" *(mandatory)*

- unique identifier

<filter>

"*effect*" *(mandatory)*

- 'light'
- 'contrast'
- 'saturation'
- 'hue'
- 'solarize'
- 'addcolor'
- 'mixcolor'
- 'negative'
- 'lumakey'
- 'chromakey'
- 'lumatoalpha'
- 'alphatoluma'

"*level*" *(applicable if "effect"='light', 'contrast', 'saturation', 'solarize', 'addcolor', or 'mixcolor'; mandatory in that case)*

- integer from -100 to 100; if "effect"='solarize' or 'mixcolor', then the filter is active only for values greater than zero

"*angle*" *(applicable if "effect"='hue'; mandatory in that case)*

- integer from -180 to 180

"*tolerance*" *(applicable if "effect"='lumakey' or 'chromakey'; mandatory in that case)*

- integer from 0 to 100

"*color*" *(applicable if "effect"='addcolor', 'mixcolor', 'lumakey', or 'chromakey'; mandatory in that case)*

- #rrggbb '#' followed by 3 pairs of hexadecimal digits; default value: '#0000ff'

<setrelief> and <relief>

<setrelief>

Can contain from 1 to 4 <relief> elements.

"*reliefid*" *(mandatory)*

- unique identifier

<relief>

"*rpos*" *(mandatory)*

- x,y x from -64 to 64, y from -64 to 64

"*color*" *(optional)*

- #rrggbb '#' followed by 3 pairs of hexadecimal digits; default value: '#ffffff'

"*blur*" *(optional)*

- integer from 0 to 32; default value: '0'

"*opacity*" *(optional)*

- integer from 0 to 100; default value: '100'

<setshadow> and <shadow>

<setshadow>

Can contain from 1 to 4 <shadow> elements.

"***shadowid***" *(mandatory)*

- unique identifier

<shadow>

"***rpos***" *(mandatory)*

- x,y x from -64 to 64, y from -64 to 64

"***color***" *(optional)*

- #rrggbb '#' followed by 3 pairs of hexadecimal digits; default value: '#000000'

"***blur***" *(optional)*

- integer from 0 to 32; default value: '0'

"***opacity***" *(optional)*

- integer from 0 to 100; default value: '100'

<resmerge> and <merge>

<resmerge>

Can contain from 1 to 16 <merge> elements.

"*resid*" *(mandatory)*

- unique identifier

"*size*" *(mandatory)*

- width,height width from 1 to 640, height from 1 to 480

<merge>

"*resref*" *(mandatory)*

- "resid" of the prepared resource. Cannot refer to the parent <resmerge> element.

"*flip*" *(optional)*

- 'none' (default value)
- 'xdir'
- 'ydir'
- 'xydir'

"*filterref*" *(optional)*

- "filterid" of a previously defined <setfilter>; default value: '' (the empty string)

"*reliefref*" *(optional)*

- "reliefid" of a previously defined <setrelief>; default value: '' (the empty string)

"*angle*" *(optional)*

- integer from -180 to 180; default value: '0'

"*blur*" *(optional)*

- integer from 0 to 32; default value: '0'

"*opacity*" *(optional)*

- integer from 0 to 100; default value: '100'

"*pos*" *(mandatory)*

- x,y x from -640 to 1280, y from -480 to 960

"*align*" *(optional)*

- 'left-top'
- 'left-middle'
- 'left-bottom'
- 'center-top'
- 'center-middle' (default value)
- 'center-bottom'
- 'right-top'
- 'right-middle'
- 'right-bottom'

"*combine*" *(mandatory)*

- 'add'
- 'clip'
- 'cutout'
- 'inter'

"*shadowref*" *(optional)*

- "shadowid" of a previously defined <setshadow>; default value: '' (the empty string)

<layer>

The <layer> element is a child of the <frogans-fsdl> or of a <button> element.

