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Better, Faster, Cheaper Processes for Design Development and Analysis

David Morley Architects is an innovative architecture practice based in London that recently partnered with KnowledgeSmart and Evolve Consultancy to identify CAD and BIM skills gaps across the whole practice to inform and direct a new benchmark-raising training strategy.

Ask people in the street what an architect does and they'll likely tell you that (s)he designs buildings. Ask anyone at David Morley Architects (DMA) about their design philosophy and they'll talk passionately about introducing new methods, ideas, and products into their designs to ensure that each building component solves more than one problem.

For example, in their fashionably-located offices on the fringes of London's Clerkenwell, DMA incorporates a large living wall into their office courtyard. This 'green wall' concurrently softens their working environment by adding nature to an urban space, while cooling the computer server room; reducing energy consumption and increasing network uptime. Beautiful, functional, efficient.

Rethinking Process

Extending this 'let's make every input count' philosophy to their design 'process', DMA recently introduced Building Information Modelling (BIM)

workflows to make design and analysis processes better, faster, and in the grand scheme of things cheaper; thus affording extended design periods while maintaining project delivery budgets. Naturally such quantum change isn't easy and it isn't without its trials so DMA followed best practice and recruited a seasoned BIM expert to lead the transition.

"I joined DMA in 2010 from the Billard Leece Partnership (BLP) in Australia" Adrian Banks explained, "There I worked extensively with Bentley Systems' MicroStation TriForma – the forerunner to Bentley Architecture and Bentley AECOsim."

With such a well-developed and thorough working knowledge of Bentley Systems' BIM applications, Adrian was happy to stick with familiar ground. *"I was very pleased to see that DMA was already a good MicroStation shop so upgrading to Bentley Architecture for our first BIM project was a natural progression."*



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Going All-in

The first project was the building of the new Medium Secure Unit at St Bernard's Hospital for the West London Mental Health Trust. As a multi building 'campus' project the design called for the demolition of one building to accommodate the construction of an entirely new building and the integration of an existing building to create a new self-contained campus. St. Bernard's is a sister organisation to the very well-known high-security Broadmoor Hospital in Berkshire.

"Upgrading software without upgrading the software users' skills is a recipe for rejection."

Delivered using a P21+ partnering agreement the project team included Kier as the main contractor with DMA for design and AECOM for all engineering disciplines including structures, civils, M&E, acoustics and public health. *"We went 'all-in' with BIM at a very early stage of the project,"* Adrian commented *"Kier has a dedicated BIM group ready to kick off every new project so we were happy to be guided by them."*

With the whole team on-board and in agreement there was no 'testing-phase' for the BIM adoption – the team just dived straight in. While this was quite acceptable to the guys building the BIM models other team members – who were more used to watching drawings develop over time – were left a little nervous at the lack of visible deliverables. "There was nothing until there was everything." Explained Adrian. "Until the model was nearing completion there were no drawings for the project leaders to review." To help counter concerns, DMA split its team into groups dedicated to BIM modelling, spec writing, and 2D detail production to help mitigate some of the risk and to relax some of the tensions felt.

Measuring Success

So what did they learn in the process? Invest in training to improve adoption. "Upgrading the software without upgrading the users' skills is a recipe for rejection. Before we could ask the design team to believe in the new BIM workflows we planned to implement, we first had to demonstrate our belief in them by investing in training." As a practice DMA does a lot of training; working with the team from Evolve Consultancy, DMA architects are able to attend one-day training courses on an as-needed basis. In addition, every month Evolve Consultancy spends a day in DMA's office focusing on key aspects of the CAD and BIM workspaces they maintain. DMA also delivers in-house training sessions on an as-required basis.

As ever with training investment, the ROI is never easy to measure; that's why, after the first few years working with BIM, DMA went in search of a skills analysis service – to assess progress to date and to enable future targeted skills-development training – and its why they settled upon KnowledgeSmart.

Entrance, St Bernard's Hospital

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While the DMA team was keen to embrace BIM to improve design and project delivery workflows, they were a little more resistant to measuring their skill levels using KnowledgeSmart as the replacement for the more traditional verbal feedback.

DMA started with KnowledgeSmart in 2015 and at first they only used the online skills assessment services to assess new staff. With positive and reliable results, they very quickly decided to assess all staff – except partners who spend little to no time in the CAD and BIM environment. In total 47 people took the MicroStation Fundamentals test returning an average score of 70%; a strong benchmark for the practice.

With a fairly even spread from 45% at the low end to 100% at the top end some surprising trends emerged.

- 1 Confidence isn't always appropriate: Where some of the more confident team members expected great things from their own assessments, many of them came up short; while others who expected little from themselves, exceeded everyone's expectations.
- 2 There may be a reason why some people hesitate: Generally, those who responded quickly to the assessment invitation fared very well, while others who procrastinated and delayed the start of their assessment fared less well.

Clear and predictable patterns also emerged across the practice hierarchy.

- Project leaders performed best: As a rule, associates performed above the practice benchmark while architects' and senior architects' skills were in line with the benchmark.
- Lack of experience showed: At either end of the scale Part One students and Associate Directors performed below average.
- Improvements were clear: Part Two students demonstrated marked improvements over Part One while still falling a little below the average.

"These broad brush assessments are interesting to play with but the real data crunching provides the most value." Explained Adrian. "We are now using the specific results from each assessment question to identify weak spots in individuals and together with Evolve Consultancy we have planned a series of two-hour training 'sprints' to fill those skills gaps."

Allowing themselves a year to complete their benchmark-raising training plan, DMA intends to invite the whole team to re-assess after 12-months. It is anticipated that informed needs and targeted training will make the budget go further; providing significant ROI on the annual KnowledgeSmart subscription fees and releasing additional funds to roll-out a limited assessment plan for 3D and AECOsim users after the MicroStation Fundamentals training program has been completed.

Key KnowledgeSmart Benefits Realised:

Improve the quality and effectiveness of training course material by benchmarking skills to identify knowledge gaps.

Save money on training by 'filling' knowledge gaps instead of 'completing' whole training courses.'

Save time on training by taking 'little sips' instead of 'big gulps' of training via 'continuous up-skilling' initiatives.

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