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Benchmarking computer-aided design skills

Civil engineering businesses should quantify the performance of their computer-aided design (CAD) teams to ensure they get a proper return on their considerable investment in CAD technology. **Rory Vance** of Cadsmart and **John Kinns** of the Institution of Civil Engineers' information systems panel explain.

Inefficient use of computer-aided design (CAD) technology in the construction industry wastes millions of pounds worldwide each year. Missed deadlines, project re-working, problems on site caused by inaccurate drawings—all these issues can lead to construction projects experiencing delays during the build phase that could easily have been avoided with better working practices at the design stage.

Many companies today employ CAD technology on multiple projects at the same time, often across a number of different offices, even across several locations worldwide. This, combined with the trend towards outsourcing and off-shoring of production information work, means it is essential to be able to benchmark CAD performance to maintain overall operational efficiency.

Identify individual needs

Lack of quality information relating to CAD productivity and performance impacts upon training plans, recruitment, resourcing, new staff inductions, software upgrades and annual appraisals. Each of these can benefit from a clearer understanding of an individual's ability to use CAD software.

When planning training and development programmes, it is important to consider each user and the typical circumstances in which they operate CAD systems during the course of their work. Some may be full-time users, while others may only use it occasionally.

Also, project type, job title and industry discipline affect the way in which CAD is utilised on live projects. Designers of different disiplines, technicians and site staff will each use CAD in a distinctly different way. Tailoring training and development plans to reflect these individual needs is not only more effective but costs less too.

Benchmarking performance

There are a number of approaches that civil engineering organisations might choose to adopt when approaching the topic of identifying individual user ability and experience using CAD. Here are some suggestions.

- Ask a CAD reseller or preferred training partner to conduct one-to-one interviews with staff to try and gauge their level of CAD experience.
- Develop an in-house 'CAD test' for existing teams and new recruits.
- Ask a preferred recruitment agency to identify CAD knowledge during their initial candidate interview, or by checking references.
- Investigate more formal examinations, such as City & Guilds 2D and 3D CAD, CAD vendor certification exams post-training, or the European Computer Driving Licence 2D CAD course.
- Search the web for a multiple-choice-type assessment which captures individual CAD knowledge.
- Use a CAD skills assessment software package to benchmark your CAD teams and feed performance data into more relevant training and recruitment programmes.

Assessment software

Since 2003 there has been a project run in the UK by Cadsmart in association with Construct IT and the IT Construction Forum, which has captured the results of over 5000 individual CAD assessments taken using independent testing software.[1] The results comprise a national CAD benchmark—a standard against which companies can compare their own performance and set meaningful targets for improvement.

Computer-aided design systems are expensive so it is vital civil engineering businesses quantify operator performance

A number of civil engineering practices and local authorities have adopted the approach to help them measure and improve their CAD productivity. Every time an assessment is taken, results are uploaded to the web where companies can access, sort and analyse their data and apply it to their business.

The assessment data feeds into specific, targeted training programmes and workshops for AutoCAD and Microstation. It can also benefit firms when used as part of a structured recruitment process.

To highlight the risks of recruiting unknown CAD personnel, a six-month live exercise was carried out across nine firms of engineering and architectural practices in the UK in 2006.[2] During this time the basic CAD skills of 85 recruits were assessed at interview. Scores ranged from 5% to 95% and times ranged from 26 minutes to over 4 hours!

Once a company knows what people can and cannot do with CAD, it can provide a more valuable induction process for new recruits and firms can know with confidence where to place them within their teams.

References

1. See http://www.cadsmart.net (last accessed March 2008).
2. VANCE R. Assessment, diagnosis and evaluation: benchmarking CAD skills for recruitment gives better efficiency. *Training and Management Development Methods*, 2008, **22**, No. 1, 2.01–2.07.

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