"*layerid*" *(mandatory)*

- unique identifier

"*leapout*" *(mandatory)*

- 'all'
- 'lead' *(only possible value if child of <button>)*
- 'vignette'

"*resref*" *(mandatory)*

- "resid" of a previously prepared resource

"*flip*" *(optional)*

- 'none' (default value)
- 'xdir'
- 'ydir'
- 'xydir'

"*filterref*" *(optional)*

- "filterid" of a previously defined <setfilter>; default value: '' (the empty string)

"*reliefref*" *(optional)*

- "reliefid" of a previously defined <setrelief>; default value: '' (the empty string)

"*angle*" *(optional)*

- integer from -180 to 180; default value: '0'

"*blur*" *(optional)*

- integer from 0 to 32; default value: '0'

"*opacity*" *(optional)*

- integer from 0 to 100; default value: '100'

"*pos*" *(mandatory)*

- x,y x from -640 to 1280, y from -480 to 960

"*align*" *(optional)*

- 'left-top'
- 'left-middle'
- 'left-bottom'
- 'center-top'
- 'center-middle' (default value)
- 'center-bottom'
- 'right-top'
- 'right-middle'
- 'right-bottom'

"*combine*" *(mandatory)*

- 'add'
- 'clip' *(only possible value if child of <button> and if the value of the "visible" attribute is not 'always')*
- 'cutout'
- 'inter'

"*shadowref*" *(optional)*

- "shadowid" of a previously defined <setshadow>; default value: '' (the empty string)

"*visible*" *(applicable if child of <button>; mandatory in that case)*

- 'always'
- 'not-selected'
- 'selected'

"*reactivity*" *(optional)*

- #rr '#' followed by 1 pair of hexadecimal digits; default value: '#7f'

<button>

Contains from 1 to 16 <layer> elements.

"*buttonid*" *(mandatory)*

- unique identifier

"*goto*" *(mandatory)*

- 'slide'
- 'frogans-site'
- 'way-out'

"*fileref*" *(applicable if "goto"='slide'; mandatory in that case)*

- "fileid" of a previously defined <file>

"*entryref*" *(applicable if "goto"='slide'; optional in that case)*

- "entryid" of a previously defined <setentry>; default value: '' (the empty string)

"*address*" *(applicable if "goto"='frogans-site'; mandatory in that case)*

- Frogans address of another Frogans site (e.g. 'network-name*site-name')

"*uri*" *(applicable if "goto"='way-out'; mandatory in that case)*

- URI. The URI starts with one of the following schemes: 'http', 'https', or 'mailto'.

<next>

Slide of the Frogans site to be loaded automatically after a defined period.

"***delay***" *(mandatory)*

- integer from 5 to 86400, in seconds

"***fileref***" *(mandatory)*

- "fileid" of a previously defined <file>

<setentry> and <entry>

<setentry>

Can contain from 1 to 8 <entry> elements.

"***entryid***" *(mandatory)*

- unique identifier

<entry>

"***key***" *(mandatory)*

- Field key name identifying the entry.

The value is a field key name.

As a result:

> The value is a case-sensitive string containing between 1 and 24 characters (inclusive). Each character in the string is in the range from 'A' to 'Z' inclusive(inclusive), in the range from 'a' to 'z' inclusive(inclusive), in the range from '0' to '9' (inclusive), or is either the '_' character or the '-' character. The string cannot contain the ' ' (space) character.

"***label***" *(mandatory)*

- Label of the entry.

The value is a string of up to 64 Unicode characters. The string cannot begin or end with a ' ' (space) character and cannot contain two consecutive ' ' (space) characters.

"***description***" *(optional)*

- Description of the entry; default value: '' (the empty string)

The value is a string of up to 256 Unicode characters. The string cannot begin or end with a ' ' (space) character and cannot contain two consecutive ' ' (space) characters.

"***lasterror***" *(optional)*

- Last error of the entry; default value: '' (the empty string)

The value is a string of up to 256 characters Unicode characters. The string cannot begin or end with a ' ' (space) character and cannot contain two consecutive ' ' (space) characters.

"*notice*" *(optional); default value: 'none'*

- 'mandatory'
- 'optional'
- 'none'

"*readonly*" *(optional); default value: 'off'*

- 'on'
- 'off'

"*input*" *(mandatory)*

- 'text'

"*preset*" *(applicable if "input"='text'; optional in that case)*

- Preset value of the entry; default value: '' (the empty string)

The value is a string of up to 256 Unicode characters representing the preset value for the entry.

"*concealed*" *(applicable if "input"='text'; optional in that case; default value: 'off')*

- 'on'
- 'off'

"*max*" *(applicable if "input"='text'; mandatory in that case)*

- integer from 0 to 256

<setdata> and <data>

<setdata>

Can contain from 1 to 16 <data> elements.

"*dataid*" *(mandatory)*

- unique identifier

<data>

The content is a string containing between 1 and 256 Unicode characters (inclusive) representing the value of the data key.

