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[54] APPROXIMATION METHOD FOR WORKPLACE LAYOUT USING CONVEX POLYGON ENVELOPE

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[57] ABSTRACT

[73] Assignee: The United States of America as represented by the Secretary of the Navy, Washington, D.C.

A method for laying out a workspace using the crowding index, PDI, and an approximation for the average interpoint distance between the personnel and/or equipment to be laid out, \bar{d}_{act}' . The invention lies in using the convex hull area, A_{poly} , of the distribution of points being laid out within the workplace space to calculate the actual crowding index for the workspace. The convex hull area is that area having a boundary line connecting pairs of points being laid out such that no line connecting any pair of points crosses the boundary line. The calculation of the convex hull area is illustrated using Pick's theorem with additional methods using the Surveyor's Area formula and Hero's formula also being described for calculating A_{poly} . The crowding index is termed PDI_{poly}' to distinguish it from the crowding index, PDI_{acr} , the prime notation indicating the approximation used to determine the average interpoint distance, \bar{d}_{act}' .

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[51] Int. Cl.⁶ G06F 15/00

[52] U.S. Cl. 345/440

[58] Field of Search 345/440, 441, 345/442, 443, 118, 121

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10 Claims, 2 Drawing Sheets

