★★☆

Basic / Advanced / Expert

Application note

Advanced techniques in visualization

CSS, SVG and screen resolution support in spaceLYnk



Schneider Electric

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1 Introduction

This application note describes:

- CSS *(Cascading Style Sheets)* which allows you to modify spaceLYnk visualization to give the integrator easy control of customization of GUI *(Graphical user interface)*
- SVG *(Scalable Vector Graphics)* minimizing memory requirements and ensure forward compatibility as well as independency of icon quality in different resolutions.

The application note also contains information about available graphic resolutions to ensure spaceLYnk compatibility with a wide range of visualization devices.

Customer value proposition

The customer value propositions correspond to real use cases to modify spaceLYnk visualization via CSS, import SVG icons and select suitable resolution for visualization. In this context here are some possible use cases which can be implemented with this application note:

- How to modify CSS
- How to select element located on Visualization
- How to edit CSS selector via changes of declaration
- How to import SVG icons into spaceLYnk
- How to select suitable resolution for visualization

Competencies

There are several necessary competencies to follow procedures mentioned in this application note. It is mandatory to have knowledge of basic spaceLYnk configuration described in the User guide and knowledge of web and graphic technologies CSS, SVG. Further information about CSS is available on W3C website *(*http://www.w3.org*)*

System prerequisites

Software	Version	Download
spaceLYnk	2.1 and newer	http://www.schneider-electric.com

Table 1: software versions of used software

2 CSS – Cascading Style Sheets

CSS is a language which makes up the presentation of web pages, including colors, layouts and fonts. CSS is independent of HTML *(HyperText Markup Language).* This separation of HTML from CSS makes it easier to maintain spaceLYnk visualization and share style sheets across pages.

The spaceLYnk has an integrated CSS editor which is designed to work-out the final design of visualization.

2.1 Basic CSS syntax description

CSS rule consists of two parts: selector and declarations

```
selector{property:value; property:value;}
e.g. h1{color:green; font-size:18px;}
```

Selector is an HTML element, in this case header level 1 (in this example `h1`)
Declaration (in this example `color:green; font-size:18px;`) modifies origin look of HTML element via changes of values in brackets. Every graphic element which is located on visualization web page is described by CSS in terms of placement and look.

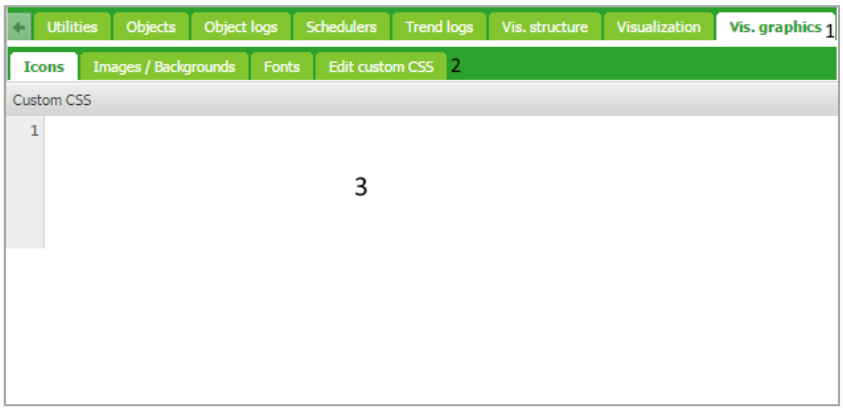
2.2 How to modify CSS

CSS editor is integrated in the spaceLYnk :

1) Open web browser and log on to spaceLYnk controller
2) Edit custom CSS *Configurator ›› Vis. Graphic ›› Edit custom CSS*

On the spaceLYnk Configurator page:

- Left click Vis. graphic [1]
- Left click Edit custom CSS [2]
- Edit CSS [3]



Picture 1: Edit custom CSS

The spaceLYnk supports only one style sheet linked to the visualization. This style sheet modifies behavior of whole visualization.

Beside using of the custom CSS, the visualization can be upon of that affected by inline CSS, which is generated via Visualization during creation of visualization.

The inline CSS can cause problem because it has higher priority than custom CSS. This priority can be forced by `!important` property.

