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Solution Catalogues for the design of Visualisations as Tools in Product Development

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V 0.1

- ● recommendable
- ◑ partly recommendable
- ○ not recommendable

Table 1 - Visualisation Principles

Visualisation Principles		A					B			C				D						E			
		Structure					Type			Dimensions				Quantitative data						Objects			
		linear	temporal	spacial	hierarchal	relational	quantitative	qualitative	qualitative & quantitative	univariate	bivariate	trivariate	multivariate	comparison		composure		relation	distribution	level of realism		level of details	
														temporal		temporal				realistic	abstract	detailed	rough
Matrices / Tables	Matrix	◑	◑	○	◑	●	◑	●	◑	○	●	◑	○	◑	◑	○	◑	●	◑				
	Table	●	●	○	○	○	●	●	●	●	◑	○	○	●	●	◑	◑	◑	○				
	Matrix + Symbols	◑	◑	○	◑	●	◑	◑	●	○	●	◑	◑	◑	◑	○	◑	●	◑				
	Heatmap Matrix + Saturation	◑	◑	○	◑	●	◑	◑	●	○	●	●	◑	○	◑	○	◑	●	◑				
	Heatmap Matrix + Colour	◑	◑	○	◑	●	◑	◑	●	○	●	●	◑	○	◑	○	◑	●	◑				
	One-dimensional scatter plot	●	◑	○	○	○	●	○	●	●	◑	◑	◑	◑	●	○	○	○	●				
	Scatter diagram	●	●	◑	○	○	●	○	○	○	●	◑	◑	◑	◑	○	○	●	●				
	Bubble diagram Scatter diagram + Area	●	◑	◑	○	○	●	○	◑	○	◑	●	◑	◑	◑	○	○	●	●				
	Bubble diagram Scatter diagram + Area + Saturation	●	◑	◑	○	○	●	○	◑	○	◑	●	◑	◑	◑	○	○	●	●				
	Bubble diagram Scatter diagram + Area + Colour	●	◑	◑	○	○	◑	○	●	○	◑	●	◑	◑	●	○	○	●	●				
	Bar diagram	●	●	○	○	○	◑	○	●	●	●	◑	○	●	●	◑	◑	○	●				
	bar diagram + Area	●	◑	○	○	○	◑	○	●	◑	●	●	○	◑	●	◑	◑	○	◑				
	Vertical bar diagram	●	●	○	○	○	◑	○	●	●	●	○	○	●	●	◑	◑	○	●				
	Staggered bar diagram	●	●	○	○	○	◑	○	●	●	●	◑	○	●	●	◑	◑	○	◑				
	Deviating bar diagram	●	●	○	○	○	◑	○	●	●	●	○	○	●	●	◑	◑	○	◑				
	Staged bar diagram	●	●	○	○	○	◑	○	●	●	●	○	○	◑	●	●	◑	○	◑				
	Normalized bar diagram	●	●	○	○	○	◑	○	●	●	●	○	○	◑	◑	●	●	○	◑				
	3D bar diagram	●	◑	○	○	○	◑	○	●	●	●	●	○	◑	●	◑	◑	○	◑				
	Box plot	◑	●	○	○	○	◑	○	●	○	◑	◑	●	●	◑	◑	○	○	●				
	Vertical floating bar diagram	◑	●	○	○	○	◑	○	●	○	●	◑	○	●	◑	◑	○	○	○				
	Bar histogram	●	◑	○	○	○	●	○	○	●	◑	○	○	○	○	○	○	○	●				
	Line histogram	●	◑	○	○	○	●	○	○	●	◑	○	○	◑	◑	○	○	○	●				
	Line diagram	●	●	○	○	○	●	○	○	○	●	◑	○	◑	○	○	○	●	◑				
	Staged line diagram	●	●	○	○	○	●	○	○	○	●	◑	○	●	○	◑	○	●	●				
	Area diagram	●	●	○	○	○	●	○	○	○	●	◑	○	◑	○	◑	●	●	◑				
	Staged area diagram	●	●	○	○	○	●	○	○	○	●	◑	○	●	○	●	●	●	◑				
	Normalized area diagram	●	●	○	○	○	●	○	○	○	●	◑	○	◑	○	●	●	◑	○				
	3D area diagram	●	○	◑	○	○	●	○	○	○	○	●	○	○	○	○	○	○	●				
	Radar diagram	●	●	○	○	○	●	○	◑	○	○	◑	●	●	●	○	○	○	◑				
