

Whilst I am recommending publication of this paper there are a number of issues which I think the authors should take into account, though I am not insisting on these being addresses before the paper goes to print.

As the authors point out the design of a major product, such as a civil airliner, is complex and the level of complexity increases as design requirements change i.e. the need to reduce carbon emissions, the need to reduce maintenance downtime etc. and the number of design teams involved in creating a new product increases in number and distribution. Their paper is, I think, attempting to address the need to support design teams in confronting this situation but have not clearly defined where their work fits into the design process

Broadly speaking there are three major tasks or steps that have to be worked through when a globally distributed team is setting up a design system that allows it to effectively deploy an MDO methodology to support the design of a product such as a new civil airliner:

1. The team must decide which design tools are required at each stage of the design process as the design proceeds down the time-line this includes the data flow required between the various design centers and the design history preservation requirements,
2. This combination of requirements must be converted into a set of interacting tools together with data flow and control programs that constitute a template for a Computational Design Engine (CDE),
3. Finally this template has to be instantiated into a usable CDE software system which might take advantage of commercially available software such as that found in Simula etc.

The paper is clearly focused on step 2 above and it advances a sound argument for the use of graph theory to establish an appropriate set of outcomes from such a step and, whilst it implies the existence of the other two steps, it does not state this early enough in the paper and with sufficient detail to allow a practicing engineer to understand the role being played by the authors contribution. I would recommend that the authors clearly define the role that their graph theoretic approach plays in this triple set of steps leading to the creation of effective CDE.