For example: If the integrator creates a custom CSS for his complete project and after that needs to modify newly implemented icons, he needs to add command `!important` to each of them so that the new icon shares the custom CSS format of the project. See picture 9.

Modification of visualization can be performed according to the following steps:

1. Select elements to be modified via CSS
2. Edit CSS via modification of selector

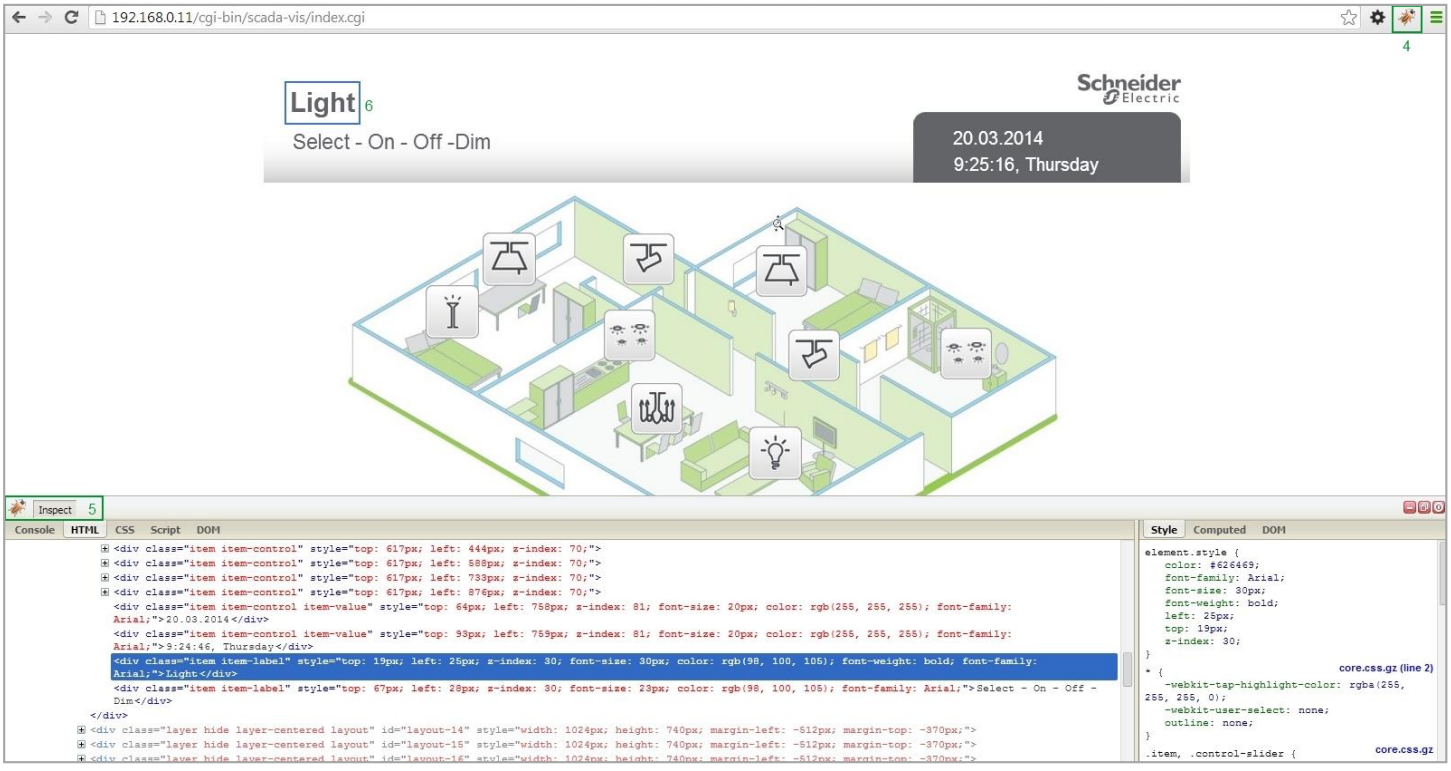
2.2.1 Select elements to be modified via CSS

This step can be performed with specific web design tools like Firebug or Web Developer which can installed like browser extensions. These web design tools are available for the Mozilla Firefox and Google Chrome browsers.

