BIM E-SUBMISSION PIONEERS

RDC Architects and Surbana International Consultants share their insights on harnessing BIM technology.
Dear readers,

It is again the start of a new year. Have you made your new year’s resolutions yet? For us at BCA, the need to continually drive construction productivity within the industry through our incentive schemes, capability upgrading and outreach programmes remains at the top of our priority list.

BCA has forecasted that this year’s construction demand will reach between $31 billion and $38 billion, fuelled largely by public infrastructure projects. This means that there are still plenty of opportunities for firms to explore new ways and improve on existing practices and coordination on site. We have been sharing with the industry that one way to improve coordination amongst project parties is through use of the Building Information Modelling (BIM).

In this issue of Build Smart, four companies share with us on how they engage their staff and step up on in-house training to build up capabilities in BIM. All of these initiatives helped them better prepare for the mandatory BIM e-submission, which companies have to make to the regulating agencies from July 2013.

Indeed, employees are the assets of a company. Ensuring that your employees — regardless of whether they are taking on supervisory roles or performing technical related work — receive proper training before embarking on a job would help ensure that the right person is tasked to do the right job. This is especially important as it helps staff work more efficiently, and thus, improve productivity.

While we have been placing great emphasis on skills training for those at the workers level, the more experienced ones would also need to undergo regular upgrading to be kept up to date with the latest technologies, practices and regulatory changes. From October 2013, CoreTrade personnel are required to undergo BCA’s Continual Educational Training before they can renew their CoreTrade registration. They can do so at the BCA Academy or at any of the 14 BCA Approved Training and Testing Centres.

Skilled and productive workers play a key role in our productivity journey so it is imperative for firms to invest in proper training and upgrading for their staff. Firms can also make use of BCA’s incentive schemes to help defray such costs.

On behalf of BCA, let me take this opportunity to wish everyone a prosperous and productive new year. We look forward to greater partnership with the industry in our construction productivity movement.

Dr John Keung
Chief Executive Officer

We would love to hear from you if you would like to share any best practices and latest technologies that could improve construction productivity. Please email us at bca_enquiry@bca.gov.sg

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CLARIFICATION

The following errors, which appeared in the October 2013 issue of Build Smart, are regretted:

Helping Smaller Companies Improve Productivity (page 9)
The sentence, "计划从2010年6月推行以来，已收到约2,200家公司申请" should read "计划从2010年6月推行以来，已收到约2,200份申请".

BIM Champions (page 11)
The winner of the 48-Hour BIM Competition 2013 is under the Education – Multidisciplinary Collaboration Category instead of Education – Architecture Category.

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At Orlando, the delegation visited Eggrock, the largest PBU production plant in the city. PBU is used widely in hotels, dormitories, military housing, apartments and hospitals in the U.S.. In terms of productivity, each PBU requires an average of 150 to 200 man-hours to be produced, with all wet trades performed in a factory environment for better quality control.

Before shipping PBUs to various sites for installation, Eggrock puts the structures through quality assessments such as the water ponding test for leakage checks and the pressure test for piping examination. A prototype is always fabricated for the owner’s confirmation prior to mass production to ensure that each item would be in order and correctly installed.

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Many of the delegates were keen to explore the feasibility of applying these technologies in Singapore. Mr Ong Hock Leong, Managing Director of Swee Hong Limited, said, “With tighter manpower restrictions to reduce dependency on foreign workers, off-site construction can help optimise resources for maximum productivity. PPVC is ideal in this scenario.”

“PBUs cut down the wet trades on site to a minimum, enabling builders to plan construction activities more effectively,” added Senior Manager Lim Tee Yoke from Tiong Seng Contractors Pte Ltd.
The programme strives to upgrade CoreTrade personnel to keep them ahead of the competition.

From 1 October 2013, CoreTrade personnel are required to attend the Continual Educational Training (CET) programme to renew their CoreTrade registration.

CET courses are conducted by the Building and Construction Authority (BCA) Academy and 14 Approved Training and Testing Centres (ATTCs) to steadily upgrade the workforce in the areas of productivity, quality and safety.