"*key*" *(mandatory)*

- Field key name.

The value is a field key name.

As a result:

> The value is a case-sensitive string containing between 1 and 24 characters (inclusive). Each character in the string is in the range from 'A' to 'Z' (inclusive), in the range from 'a' to 'z' (inclusive), in the range from '0' to '9' (inclusive), or is either the '_' character or the '-' character. The string cannot contain the ' ' (space) character.

<session>

"*dataref*" *(mandatory)*

- "dataid" of a previously defined <setdata>

"*remember*" *(mandatory)*

- 'on'
- 'off'

<redirect>

Slide of the Frogans site to be loaded and rendered immediately.

Element to be used only if the FSDL document corresponds to a Frogans redirection slide (see the **<frogans-fsdl>** element).

Note: In order to avoid redirect loops, Frogans Player ensures that a Frogans redirection slide does not redirect to another Frogans redirection slide.

"*fileref*" *(mandatory)*

- "fileid" of a previously defined <file>

FSDL-Request documents

Note: FSDL-Request documents are not written by the author of the FSDL documents, but rather are generated automatically by Frogans Player and sent to the server hosting the Frogans site.

FSDL-Request documents are based on the Extensible Markup Language (XML) 1.0 Fifth Edition.

FSDL-Request documents are encoded using the character encoding method defined for the FSDL documents of the Frogans site (either UTF-8 or UTF-16) via its Frogans address. A Byte Order Mark (BOM) is always used at the start of the file. If UTF-16 is used, then little-endian serialization (UTF-16LE) is applied, regardless of the serialization used in the FSDL document (UTF-16LE or UTF-16BE).

The size of an FSDL-Request document cannot exceed 64KB.

FSDL-Request documents are organized as follows:

```
<?xml version='1.0' encoding='...'?>

<frogans-fsdl-request version='3.0'>

    <request wanted='...' navigation='...' kind='...'/>

    <session-fields>
        <field key='...'>...</field>
        ...
    </session-fields>

    <file-fields>
        <field key='...'>...</field>
        ...
    </file-fields>

    <entry-fields>
        <field key='...'>...</field>
        ...
    </entry-fields>

</frogans-fsdl-request>
```

FSDL-Request documents are sent in order to fetch an FSDL document or an auxiliary file only if the "nature" attribute of the corresponding <file> element equals 'dynamic'.

If an FSDL-Request document is to be sent to the server hosting the Frogans site, then Frogans Player uses the UCSR fetch mode "invoke" to send the FSDL-Request document (corresponding to the HTTP POST method when using the UCSR networks 'IP_DNS_TCP_HTTP' or 'IP_DNS_TCP_TLS_HTTP').

If no FSDL-Request document is to be sent to the server hosting the Frogans site, then Frogans Player uses the UCSR fetch mode "retrieve" (corresponding to the HTTP GET method when using the UCSR networks 'IP_DNS_TCP_HTTP' or 'IP_DNS_TCP_TLS_HTTP').

Five situations can trigger Frogans Player to generate an FSDL-Request document and send it to the server. The content of the FSDL-Request document changes accordingly.

1) The end user clicks on a button leading to a Frogans slide of the Frogans site

- Conditions for generating the FSDL-Request document:
  - The value of the "goto" attribute of the <button> element in the FSDL document corresponding to the button clicked equals 'slide'
  - The <button> element refers to a <file> element where the "nature" attribute equals 'dynamic'.
- <request> element - An FSDL document is wanted:

```
<request wanted='fsdl-document' navigation='button'/>
```

- <session-fields> element:
  - If the FSDL document includes a <session> element, then there is a <field> element for each <data> child element of the <setdata> element referred to by the <session> element:

```
<session-fields>
   <field key='...'>...</field>
   ...
</session-fields>
```

    - Otherwise:

```
<session-fields/>
```

- <file-fields> element:
  - If the <file> element referred to by the <button> element refers to a <setdata> element, then there is a <field> element for each <data> child element of the <setdata> element:

```
<file-fields>
   <field key='...'>...</field>
   ...
</file-fields>
```

  - Otherwise:

```
<file-fields/>
```

- <entry-fields> element:
  - If the <button> element refers to a <setentry> element, then there is a <field> element for each <entry> child element of the <setentry> element:

```
<entry-fields>
   <field key='...'> //user input// </field>
   ...
</entry-fields>
```