In this use case we focus on the question “How to change font and color of heading?”.

Steps for selecting element on webpage in the Firebug

- Open visualization and activate firebug plugin [4]
- Left click Inspect button [5]
- Select element [6]



Picture 2: Visualization analysis in Firebug

Note: Control icons of Firebug can be available from other menu. It depends on user settings of specific web browser.

Steps for selecting element on webpage in the Web Developer

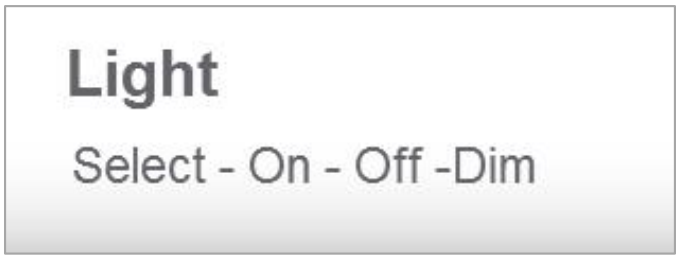
- Open visualization and activate Web developer plugin [7]
- Activate Display Div Order [8]



Picture 3: Visualization analysis in Web developer

HTML element for heading which is described by inline CSS according tools for visualization analysis.

```
<div class="item item-label" style="top: 19px; left: 25px; z-index: 30; font-size: 30px; color: rgb(98, 100, 105); font-weight: bold; font-family: Arial;">Light</div>
```



Picture 4: Default settings of heading font

2.2.2 Edit CSS via modification of selector

Configurator ›› Vis. graphics ›› Edit custom CSS

- Left click Vis. graphic [9]
- Left click Edit custom CSS [10]



Picture 5: Edit custom CSS

Add following line into custom CSS:

```
div.item.item-label{font-family: Calibri !important; color:#009530 !important;}
```



Picture 6: Modified headings via custom CSS

Origin grey colored font Arial changed to font Calibri and green color. This rule is applied over whole visualization and saves the time of bespoke modification.

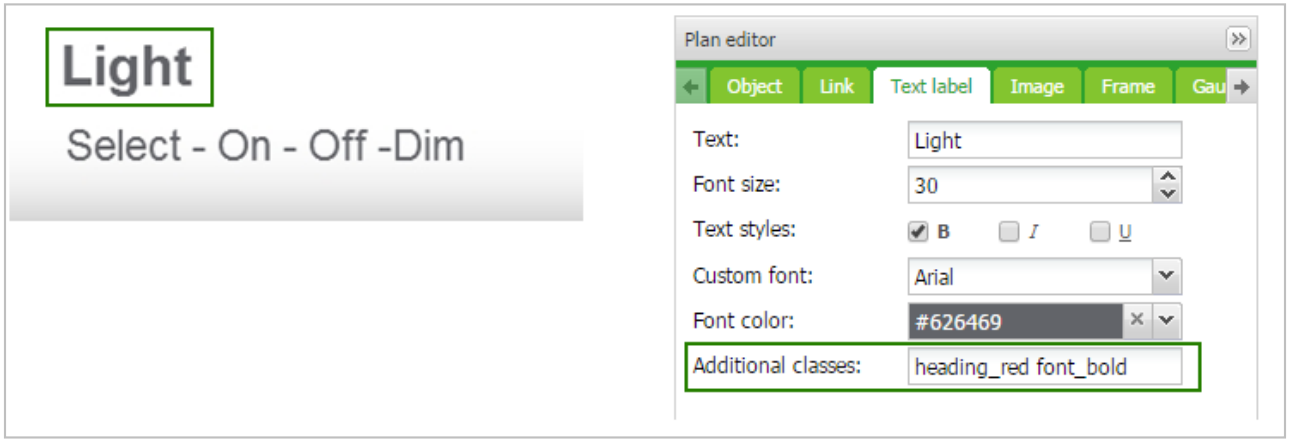
In case of modification of some part of the SVG icon (color, fill etc.) it is highly recommended to modify it in professional graphic software before upload to spaceLYnk.

