

# DIN EN ISO 9241-125:2018-05 (E)

## Ergonomics of human-system interaction - Part 125: Guidance on visual presentation of information (ISO 9241-125:2017)

---

| Contents   | Page |
|--|------|
| European foreword .....  | 7    |
| Foreword .....   | 8    |
| Introduction .....   | 9    |
| 1 Scope .....  | 10   |
| 2 Normative references .....   | 10   |
| 3 Terms and definitions .....  | 10   |
| 4 Application of ISO 9241-125 .....                                      | 16   |
| 4.1 Accessibility .....  | 16   |
| 4.2 General guidance for presentation of information .....               | 16   |
| 4.3 Guidance on the presentation of visual information .....             | 17   |
| 4.4 General issues for the display of visual information .....           | 17   |
| 4.4.1 Legibility of characters and symbols .....                         | 17   |
| 4.4.2 Character height .....   | 17   |
| 4.4.3 Scaling visually presented information .....                       | 18   |
| 5 Visual structuring of information .....                                | 18   |
| 5.1 Arranging and labelling information .....                            | 18   |
| 5.1.1 Information location .....   | 18   |
| 5.1.2 Required information .....   | 18   |
| 5.1.3 Consistent location of areas .....                                 | 18   |
| 5.1.4 Density of displayed information .....                             | 18   |
| 5.1.5 Distinction of groups .....  | 19   |
| 5.1.6 Sequencing .....   | 21   |
| 5.1.7 Use of conventions .....   | 21   |
| 5.1.8 Functional grouping .....  | 21   |
| 5.1.9 Arrangement of groups for rapid detection and discrimination ..... | 21   |
| 5.1.10 Consistency with paper forms .....                                | 21   |
| 5.1.11 Labelling user interface elements .....                           | 21   |
| 5.1.12 Label designation .....   | 21   |
| 5.1.13 Grammatical construction of labels .....                          | 21   |
| 5.1.14 Label position .....  | 22   |
| 5.1.15 Label position for individual check boxes or radio buttons .....  | 22   |
| 5.1.16 Separation of labels and associated information .....             | 22   |
| 5.1.17 Label format and alignment .....                                  | 22   |
| 5.1.18 Labels for units of measurement .....                             | 22   |
| 5.1.19 Differentiating objects of identical type .....                   | 22   |
| 5.2 Using windows to present information .....                           | 23   |
| 5.2.1 Appropriateness of windows .....                                   | 23   |
| 5.2.2 Multiple windows .....   | 23   |
| 5.2.3 Selection of window format .....                                   | 24   |
| 6 Using user interface elements to organize information .....            | 24   |
| 6.1 Lists .....  | 24   |
| 6.1.1 List structure .....   | 24   |
| 6.1.2 Item separation .....  | 24   |

