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The utilisation of knowledge for the rapid development of design engineering automation solutions

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A Need to Rethink the Solution? – CAD has evolved from simple drafting and analysis tools. Our present systems automate small and often isolated tasks within the overall engineering process. CAD systems have been extended by programmatic means to assist the engineer in localised application areas and in the optimisation of specialist part objects. To go further we must take a holistic view of design. To overcome the limitations set by the traditional design tools, we are now seeing an evolution in our design systems, one where the knowledge of the actual process is being represented. The specifications are being transformed into sets of attributed objects, which act together to satisfy the specification. One of the methods being used and researched to acquire, represent, store, reason and communicate the intent of the design process is Knowledge Based Engineering. The systems should give back the time to be an engineer. A true CAD system should be able to draw from a company's natural knowledge base, the accumulated experience of the workforce and more importantly have the ability to utilise that knowledge in the pursuit of a solution(s). This talk will explore the modelling of design engineering processes to develop our products and the utilisation of our existing corporate knowledge, showing examples and discussing methods to model the complex systems being automated.

Biography

Craig Chapman, CEng MIED MIET is Head of the Advanced Design Engineering Centre and Director of the Knowledge Based Engineering Lab at Birmingham City University. He has worked at an international level working in Europe, USA and the UK, holding positions in industry from Director, Principal Design Engineer, Design Group Leader and Senior Applications Consultant. The main focus of his career has been research, development and the application of design engineering automation and the development of Knowledge Based Engineering (KBE) solutions, enabling companies to rapidly respond to design engineering changes and explore multiple solutions with consideration to all life cycle phases. He is a visiting Lecturer at the University of Warwick and NTNU. He also delivers KBE courses into industry. KBE Research partners have included Rolls-Royce, Jaguar Land Rover, BAE Systems, Morgan Motor Company, Daewoo, Ascam Technological Centre and TechnoSoft Inc.

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