ATTCs Tiong Seng Contractors Pte Ltd and P-One (S) Pte Ltd are the first to conduct CET courses. They covered the topics of Reinforced Concrete Works and Construction Plant Operation (Non-lifting) respectively in October. The four-hour courses by Tiong Seng and P-One also offered information on new installation methods, equipment, materials, tools, the latest codes and regulations, and good practices on site.

Mr Li Fen Lin from San Tai Construction (S) Pte Ltd attended the CET course on Reinforced Concrete Works. He said, “The course imparted me with new knowledge and gave me insight into good site practices that I was previously unaware of. It also made me think about the technology and equipment I can harness for better productivity.”

Mr Pitchai Barathi Kannan from Kok Tong Construction Pte Ltd was glad to get an update on the latest safety requirements after attending the Construction Plant Operation (Non-lifting) session. “The course was very comprehensive,” he said. “Now, I’m in the know of the various regulatory changes. It also exposed me to the latest machinery in the market.”

Get the course schedule and fee information at https://www.bca.gov.sg/CoreTrade/others/CETfees.pdf

CET in Construction Plant Operation (Lifting)

This is a half-day classroom-based course covering the latest codes and regulations required for lifting operation. Participants will learn about best practices, identify new hazards in lifting operations and review the latest case studies of lifting accidents. They will also be introduced to new lifting related technologies that are currently used in the industry.

All CoreTrade registered crane operators are required to attend the CET in Construction Plant Operation (Lifting) course. This is on top of the mandatory Workshop to Enhance Safety of Crane Operator (WESCO) training workshop that all MOM-registered crane operators must attend to renew their crane operator licenses every two years.

For more information on the CET in Construction Plant Operation (Lifting), please visit the BCA Academy website at http://www.bcaa.edu.sg or contact us at 6248 9999.

Get the course schedule and fee information at https://www.bca.gov.sg/CoreTrade/others/CETfees.pdf
A CHEAT SHEET TO EFFECTIVE BIM TRAINING AND TRANSITION

Two companies let us in on their secrets

UNITED PROJECT CONSULTANTS
Trained more than 50 staff in BIM. Mr Felix Batad, BIM Manager, tells us how.

5 Key Elements in United Project Consultants’ BIM Roadmap
1. Crucial BIM Briefings
   As BIM is a whole new concept for many, the briefings have become an important platform to change staff’s mind-set and align the company with industry BIM practices.

2. Collaborative and Real-time Modelling Processes
   BIM modelling is blended into the company’s standard project delivery process with an emphasis on collaboration.

3. Harnessing Analysis
   Information is harnessed from the architectural models to ensure accuracy and for value-added analysis.

4. Effective Model Reviews
   Engineers are taught how to communicate and exchange ideas with BIM specialists and architects through the 3D models.

5. Managing Changes
   Staff are trained on how to manage changes within the model throughout the different stages of the project.

2 Tips on In-house Training
1. Staff specialising in mechanical, electrical or plumbing are trained together so that they will also learn the concept of teamwork and collaboration using BIM.

2. Training is conducted by a full-time BIM Manager over six afternoons per batch.

2 Ways Forward
1. Expose BIM specialists and engineers to BIM seminars and workshops such as the BCA MEP e-submission briefing, so that they understand the rationale behind and are better prepared mentally for the transition.

2. Increase productivity by harnessing information from BIM model in design and analysis.

An Extra Tip
Mr Batad spills the beans:

“Our Senior Management has been thoroughly briefed on the concepts, benefits and deliverables of BIM, so we win their full support to go ahead with the transition.”

LAUD ARCHITECTS
Trained more than 30 staff in BIM. Mr Joseph Tobias Atrido, BIM Manager, shares a few tips with us.

5 Key Elements in LAUD Architects’ BIM Roadmap
1. Committed Management
   Management is determined to train all staff in BIM. Training schedules and outlines are put in place to carry out continuous training.

2. Comprehensive Orientation
   Staff are equipped with a BIM manual, folder structure, templates and guides to get them started.

