ABSTRACT

A Support Architecture for High Level Interpretation
in Legacy Engineering Drawing Conversion. (December 1995)
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Legacy data conversion of engineering drawings (abbreviated as LDC) has received wide attention due to its challenging complexity and its significant role in the reusability of product definition data to computer aided applications. Though commercial packages are available for stand alone low level LDC services, critical problems need to be solved before the converted data obtained from those commercial tools can be reused.

This research investigates a realistic and plausible solution for two critical activities in an LDC cycle: vector drawing editing and high level symbol interpretation by integrating human intelligence and enabling geometric modeling and knowledge based systems technologies. An innovative LDC support architecture is proposed to enhance the capability of current commercial packages for LDC and increase the reusability of the converted data for further applications. A prototype system called LEDCONS was implemented to illustrate the concepts and demonstrate the feasibility of the architecture and methodologies proposed in this research.

LEDCONS is an LDC support system that enables a human to perform drawing editing and analysis/interpretation effectively and efficiently at the vector level. Specifically, with

the LEDCONS intelligent editing tools equipped with pre-defined patterns, human editing time and burdens can be greatly reduced. In addition, with the knowledge-based blackboard system, syntactic and semantic drawing interpretation can be achieved and true CAD representation of the drawing becomes available. Hence, LEDCONS could significantly promote the reusability of the digital drawing data for further computer aided applications. Though the domain of this research is focused on mechanical engineering drawing, it is our conviction that the concepts and approaches proposed in this research can be applied to other domains where reverse engineering effort is needed.