

Topic:
2D/3D

The 2D/3D Debate

Regional differences in the usage of different CAD programs

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2D or not 2D....that is the Question! Putting the 2D/3D debate to bed

A recent Autodesk-commissioned survey into the opinions of the UK's Design and New Product Development (NPD) community, argues that the long-running debate about the mutual exclusivity of 2D and 3D design software is over.

Just 7% of the survey sample for 'Tomorrow's Integrated World' said they were 'wholly 2D based'. And, while 90% of respondents confirmed 3D is 'today and here to stay', only 8% claim to be 'wholly 3D based'. This supports the widely-held view that, in most companies, both forms are required. But why is this so and what does it tell us about the likely future of design software?

Why 2D still has a key role to play

2D design software is still in widespread demand. Most designers in the mechanical engineering sector still use 2D drawing methods and there are several design-related applications for which 2D remains the fastest and most economical solution.

One reason for 2D's continuing popularity is the clear advantage it offers designers for certain types of work. 2D solutions are, for example, very good at creating effective schematic design drawings like those used in systems engineering, electrical engineering and hydraulics. And, whatever the application, they manage legacy data very efficiently.

With many companies owning extensive stocks of CAD drawings, generated over a period of many years, it is vital that these intellectual assets are not only preserved but put to the best possible use in the future.

In addition, many designs are modifications of existing systems, in which just a few sections need changing. It would be impractical to redesign an entire machine just because a new variant has to be outlined. A much better approach is to maintain legacy data in 2D and use 3D exclusively for new projects.

2D is also especially valuable for creating high-quality metadata. Many engineering firms, for example, still use it to detail parts for assembly, while employing 3D in parallel for conceptual design.

The best 2D design solutions can help to accelerate design creation, improve product quality and facilitate design innovation, in addition to raising productivity.

The benefits of 3D

While 2D solutions will continue to play an important role in the future of design, the emergence of 3D technology has clearly brought major benefits to the industry.

By using it, designers can generate significant enhancements in operational efficiency, for example. In particular, 3D can be used to create a detailed model of a design object on screen so that all elements of the design can be verified, agreed and tested before commitment to manufacture. In so doing, companies can achieve major productivity gains by eliminating the need for expensive prototyping.

In sales terms, the emergence of 3D has facilitated faster time to market and the development of competitive edge.

A little bit of both

In the past, companies have often hesitated before implementing 3D solutions. Generally speaking, the issue has not been a lack of awareness of the benefits but rather a widespread uneasiness about the perceived obstacles and dangers inherent in migrating to 3D usage.

For many, large amounts of capital are tied up in existing 2D systems - from drawing stock to the knowledge of designers to CAD integration in the process chain. As a result, companies are often unwilling to undertake what they see as a radical transition from 2D to 3D.

They are worried that they will no longer be able to use their previous design documentation efficiently, that extensive training will be required on new systems and that they will be forced to re-organise the processes on which their 2D drawings were based in the past.

Further to this, the 2D/3D debate has created the myth of an 'either/or situation', which has helped sustain the dangerous misconception that companies need to get rid of their existing 2D systems in order to move to 3D. As a result, a desire to protect established investment and well-defined efficiency gains has outweighed what are seen by many as the largely unproven benefits of 3D.

The reality is, however, that end users can enjoy all the benefits of 3D and, simultaneously, retain and use their existing 2D functionality without needing to go through a painful transition period. The practical evidence suggests that the two formats operate most effectively in a complementary way in the majority of environments. Best practice organisations have identified 2D and its operators' skillsets as fundamental building blocks for effective 3D.

Solutions like Autodesk Inventor Series (AIS), allow customers to avoid the need to switch completely to 3D. Instead, they can retain the ability to work in their familiar 2D environment and also exploit the benefits of 3D whenever they wish. If required, the switch from 2D to 3D can be made at any time.

Another 'myth' is that migrating to 3D inevitably involves a commitment to an extensive training course. Many organisations continue to believe that 3D CAD is complex, difficult to transition, the sole preserve of technical experts and, therefore, out of the reach of the average user.

This might have been true of the original early 1980s systems, which generally did necessitate substantial investment in training to make them effective. However, later innovations like the introduction of adaptive 3D CAD technology - culminating in products like Inventor - has gradually reduced the 'learning curve' so that 'first day productivity' is now achievable.

High-end capability is now available to all engineers. Systems like AIS include:

- intuitive user interface
- easy-to-use sketching tools
- high-performance graphics, and
- a comprehensive online help system, to identify and cure a user's mistakes and promote best practice in modelling.

Shifting the discussion

Looking back, the impassioned industry debate about the relative merits of 2D and 3D software can largely be viewed as a 'red herring'. As this article has shown both technologies can bring a broad range of benefits to design teams but when the two technologies are deployed together, the benefits are increased.

Looking beyond the 3D wave, technology is now advanced enough to be able to support the integration of design across a much greater part of an organisation's value chain and, in this way achieve further productivity gains. Consequently, while the 2D/3D debate may be over, the industry discussion has now moved on to the next 'hot topic' - collaboration and, coupled with it, the wider integration of the design function.

This article was written by Jo Graves who works at PR company Whiteoaks. As is clear from the article, one of Jo's clients is Autodesk. CAD Spaghetti is grateful to Jo for her contribution.

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