Note: The welcome page does not have external CSS file and cannot be modified via custom CSS.

2.2.3 User created additional classes

User can add additional classes to any element in the visualization. This feature is implemented from spaceLYnk firmware version 1.1.0 and allows you to differentiate elements so you are able to write a unique CSS rule for specified elements only.

Adding new classes are done by filling **Additional classes input** in **Plan editor** when element is selected.



Picture 7: Filling Additional classes input

```
<div class="item heading_red font_bold item-label" style="top: 19px; left:
25px; z-index: 80; font-size: 30px; color: rgb(98, 100, 105); font-weight:
bold; font-family: Arial;">Light</div>
</div>
```

Picture 8: Modified class in html code

Header modified by **Additional classes** is now accessible via 2 new classes .**heading_red** and .**font_bold.** How to edit CSS via modification of selector is described in chapter 2.2.2. Following code change color of heading to red and font to bold.

```
Custom CSS
1 .heading_red {
2   color:red !important;
3 }
4 .font_bold {
5   font-weight:bold !important;
6 }
```

Picture 9: Custom css for additional classes



Picture 10: Modified heading via custom CSS

2.2.4 Possible modification of objects via CSS

There are some standard elements used on visualization webpage which can be modified via custom CSS.

labels	font	Sets all the font properties in one declaration
	font-family	Specifies the font family for text
	font-size	Specifies the font size of text
	font-style	Specifies the font style for text
	font-variant	Specifies whether or not a text should be displayed in a small-caps font
	font-weight	Specifies the weight of a font
icons	opacity	Specifies the transparency of a icon
	border	Specifies the border of icon
	height	Sets the height of an element
	width	Sets the width of an element

Table 2: Possible element modification via properties

Note: Table 2 does not contain all properties, because they are not applicable to spaceLYnk visualization.

Complete properties are available on W3C website *(*http://www.w3.org*).*

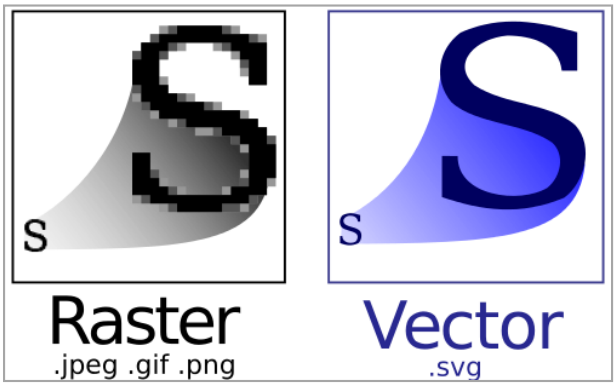
3 SVG icons

SVG (Scalable Vector Graphics) is a kind of two dimension graphic format, which is based on vectors instead of pixels and has huge potential for high resolution plans because the file size is independent of the scale of the icon and thus significantly improves quality of GUI.

SVG format is supported from firmware v1.0

3.1 Comparison of vector and raster graphics

PNG format of the icons included in the spaceLYnk by default is not suitable for high resolutions of plans due to reduced quality when the icon is scaled up. On the other hand, SVG format has no limitation when used in higher floor plan resolution.



Picture 11: Comparison of vector and raster graphics

3.2 Import SVG icons into spaceLYnk

Import of SVG icons can be performed here:

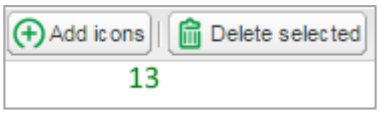
Configurator ›› Vis. graphics ›› Icons

- Left click Vis. graphics [11]
- Left click Icons [12]



Picture 12: Add icons

- Left click Add icons [13]



Picture 13: Add icons button

1) Import icons

Import SVG icons can be done by using **Add icons button** and choosing SVG icons located on hard drive.



Picture 14: Import icon

Note: **If there is no need to use the PNG icons, they can be deleted. Select icons which you want delete and activate *Delete selected*.**

4 Resolutions

spaceLYnk provides visualization for wide range of display devices. Appropriate resolution complying with native resolution and aspect ratio of used display devices is the key to reach best results in visualization.