|        |   |    |
|--------|---|----|
| 6.1.3  | Alphabetic information .....  | 25 |
| 6.1.4  | Numeric information .....   | 25 |
| 6.1.5  | Fixed font size .....   | 25 |
| 6.1.6  | Item numbering .....  | 25 |
| 6.1.7  | Indication of relative position of displayed information .....            | 26 |
| 6.1.8  | Indication of list continuation .....                                     | 26 |
| 6.2    | Tables .....  | 26 |
| 6.2.1  | List organization in tables .....   | 26 |
| 6.2.2  | Maintaining column and row headings .....                                 | 27 |
| 6.2.3  | Spacing as a visual technique for grouping information .....              | 27 |
| 6.2.4  | Column spacing .....  | 27 |
| 6.3    | Entry fields .....  | 27 |
| 6.3.1  | Entry field format .....  | 27 |
| 6.3.2  | Entry field length .....  | 28 |
| 6.4    | Windows .....   | 28 |
| 6.4.1  | Unique window identification .....  | 28 |
| 6.4.2  | Application information .....   | 28 |
| 6.4.3  | Default window parameters .....   | 28 |
| 6.4.4  | Consistent window appearance within an application .....                  | 28 |
| 6.4.5  | Consistent window appearance within a multi-application environment ..... | 28 |
| 6.4.6  | Indication of primary/secondary window relationships .....                | 28 |
| 6.4.7  | Identification of window control elements .....                           | 29 |
| 6.4.8  | Location of window control elements .....                                 | 29 |
| 6.4.9  | Size and location across sessions .....                                   | 29 |
| 6.4.10 | Duplicate or split windows .....  | 29 |
| 6.4.11 | Resizing windows .....  | 29 |
| 6.4.12 | Resizing window panes .....   | 29 |
| 6.4.13 | Predictable new window location .....                                     | 29 |
| 6.4.14 | New windows offset .....  | 29 |
| 6.4.15 | New window on top .....   | 29 |
| 6.4.16 | Placement and size of new window .....                                    | 29 |
| 6.4.17 | Placement of secondary windows .....                                      | 30 |
| 6.4.18 | Warning for application termination .....                                 | 30 |
| 6.4.19 | Restoring hidden windows .....  | 30 |
| 6.4.20 | Identification cues for iconified window .....                            | 30 |
| 6.4.21 | Predictable position of an icon representing a window .....               | 30 |
| 6.4.22 | Visual cue in icon for important events .....                             | 30 |
| 6.4.23 | Discriminable cue for application status .....                            | 30 |
| 6.4.24 | Discriminable cue for restored windows .....                              | 31 |
| 6.4.25 | Identification cues for restored window .....                             | 31 |
| 6.4.26 | Input cursor location .....   | 31 |
| 6.4.27 | Visual cues for window with focus .....                                   | 31 |
| 6.4.28 | Manipulation of the size of windows .....                                 | 31 |
| 6.4.29 | Feedback provided during resize .....                                     | 31 |
| 6.4.30 | Original size indicator during resize .....                               | 31 |
| 6.4.31 | Independence of resize dimensions .....                                   | 32 |
| 6.4.32 | Scaling .....   | 32 |
| 6.4.33 | Sizing effects on window contents .....                                   | 32 |
| 6.4.34 | Scrolling and paging .....  | 32 |
| 6.4.35 | Moving window contents in multiple units .....                            | 32 |
| 6.4.36 | Provide scrolling by smallest meaningful unit .....                       | 32 |
| 6.4.37 | Provide scrolling by large units .....                                    | 33 |
| 6.4.38 | Consistent direction of scrolling .....                                   | 33 |
| 6.4.39 | Visual cue for group membership .....                                     | 33 |
| 7      | Graphical objects .....   | 33 |
| 7.1    | Cursors and pointers .....  | 33 |
| 7.1.1  | Designation of cursor and pointer position .....                          | 33 |
| 7.1.2  | Cursor occlusion of characters .....                                      | 33 |
| 7.1.3  | Cursor and pointer location .....   | 33 |
| 7.1.4  | Cursor "home" position .....  | 33 |
| 7.1.5  | Initial position for entry fields .....                                   | 33 |