3. In-depth Training and Evaluation
   The actual training takes two months and staff are evaluated with the software test.

4. Real-life Application
   Staff are then engaged to work on actual projects using BIM.

5. Hands-on Coaching
   While learning and applying BIM technology, staff are mentored by BIM Managers.

2 Tips on In-house Training
1. Train staff by small batches according to their needs and make these sessions regular, for example, once a week.

2. Share issues openly and solve problems together during these sessions.

An Extra Tip
Mr Atrido spills the beans:

“Coaching and mentoring staff using an actual and live project after basic training is the most effective BIM training process.”

Ways forward
1. Train current staff on features found in newer software version and continue to enhance their knowledge especially in the BIM Collaboration Server.

2. Educate project team members and external project partners to prepare them for collaboration and sharing of information throughout the project lifecycle.

LAUD Architects’ Training Programme

HOW?
• In batches according to BIM needs • 3 to 6 staff members per group • 1 group per session • Once a week from 4pm – 7pm • Sharing sessions, solving problems faced during BIM project execution, modelling and documentation

WHEN?
• ‘Live’ Project and Coaching/Mentoring

WHAT?
• Staff Orientation • Actual Training

FURTHER TRAINING
• In batches according to BIM needs • 3 to 6 staff members per group • 1 group per session • Once a week from 4pm – 7pm • Sharing sessions, solving problems faced during BIM project execution, modelling and documentation

LAUD image of HDB Hougang N9 C23

The Fulcrum, Fort Road

BIM image of HDB Hougang N9 C23

The Fulcrum, Fort Road

BUILD SMART - DECEMBER 2013

DECEMBER 2013 - BUILD SMART
RDC Architects and Surbana International Consultants share their insights on harnessing BIM technology

RDC Architects and Surbana International Consultants have championed the adoption of Building Information Modelling (BIM) company-wide. They were also one of the first few companies that had carried out BIM e-submission for projects more than 20,000m² after the Building and Construction Authority’s 1 July 2013 mandate. They share with Build Smart on their BIM journey.

Q: RDC Architects is one of the pioneers of BIM adoption in Singapore. What is your motivation for embarking on this journey?

A: RDC Architects has always been a keen advocate and early adopter of new technologies. It’s our philosophy to work smart and embrace new technologies to deliver excellence to our clients. Hence, we did not hesitate to embark on the BIM platform despite hearing about its challenges.

Q: RDC Architects was also one of the first few companies that embarked on BIM e-submission for projects more than 20,000m² after the 1 July 2013 mandate. What did RDC Architects do to prepare for BIM e-Submission?

A: Even before the July 2013 deadline, we had already proceeded with BIM training for some of our more IT-savvy staff and had tested the technology partially on a couple of housing projects. These staff provided valuable feedback and this had, in some way, encouraged us to move into a full BIM programme for the whole office. It’s also crucial to mention that both our management and staff shared a similar vision to embrace BIM as the way forward for all future projects.

Q: Could you share how RDC Architects is using BIM in projects beyond BIM e-submission?

A: For us, the use of BIM technology goes beyond e-submission. Whilst e-submission is a new paradigm change in the way design is being done, we’re also excited by the many possibilities that BIM offers.

For a new 298-bed hospital project, besides the usual clash detections to ensure the structural elements work seamlessly with the mechanical/electrical systems within the architectural intent, we also used BIM to help us study how the need for natural ventilation shaped the building’s final shape and form. Thermal comfort as well as glare analyses were also carried out from the BIM model to address the concerns from heat gain to the final choice of materials selected, including the confirmation of finishing details.

Q: What are RDC Architects’ plans to further sharpen its BIM capability?

A: We will continue to hone our skills in BIM capability. This year, we’re proud that our staff who participated in the BCA 48-Hour BIM competition at the Singapore Construction Productivity Week 2013 won second runner-up. This further enthused and motivated our office, especially those who were less excited about BIM.

From the management’s point of view, I would like to move our office to go beyond BIM. One of the areas I intend to explore is the use of Project Information Management System as well as other software applications that can further leverage the BIM infrastructure.
Surbana was also one of the first few companies that embarked on BIM e-submission for projects more than 20,000m² after the 1 July 2013 mandate. What did Surbana do to prepare for BIM e-Submission?