Each class of resolution was tested in "*center plans, enabled auto-sizing*" mode.

You can see the behavior different resolutions in next chapters which are focused on the testing of different resolutions.

Resolution	Description	Usage
640x480	VGA	Just for needs of this AN
1024x768	XGA resolution	PC workstations, Touch screens
1920x1080	FullHD display	PC workstations
2048x1536	Apple iPad retina	Tablets

Table 3: Resolution used in spaceLYnk

4.1 Full HD display

Full HD display with 1920x1080 resolution was used as a display device.

Resolution	File	Impression
640x480		Plan is too small for this display, use higher resolution
1024x768		Plan is covering approximately 75% of display height, use higher resolution
1920x1080		This resolution is made for this display, looks perfect
2048x1536		iPad resolution was correctly adapted, but due to different ratio there are white borders from sides

Table 4: Display 1920x1080

4.2 iPad

iPad 4th generation has default resolution 2048x1536 on display called *Retina* .

Resolution	File	Impression
640x480		Plan is too small for this display, it is zoomed out, use higher resolution to improve the look
1024x768		This resolution is good enough for iPad 4gen
1920x1080		FullHD resolution was correctly adapted to resolution of iPad, but due to different ratio there are white borders from above and bellow
2048x1536		2048x1536 is made for this display, looks perfect

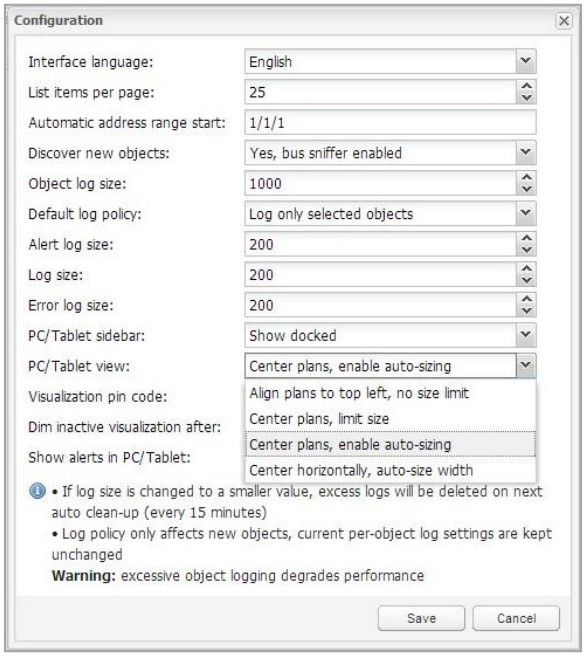
Table 5 iPad

4.3 PC/Tablet view parameter

PC/Tablet settings have an impact on display of plans in visualization. The influence of these parameters is described in following subchapters.

Parameter can be set here:

Configurator ›› Configuration



Picture 15: PC/Tablet view settings

1) Align plans to top left, no size limit

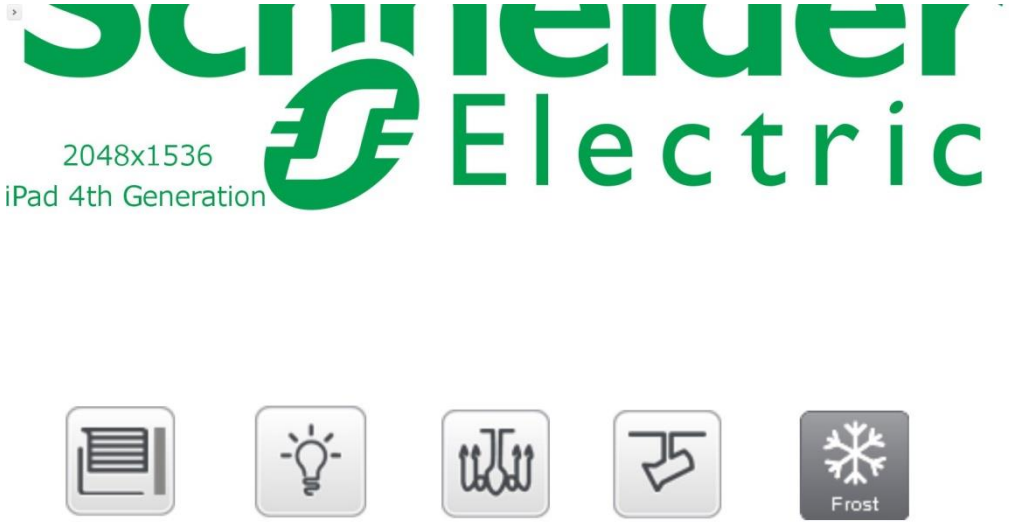


Picture 16: Align plans to top left, no size limit

Description:

If visualization is larger than resolution of display, plan is cut from bottom and right side. If visualization is smaller than resolution of display, plan is aligned to top left.

2) Center plans, limit size



Picture 17: Center plans, limited size

Description:

If visualization is larger than resolution of display, plan is cut from all sides. If visualization is smaller, than resolution of display, plan is centered.

1) **Center plans, auto sizing**

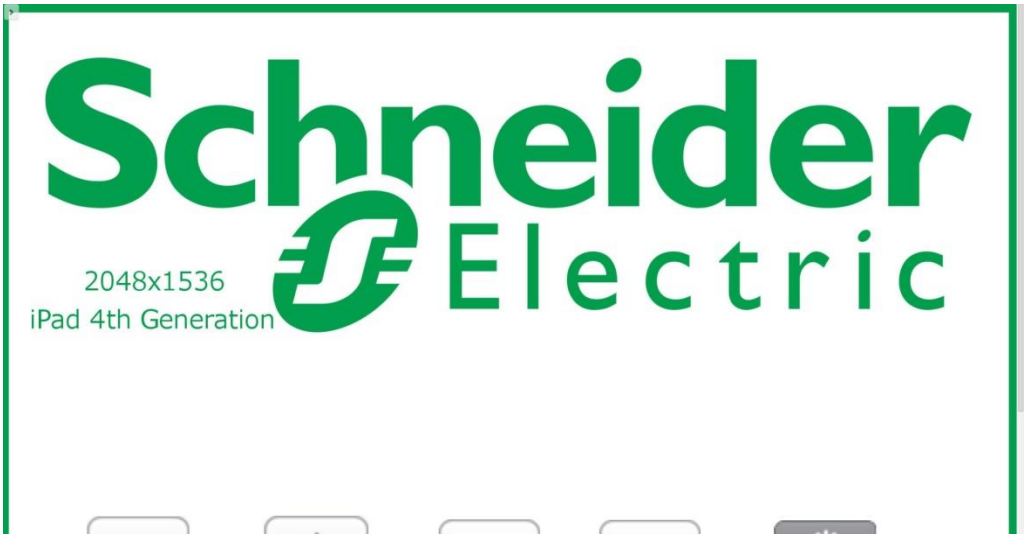


Picture 18: Center plans, auto sizing

Description:

If visualization is larger than resolution of display, plan is auto sized. If visualization is smaller than resolution of display, plan is centered.

2) **Center horizontally, auto-size width**



Picture 19: Center horizontally, auto-size width

Description:

If visualization is larger than resolution of display, plan is cut from bottom. If visualization is smaller than resolution of display, plan is centered.

5 Conclusion

Using Custom CSS is helpful for mass changes in visualization or to create styles based on customer conventions.

SVG graphics are very useful for visualization in high resolution. Using SVG graphics does not have a negative effect on spaceLYnk performance.

Regarding *PC/Tablet view* parameter it is advised to use the **same resolution as on display of the device or higher**. If resolution of display device will be higher and PC/tablet view parameter will be set as **Center plans, auto size**, plan will be optimalized for comfort view.

6 Appendix

6.1 Glossary

The following table describes the acronyms and defines the specific terms used in this document.

Abbreviation	Description
CSS	Cascading Style Sheets
HTML	HyperText Markup Language
SVG	Scalable Vector Graphics
JPG	Loosy image format
GIF	Lossless bitmap image format
PNG	Lossless bitmap image format
VGA	Video Graphics Array
XGA	Extended Graphics Array
W3C	The World Wide Web Consortium

Table 6: specific terms

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