	Parallel plot	●	●	○	○	○	●	○	○	◑	◑	●	●	●	●	◑	◑	●	●				
	Triangle diagram	●	○	○	○	○	●	○	○	○	○	●	○	○	○	○	●	○	○				
	Pie chart	●	○	◑	○	○	●	○	◑	●	◑	○	○	○	○	◑	●	○	○				
	Ring diagram	●	◑	◑	○	○	○	○	●	●	◑	○	○	○	○	○	●	○	○				
	Square Pie/ Waffle Chart	●	○	○	○	○	○	○	●	●	◑	○	○	○	○	○	●	○	○				
	Circle Packing Diagram	○	○	○	●	◑	○	○	●	●	●	◑	◑	○	○	○	●	○	◑				
	Venn diagram	◑	○	◑	●	●	○	○	●	●	◑	◑	◑	○	●	○	●	◑	○				
	Venn diagram packed	◑	○	◑	◑	●	○	○	●	●	◑	◑	●	○	●	○	●	◑	○				
	Area diagram	●	○	◑	○	○	○	○	●	●	◑	○	○	◑	●	○	○	○	◑				
Graphs	Networks	○	◑	◑	◑	●	○	●	◑	●	●	●	●										
	Networks + Form	○	◑	◑	◑	●	○	●	●	○	●	●	●										
	Networks + Line types	○	◑	◑	◑	●	○	●	●	○	●	●	●										
	Networks + Colour	○	◑	◑	◑	●	○	●	●	○	●	●	●										
	Networks + Line width	○	◑	◑	◑	●	○	●	●	○	●	●	●										
	Networks + Area	○	◑	◑	●	●	○	◑	●	○	●	●	●										
	Tree diagram	○	◑	◑	●	◑	○	●	◑	●	◑	●	●										
	Hyperbolic tree diagram	○	◑	◑	●	◑	○	●	◑	●	●	●	●										
	Tree map	○	○	○	●	○	○	●	●	○	●	●	●										
	Ring tree	○	○	○	●	◑	○	●	○	●	●	●	●										
	Sunburst	○	◑	○	●	○	○	◑	●	○	●	●	●										
	Flow chart	○	●	◑	◑	◑	○	●	◑	●	●	●	●										
	Sankey Diagram Flow chart + Position + Area	○	●	○	◑	◑	○	○	●	○	●	●	●										
	Slope graph	◑	●	○	○	●	○	●	●	○	●	●	◑										
	Slope graph + Colour	◑	●	○	○	●	○	●	●	○	●	●	◑										
	Chord diagram	○	○	○	○	●	○	●	◑	○	●	●	●										
Pictural representations	Assembly drawing	○	○	●	○	○	○	●	●											◑	●	●	◑
	Detail drawing	○	○	●	○	○	○	●	●											◑	●	●	◑
	Principle drawing	○	○	●	○	○	○	●	●											◑	●	◑	●
	Exploded view drawing	○	○	●	○	○	○	●	●											◑	●	●	◑
	X-ray drawing	○	○	●	○	○	○	●	●											◑	●	●	◑
	Sketching	○	○	●	○	○	○	●	●											●	◑	◑	●
	Rendering	○	○	●	○	○	○	●	●											●	◑	●	◑
	Photo	○	○	●	○	○	○	●	●											●	○	●	○
	CAD Drawing	○	○	●	○	○	○	●	●											◑	●	●	●
	Symbol	○	○	●	○	○	○	●	●											○	●	○	●
	Metaphor	○	◑	◑	◑	◑	◑	◑	◑											○	●	○	●

Table 2 - Visualisation Techniques

Visualisation Techniques \ Data types	qualitative	ordinal	nominal	objects	quantitative	temporal	abstract
Colour	◕	◕	◔	○	◕	◔	○
Saturation	◔	◕	◔	○	◕	○	○
Area / Size	○	◔	○	◔	◕	◕	○
Length	◔	◔	○	○	◕	◕	○
Position / proximity	◕	◕	◔	○	◕	◕	◔
Angle / Orientation	◔	◔	○	○	◔	◔	○
Texture	●	●	◔	○	●	◔	◔
Transparency	●	◕	○	○	◔	○	○
Sketchiness	●	◕	○	○	◔	◔	◔
Acuity	●	◕	○	○	○	◔	◔
Line width	◕	◔	◔	○	◕	○	○
Line type	◕	◔	◔	○	◔	○	○
Text	◕	◔	◕	◔	◕	◕	◕
Text Format	◔	◕	○	○	◔	◔	◔
Picture	◕	◕	◕	◕	◔	◔	◕
Metaphor	◕	◕	○	○	○	○	◕
Symbol	◕	◔	◕	◕	◔	◕	◕
Connection	◕	◔	◕	◔	○	◕	◔
Enclosure	●	◔	◕	○	○	○	◔