|        |   |    |
|--------|---|----|
| 7.1.6  | Point designation accuracy .....                                      | 33 |
| 7.1.7  | Different cursors/pointers .....                                      | 34 |
| 7.1.8  | Active cursor/pointer .....   | 34 |
| 7.1.9  | Multiple cursors and pointers .....                                   | 34 |
| 7.2    | Icons .....   | 34 |
| 7.2.1  | Guidance on design and use of icons .....                             | 34 |
| 7.2.2  | Text alternative for icons .....                                      | 34 |
| 7.2.3  | Neutral icons .....   | 34 |
| 7.2.4  | Cross-cultural icons .....  | 34 |
| 7.2.5  | Ease of learning .....  | 35 |
| 7.2.6  | Icons containing consistent cues .....                                | 35 |
| 7.2.7  | National or international graphics .....                              | 35 |
| 7.2.8  | Reuse of existing icons .....   | 35 |
| 7.2.9  | User guidance for icons .....   | 36 |
| 8      | <b>Coding techniques .....</b>  | 36 |
| 8.1    | General recommendations for codes .....                               | 36 |
| 8.1.1  | Introduction .....  | 36 |
| 8.1.2  | Meeting user expectations .....                                       | 36 |
| 8.1.3  | Explaining codes .....  | 36 |
| 8.1.4  | Distinctiveness of codes .....  | 36 |
| 8.1.5  | Consistent coding .....   | 36 |
| 8.1.6  | Meaningfulness .....  | 36 |
| 8.1.7  | Access to meaning of code .....                                       | 37 |
| 8.1.8  | Use of standards or conventional meaning .....                        | 37 |
| 8.1.9  | Rules of code construction .....                                      | 37 |
| 8.1.10 | Codes for missing information .....                                   | 37 |
| 8.1.11 | Partitioning long information items .....                             | 37 |
| 8.2    | Alphanumeric coding .....   | 38 |
| 8.2.1  | Length of character strings .....                                     | 38 |
| 8.2.2  | Alphabetic vs. numeric codes .....                                    | 38 |
| 8.2.3  | Same meaning for upper and lower case characters .....                | 38 |
| 8.2.4  | Visually similar alphanumeric characters .....                        | 38 |
| 8.2.5  | Length of abbreviations .....   | 38 |
| 8.2.6  | Abbreviations of different length .....                               | 38 |
| 8.2.7  | Truncation .....  | 38 |
| 8.2.8  | Deviation from the rules of code construction for abbreviations ..... | 39 |
| 8.2.9  | Conventional and task related abbreviations .....                     | 39 |
| 8.3    | Graphical coding .....  | 39 |
| 8.3.1  | Distinctive states of user-interface elements .....                   | 39 |
| 8.3.2  | Levels of graphical codes .....                                       | 39 |
| 8.3.3  | Three-dimensional coding .....  | 39 |
| 8.3.4  | Coding with geometric shapes .....                                    | 39 |
| 8.3.5  | Coding with different types of lines .....                            | 39 |
| 8.3.6  | Line orientation .....  | 40 |
| 8.4    | Colour coding .....   | 40 |
| 8.4.1  | Redundant colour coding .....   | 40 |
| 8.4.2  | Colour coding for people with colour deficits .....                   | 40 |
| 8.4.3  | Legend showing colour codes .....                                     | 40 |
| 8.4.4  | Redundant codes displayed in legends .....                            | 40 |
| 8.4.5  | Different use of one colour .....                                     | 41 |
| 8.4.6  | Limiting the number of colours .....                                  | 41 |
| 8.4.7  | Colour assignment to categories of information .....                  | 41 |
| 8.4.8  | Colour coding conventions .....                                       | 41 |
| 8.4.9  | Number of colours used .....  | 42 |
| 8.4.10 | Assignments based on cultural conventions .....                       | 42 |
| 8.4.11 | Cross-cultural design .....   | 42 |
| 8.4.12 | Colour assignments for special and temporary states .....             | 42 |
| 8.4.13 | Continuous scales .....   | 42 |
| 8.4.14 | Coding differences .....  | 43 |
| 8.4.15 | Coding relative values .....  | 43 |
| 8.4.16 | Ordered coding .....  | 43 |