Our journey with BIM has approximately been three to four years. The odyssey, though arduous, has been a rewarding one. When BIM was introduced to our company in the form of Revit Architecture in mid 2007, most members of the design profession were wondering what the difference was between BIM and other 3D modelling software. Most believed that BIM, at best, was another presentation/visualisation tool to assist architects and engineers to convey ideas to the clients. At its worst, BIM was considered cumbersome and unwieldy design tool that would be a passing phase or fad.

In order to encourage BIM usage within our organisation, Surbana’s management then decided to implement BIM by adopting an organic approach (a combination of top-down, bottom-up and parallel approaches). As a mandate from the management, BIM projects were identified and implemented in phases with key performance indicators set as part of the project delivery. Company-wide, BIM evangelists were also identified and BIM core teams were formed. These highly passionate individuals were empowered to plan, develop and execute BIM deliverables. By identifying these evangelists instead of assigning responsibility to unknown individuals, there was good ownership of the projects.

We also embarked on a parallel BIM-and-CAD methodology, where we developed designs and models through BIM, and then worked on the details and tender documentation with assistance from CAD drafting and support. With these in place, we were thus equipped to be BIM-ready, and hence was able to meet BCA’s BIM e-submission mandate.

Could you share how Surbana is using BIM in projects beyond BIM e-submission?

As BIM is a process that evolves around the entire construction lifecycle, it’s therefore in Surbana’s interest to explore the possibilities of harnessing the benefits of BIM at various stages of this cycle.

Examples of some of our current explorations include: design and tender documentation, sustainable building performance and design analysis, building services integration and coordination, and 5D BIM collaboration.

What are Surbana’s plans to further sharpen its BIM capability?

We have three key directions. The first is to develop the Integrated Project Delivery System. As Surbana’s BIM implementation and execution plans are delivered to the respective design disciplines, it’s crucial for us to develop a holistic approach.

Second, as 3D BIM solutions become the norm for business practices, we would need to continue exploring new technologies to gain a competitive edge. As such, the Surbana BIM team is exploring the viability of 4D BIM simulation as part of our consultancy expertise.

Third, Surbana is currently looking at further integration of sustainability with BIM, and how the information from the BIM model can be fully utilised for studies in sustainability study. This allows architects and designers to make calculated decisions and they can use the information to support and sell their proposal to clients.

Surbana International Consultants is one of the pioneers of BIM adoption in Singapore. What is your motivation for embarking on this journey?

BIM has many benefits that propelled us to harness it so that we can drive Surbana’s portfolio forward. In my view, BIM has several characteristics. On the application level, BIM is defined as the creation and use of coordinated, internally consistent, computable information about a building project in a digital prototype. But at its heart, BIM is about a “workflow” or “process” that involves the whole building life cycle of a project, from design inception, design development, documentation, through to construction, operation and eventually demolition. As such, BIM is a naturally effective tool for architects and engineers to create a 3D digital prototype of their vision.

As a design tool, BIM’s integrated parametric change engine enables designers to extract different views from a building model for visualization, drawing production, design analysis and other uses. The generation of consistent computable and consistent views and information hence reduces the need for project teams to recreate the building/project in different software for different usage, thus improving efficiency and reducing discrepancies and human errors.

With these benefits in mind, it was difficult not to embark on BIM!
THE RIGHT PERSON FOR THE RIGHT JOB

Wider range of trades in BCA-appointed OTCs

While 90% of new workers in big companies are currently deployed in trades that are relevant and related to their skills and expertise, the figure is just 56% for smaller firms. These findings were revealed in a survey conducted by the Building and Construction Authority (BCA) in June 2013.

Yet the key to productivity is training and deploying workers into the right trade. People are, after all, a company’s greatest asset.

Small and medium firms wanting to better train their workers in specific trades can look to BCA-appointed Overseas Testing Centres (OTCs) in China, India, Bangladesh, Myanmar, Thailand and Sri Lanka.