  - Otherwise:

```
<entry-fields/>
```

2) The end user takes no action before the next Frogans slide begins to load

- Conditions for generating the FSDL-Request document:
  - The end user does not click on a button on the Frogans slide, reload the Frogans slide, or close the Frogans site before the next Frogans slide begins to load (after the number of seconds defined by the "delay" attribute of the <next> element in the FSDL document), and
  - The <next> element in the FSDL document refers to a <file> element where the "nature" attribute equals 'dynamic'.
- <request> element - An FSDL document is wanted:

```
<request wanted='fsdl-document' navigation='next'/>
```

- <session-fields> element:
  - If the FSDL document includes a <session> element, then there is a <field> element for each <data> child element of the <setdata> element referred to by the <session> element:

```
<session-fields>
   <field key='...'>...</field>
   ...
</session-fields>
```

  - Otherwise:

```
<session-fields/>
```

- <file-fields> element:
  - If the <file> element referred to by the <next> element refers to a <setdata> element, then there is a <field> element for each <data> child element of the <setdata> element:

```
<file-fields>
   <field key='...'>...</field>
   ...
</file-fields>
```

  - Otherwise:

```
<file-fields/>
```

- <entry-fields> element:

```
<entry-fields/>
```

3) The FSDL document corresponds to a Frogans redirection slide

- Condition for generating the FSDL-Request document:
  - The <redirect> element included in the FSDL document refers to a <file> element where the "nature" attribute equals 'dynamic'.
- <request> element - An FSDL document is wanted:

```
<request wanted='fsdl-document' navigation='redirect'/>
```

- <session-fields> element:
  - If the FSDL document includes a <session> element, then there is a <field> element for each <data> child element of the <setdata> element referred to by the <session> element:

```
<session-fields>
   <field key='...'>...</field>
   ...
</session-fields>
```

  - Otherwise:

```
<session-fields/>
```

- <file-fields> element:
  - If the <file> element referred to by the <redirect> element refers to a <setdata> element, then there is a <field> element for each <data> child element of the <setdata> element:

```
<file-fields>
   <field key='...'>...</field>
   ...
</file-fields>
```

  - Otherwise:

```
<file-fields/>
```

- <entry-fields> element:

```
<entry-fields/>
```

4) An image file is required to render the Frogans slide

- Condition for generating the FSDL-Request document:
  - The <resimage> element refers to a <file> element where the "nature" attribute equals 'dynamic.
- <request> element - An auxiliary file is wanted:

```
<request wanted='auxiliary-file' kind='image'/>
```

- <session-fields> element:
  - If the FSDL document includes a <session> element, then there is a <field> element for each <data> child element of the <setdata> element referred to by the <session> element:

```
<session-fields>
   <field key='...'>...</field>
   ...
</session-fields>
```

  - Otherwise:

```
<session-fields/>
```

- <file-fields> element:
  - If the <file> element referred to by the <resimage> element refers to a <setdata> element, then there is a <field> element for each <data> child element of the <setdata> element:

```
<file-fields>
   <field key='...'>...</field>
   ...
</file-fields>
```

  - Otherwise:

```
<file-fields/>
```

- <entry-fields> element:

```
<entry-fields/>
```

5) The end user opens a Frogans site

- Conditions for generating the FSDL-Request document:
  - The request is the first request made after the resolution of the Frogans address, and only if one the two following cases apply:
    - the Frogans address is of a Frogans network with individual sessions AND the Frogans address is listed in the end user's Favorites AND there is a session remembered for that Frogans address
    - the Frogans address is of a Frogans network with collective sessions AND at least one Frogans address of that Frogans network is listed in the end user's Favorites AND there is a session remembered for that Frogans network (i.e. for all Frogans addresses of that Frogans network)
- <request> element - An FSDL document is wanted:

```
<request wanted='fsdl-document' navigation='open'/>
```

- <session-fields> element:
  - There is a <field> element for each <data> child element of the <setdata> element referred to by the last <session> element that was saved for the Frogans site, or for another Frogans site in the same Frogans network:

```
<session-fields>
   <field key='...'>...</field>
   ...
</session-fields>
```

- <file-fields> element:

```
<file-fields/>
```

- <entry-fields> element:

```
<entry-fields/>
```

Appendix 1: "scripts" attribute of the <font> element

The following case-sensitive script names can be used to compose the value of the "scripts" attribute of the <font> element. They are listed in the order defined for Unicode scripts in the Unicode standard.

