Abstract

This document gives a number of concrete guidelines for visualizations, such as block diagrams, flow diagrams, graphs, decompositions, et cetera.
Texts should be readable, in PowerPoint minimum font size 14 pt
(or if you print a slide on A4, put the paper on the floor,
then you should be able to read the text)

Text and background should have sufficient contrast
(black letters on red background tend to be unreadable)
Boxes (ellipses, rectangles, triangles, et cetera) should have the same size, unless the size has a clear meaning; don't size the box to the text, since readers might interpret size in a way that you did not intend.

use the layout (left-right, up-down, close-remote) to support the message of the diagram; e.g. flow from left to right or from top to bottom.

design the layout such that there are few crossing lines; this is often kind of puzzle.
Use colors, but limited.

Try to use additional visual support to keep the diagram usable when printed black and white or for color-blind people. Alternate means to add meaning are shape (e.g. rectangles with rounded corners), line thickness, dotted lines, alternate end points or connectors.

In this example the color scale is used functionally; the color indicates the "degree of virtuality".

For readability the Gaudi site uses light background colors and darker colors for text and lines.
Limit the amount of information in one diagram.

Two or three types of information can be combined in one diagram. For example a block diagram that also shows effort, risk or complexity as size of the boxes. Or a flow diagram with annotations where the functions are allocated.
## Generic and Specific

<table>
<thead>
<tr>
<th>Integrating multiple applications</th>
<th>In multiple languages</th>
<th>Delivered by multiple vendors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical analysis</td>
<td>Cultural</td>
<td>Philips, GE, Siemens</td>
</tr>
<tr>
<td>Clinical support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workflow</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Based on multiple media, networks</th>
<th>And multiple standards</th>
<th>And multiple releases</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVD+RW, memory stick, memory cards</td>
<td>Dicom, HL7, XML</td>
<td>R5, R6.2, R7.1</td>
</tr>
<tr>
<td>Bluetooth, 11a/b/g, UTMS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Annotate generic diagrams with specific examples:**

A generic diagram often captures some valuable insight, however, the examples help readers in understanding the diagram.

**Use font size and type to visually differentiate main generic message and supportive specific examples**

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..~1985
autonomous subsystems:

<table>
<thead>
<tr>
<th>Geo</th>
<th>Acquisition</th>
<th>Imaging</th>
<th>X-ray generation</th>
</tr>
</thead>
</table>

sales: preferred configurations; arbitrary configurations are more expensive

system integration (SI) in R&D
SW in all subsystems
SI is electro mechanical and configuration parameters

innovation elapsed time several years (f.i., 2 years for digital imaging chain)

Guidelines for Visualization

7 Gerrit Muller

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March 6, 2013
VGattractiveness

in some cases 2D/3D drawings or photos help to make a diagram more
accessible (less abstract). However, it also "clutters" the diagram. So use these
"real" objects sparsely

Use animations sparsely. Animations can be very powerful to visualize
processes or flows. However, animations cannot be printed. Avoid animations that only
make the presentation more sexy.
Good visualization bring and clarify a message. What is the take away of this visualization for your audience?
architects move from:
- product to product
- environment to environment

architects experience:
- thousands of patterns
- design patterns in systems
- process patterns in environments
- human patterns in environments

Add a legend for shapes, lines, or colors when the meaning is essential for the figure.
Separate information, prevent overload

Don't overload diagrams; if you have tens of boxes then consider simplification or divide in multiple slides plus one overview slide.

Consider to add one overview slide when dividing over multiple slides.
Texts should be readable: use sufficient font size.

Text and background should have sufficient contrast.

Shapes, such as boxes, should have the same size.

Use the layout (left-right, up-down, close-remote) to support the message of the diagram.

Design the layout such that there are few crossing lines.

Use colors, but limited.

Design the diagram such that it still works when printed in black and white.

Limit the amount of information in one diagram.

Two or three types of information can be combined in one diagram.

Annotate generic diagrams with specific examples; use font size and type to visually differentiate generic from specific.

Use 2D/3D drawings or photos limited.

Ensure that the message of the visualization is clear.

Add legend to explain shapes, colors, line types, axes, etc.