|               |   |           |
|---------------|---|-----------|
| <b>8.4.17</b> | <b>Consistency of colour codes .....</b>  | <b>43</b> |
| <b>8.4.18</b> | <b>Change of state .....</b>  | <b>43</b> |
| <b>8.4.19</b> | <b>Additional guidance on the use of colour .....</b>                                       | <b>44</b> |
| <b>8.5</b>    | <b>Markers .....</b>  | <b>44</b> |
| <b>8.5.1</b>  | <b>Special symbols for markers .....</b>  | <b>44</b> |
| <b>8.5.2</b>  | <b>Markers for multiple selection .....</b>   | <b>44</b> |
| <b>8.5.3</b>  | <b>Unique use of symbols for markers .....</b>  | <b>44</b> |
| <b>8.5.4</b>  | <b>Positioning of markers .....</b>   | <b>44</b> |
| <b>8.6</b>    | <b>Other coding techniques .....</b>  | <b>45</b> |
| <b>8.6.1</b>  | <b>Blink coding .....</b>   | <b>45</b> |
| <b>8.6.2</b>  | <b>Highlighting by blinking .....</b>   | <b>45</b> |
| <b>8.6.3</b>  | <b>Size coding .....</b>  | <b>45</b> |
| <b>8.6.4</b>  | <b>Luminance(brightness) coding .....</b>   | <b>45</b> |
| <b>8.6.5</b>  | <b>Relative Lightness Levels .....</b>  | <b>45</b> |
| <b>8.6.6</b>  | <b>Image polarity reversal .....</b>  | <b>46</b> |
| <b>8.6.7</b>  | <b>Underlining .....</b>  | <b>46</b> |
| <b>8.6.8</b>  | <b>Coding of areas using different coding techniques .....</b>                              | <b>46</b> |
| <b>9</b>      | <b>Use of Colour .....</b>  | <b>46</b> |
| <b>9.1</b>    | <b>General recommendations .....</b>  | <b>46</b> |
| <b>9.2</b>    | <b>Specific guidance on using colour .....</b>  | <b>47</b> |
| <b>9.2.1</b>  | <b>Avoiding presentation of information by colour alone .....</b>                           | <b>47</b> |
| <b>9.2.2</b>  | <b>Overuse of colours .....</b>   | <b>47</b> |
| <b>9.2.3</b>  | <b>Colour interpretation from memory colour .....</b>                                       | <b>47</b> |
| <b>9.2.4</b>  | <b>Colour limits for visual search .....</b>  | <b>47</b> |
| <b>9.2.5</b>  | <b>Use of focal colours when accurate colour identification is needed .....</b>             | <b>47</b> |
| <b>9.2.6</b>  | <b>Size of character strings, data fields, and symbols when presented with colour .....</b> | <b>48</b> |
| <b>9.2.7</b>  | <b>Accurate colour discrimination .....</b>   | <b>48</b> |
| <b>9.2.8</b>  | <b>Events in the visual periphery .....</b>   | <b>49</b> |
| <b>9.2.9</b>  | <b>Object separation .....</b>  | <b>49</b> |
| <b>9.2.10</b> | <b>Background colours .....</b>   | <b>49</b> |
| <b>9.2.11</b> | <b>Foreground and background colours for text .....</b>                                     | <b>49</b> |
| <b>9.2.12</b> | <b>Continuous reading .....</b>   | <b>50</b> |
| <b>9.2.13</b> | <b>Unintended depth effects .....</b>   | <b>50</b> |
| <b>9.2.14</b> | <b>Size and the use of blue .....</b>   | <b>50</b> |
| <b>9.2.15</b> | <b>Blue and red on dark backgrounds .....</b>   | <b>50</b> |
| <b>9.2.16</b> | <b>Spectrally extreme colours .....</b>   | <b>50</b> |
| <b>9.2.17</b> | <b>Improved colour identification .....</b>   | <b>51</b> |
| <b>9.2.18</b> | <b>Contrast .....</b>   | <b>51</b> |
| <b>9.2.19</b> | <b>Contrast enhancement .....</b>   | <b>51</b> |
| <b>9.2.20</b> | <b>Realistic colours .....</b>  | <b>52</b> |
| <b>9.2.21</b> | <b>Drawing attention .....</b>  | <b>52</b> |
| <b>9.2.22</b> | <b>Restricted use of warning colours .....</b>  | <b>52</b> |
|               | <b>Bibliography .....</b>   | <b>53</b> |