default *(to be used alone)*
Common
Latin
Greek
Cyrillic
Cyrillic:Macedonian
Cyrillic:Serbian
Armenian
Hebrew
Arabic
Arabic:Kurdish
Arabic:Sindhi
Arabic:Urdu
Syriac
Thaana
Devanagari
Bengali
Gurmukhi
Gujarati
Oriya
Tamil
Telugu
Kannada
Malayalam
Thai
Lao

Tibetan
Myanmar
Georgian
Hangul
Ethiopic
Cherokee
Canadian_Aboriginal
Ogham
Runic
Khmer
Mongolian
Hiragana
Katakana
Bopomofo
Han:Chinese_Simplified
Han:Chinese_Traditional
Han:Japanese
Han:Korean
Yi
Buhid
Limbu
Braille
Buginese
Coptic
Tifinagh
Phags_Pa
Nko

Appendix 2: "pfont" attribute of the <font> element

"pfont" attribute value	Corresponding font name
101-1-serif-r	Abyssinica SIL, Regular
102-1-serif-r	Amiri Quran, Regular
102-2-serif-b	Amiri, Bold
102-3-serif-bi	Amiri, Bold Slanted
102-4-serif-r	Amiri, Regular
102-5-serif-i	Amiri, Slanted
103-1-sans-r	AnjaliOldLipi, Regular
104-1-serif-b	Annapurna SIL, Bold
104-2-serif-r	Annapurna SIL, Regular
105-1-serif-r	AR PL Ukai CN, Regular
105-2-serif-r	AR PL Ukai HK, Regular
105-3-serif-r	AR PL Ukai TW MBE, Regular
105-4-serif-r	AR PL Ukai TW, Regular
106-1-serif-r	Caslon, Roman
107-1-serif-r	Caudex, Regular
108-1-sans-r	Comic Relief, Regular
109-1-mono-r	Consola Mono, Book
109-2-mono-b	Consola Mono, Bold
110-1-mono-r	Courier Prime, Regular
110-2-mono-b	Courier Prime, Bold
111-1-sans-r	Cousine, Regular
111-2-sans-b	Cousine, Bold
112-1-mono-r	DejaVu Sans Mono, Book
112-2-sans-r	DejaVu Sans, Book
112-3-sans-r	DejaVu Sans, Condensed
112-4-sans-r	DejaVu Sans, ExtraLight
112-5-serif-b	DejaVu Serif, Bold
112-6-serif-bi	DejaVu Serif, Bold Italic
112-7-serif-i	DejaVu Serif, Italic
112-8-serif-r	DejaVu Serif, Book

"pfont" attribute value	Corresponding font name
112-9-serif-r	DejaVu Serif, Condensed
112-10-serif-b	DejaVu Serif, Condensed Bold
112-11-serif-bi	DejaVu Serif, Condensed Bold Italic
112-12-serif-i	DejaVu Serif, Condensed Italic
112-13-mono-b	DejaVu Sans Mono, Bold
112-14-sans-b	DejaVu Sans, Bold
113-1-serif-i	EB Garamond, 08 Italic
113-2-serif-r	EB Garamond, 08 Regular
114-1-sans-r	Ekushey Lohit, Normal
115-1-serif-r	Ethiopic Fantuwua, Regular
116-1-serif-r	Ethiopic Wookianos, Regular
117-1-serif-r	Ethiopic Yigezu Bisrat Gothic, Regular
118-1-serif-r	HanaMinA, Regular
119-1-serif-r	Jomolhari, Regular
120-1-serif-r	Kalpurush, Regular
121-1-sans-r	Lohit Devanagari, Regular
121-2-sans-r	Lohit Marathi, Regular
122-1-sans-b	Noto Kufi Arabic, Bold
122-2-sans-r	Noto Kufi Arabic, Regular
122-3-sans-b	Noto Naskh Arabic, Bold
122-4-sans-r	Noto Naskh Arabic, Regular
122-5-serif-r	Noto Nastaliq Urdu Draft, Regular
122-6-sans-r	Noto Sans CJK JP, Regular
122-7-sans-r	Noto Sans CJK KR, Regular
122-8-sans-r	Noto Sans CJK SC, Regular
122-9-sans-r	Noto Sans CJK TC, Regular
122-10-sans-r	Noto Sans Hebrew, Regular
122-11-sans-b	Noto Sans Kannada, Bold
122-12-sans-r	Noto Sans Kannada, Regular
122-13-sans-b	Noto Sans Malayalam, Bold
122-14-sans-r	Noto Sans Malayalam, Regular
122-15-sans-b	Noto Sans Myanmar, Bold
122-16-sans-r	Noto Sans Myanmar, Regular

"pfont" attribute value	Corresponding font name
122-17-sans-b	Noto Sans Oriya, Bold
122-18-sans-r	Noto Sans Oriya, Regular
122-19-sans-b	Noto Sans Tamil UI, Bold
122-20-sans-r	Noto Sans Tamil UI, Regular
122-21-sans-b	Noto Sans Telugu, Bold
122-22-sans-r	Noto Sans Telugu, Regular
122-23-sans-b	Noto Sans Thai, Bold
122-24-sans-r	Noto Sans Thai, Regular
122-25-sans-b	Noto Sans, Bold [Khmer]
122-26-sans-r	Noto Sans, Regular [Khmer]
122-27-serif-b	Noto Serif Thai, Bold
122-28-serif-r	Noto Serif Thai, Regular
122-29-sans-b	Noto Sans CJK JP, Bold
122-30-sans-b	Noto Sans CJK KR, Bold
122-31-sans-b	Noto Sans CJK SC, Bold
122-32-sans-b	Noto Sans CJK TC, Bold
122-33-sans-b	Noto Sans Hebrew, Bold
123-1-sans-b	Padauk, Bold
123-2-sans-r	Padauk, Regular
124-1-sans-r	Rupali, Regular
125-1-serif-b	SeoulHangang, B
125-2-serif-r	SeoulHangang, M
126-1-serif-r	SolaimanLipi, Normal
127-1-sans-r	TharLon, Regular
128-1-serif-b	Tinos, Bold
128-2-serif-bi	Tinos, Bold Italic
128-3-serif-i	Tinos, Italic
128-4-serif-r	Tinos, Regular

Appendix 3: Upgrading a Frogans site created using Frogans Player for Developers (alpha) version 1.3.1

This appendix briefly describes how to upgrade an existing Frogans site in order to take into account the enhancements made in the Frogans Slide Description Language 3.0 and implemented in Frogans Player for Developers (alpha) as of version 1.4.1.

Reasons for the enhancements to FSDL 3.0

Enhancements have been made to FSDL 3.0 in order to include :

- rules that were previously under discussion to protect end-user interests (see Rules for protecting the interests of end users; these rules included rules referred to as "Frogans slide rendering constraints")
- suggestions from developers concerning elements and attributes

For a detailed list of enhancements, see the change log of Frogans Player for Developers (alpha) version 1.4.1.

Adapting a Frogans site

Following the enhancements made to FSDL 3.0, publishers of Frogans sites need to adapt the Frogans sites they created using Frogans Player for Developers Alpha 1.3.1 version, as follows.

For each FSDL document of a given Frogans site:

1. If the FSDL document includes a <button> element where the value of the "visible" attribute equals 'nofocus', then change the value of the "visible" attribute to 'not-selected'
2. If the FSDL document includes a <button> element where the value of the "visible" attribute equals 'focus', then change the value of the "visible" attribute to 'selected'
3. If an FSDL document includes a <shadow> element with a "combine" attribute, then delete the "combine" attribute (a shadow now inherits the combine mode of the part of the merge resource or the layer that refers to it).
4. Navigate to the Frogans slide corresponding to the FSDL document and check whether Frogans Player reports any errors related to rules for protecting the interests of end users, such as a memory usage rule or an on-screen usability rule. Adapt the FSDL document as required.
5. To make it easier for developers to ensure the on-screen alignment of the lead and the vignette representations when the end user resizes the Frogans slide, Frogans Player now positions both the resize point of the lead representation and the resize point of the vignette representation at

the same location on the screen when Frogans Player switches between these representations (leapout effect). If this enhancement affects the on-screen alignment when the end user resizes the Frogans slide, then adapt the layout of the lead representation and/or the layout of the vignette representation as necessary.

6. To make it easier for developers to ensure the on-screen alignment of Frogans slides when the end user navigates from one Frogans slide to another (in a given Frogans site), Frogans Player no longer crops the lead and vignette representations. If this enhancement affects the on-screen alignment during transitions between Frogans slides, then adapt the layout of the Frogans slides as necessary.