These OTCs offer training and skills certification in a wide range of trades. Employers can opt for their new workers from these source countries to be trained and certified in the trades that are relevant to their work so that these workers are readily deployable on arrival.

For a list of BCA-appointed OTCs, please visit https://www.bca.gov.sg/otc/otc_main.html

ATTRACTING LOCALS INTO THE CRANE OPERATION TRADE

BCA welcomes more built environment firms to participate in the Crane Apprenticeship Programme

To build up a sustainable pool of local crane operators, the Building and Construction Authority (BCA) launched the Crane Apprenticeship Programme (CAP) in April 2013, a train-and-place course that also offers attractive remuneration packages and upgrading opportunities.

BCA partners built environment firms to carry out the training programme, which is a structured one-year course for participants. Value-added courses (Luffing Jib or Rigging & Signalling) and on-the-job training (OJT) will be provided so that crane operators can gain better skills, growth and experience, and operate cranes of higher tonnage effectively.

During the CAP, an apprentice will receive a minimum basic salary of $2,000 per month. In addition, they will receive two upgrading incentives of $3,000 every six months within the year.

At the end of the CAP, the minimum basic salary of the apprentice would then be raised to $2,300 per month.

To date, BCA has received more than 1,200 applications, with 93 job-seekers currently co-sponsored by 36 firms to embark on the programme. BCA encourages more built environment firms to participate in CAP to attract and retain local crane operators.

Firms interested in sponsoring CAP apprentices may register online through BCA’s Building Careers portal at http://buildingcareers.sg/. Alternatively, please contact Mr Adam Thong (Tel: 6325 5035) or Ms Serene Tang (Tel: 6325 5079) for more information.

CAP job fairs were carried out in 2013 at 26 Campuses in Redhill and Jurong, Kallang Community Centre, Cheng San Community Club and BCA Academy.

Passed 12/21 Day Crane Operation Training Course and Obtained Crane License
* Only applicable to Mobile Crane

Min. monthly basic salary: $2,000/$2,200*

Salary raised to at least $2,300/$2,400*

Upgrading Incentive $3,000

On-site assessments + value-adding courses

Successful job-matching with prospective employer

Jobseeker undergoes 12-day training and skill certification at the BCA academy

Successfully completes crane course and obtains crane license from MOM

Obtains gainful employment and embarks on 1-year CAP with new employer

How CAP Works

The CAP Application Process

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<thead>
<tr>
<th>Start of CAP</th>
<th>End of CAP</th>
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<tr>
<td>6th month</td>
<td>12th month</td>
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</table>

Workers deployed in trades relevant to their skills certification
(E.g.: Workers trained in tiling and are deployed in tiling works)

Workers deployed in trades related to their skills certification
(E.g.: Workers trained in tiling and are deployed in plastering works)

Workers deployed in general construction works
(E.g.: Workers deployed in manual tasks such as transporting materials, preparation works, cleaning, etc.)

Workers deployed in trades irrelevant to their skills certification
(E.g.: Workers trained in tiling and are deployed in piping works)

6th month 12th month

Min. end-of-programme basic salary: $2,300/month ($2,400/month for mobile crane)

Workers deployed in general construction works

Workers deployed in trades related to their skills certification

Workers deployed in trades irrelevant to their skills certification

Workers deployed in trades relevant to their skills certification

○ Ok!!! What are you doing here? I asked you to install the ducting for aircon!

But sorry boss, I am trained in plastering... how to install the ducting?

 nameLabel, how to install aircon equipment!?

Well done! You are super fast!

Thank you, boss! I have been trained in this trade.

You're right! I have been trained in this trade.

Ouch!!!
ARE YOU AN SME IN NEED OF A PRODUCTIVITY BOOST?

BCA’s Productivity Clinics show you how to get the right financial aid

Lost and confused in the world of government aid schemes relating to productivity? The Building and Construction Authority (BCA) can help you get the clarity you need.

Our Productivity Clinics, launched in December 2011, are targeted at small construction firms to help them tap into the right funding schemes to enhance their productivity and efficiency.

These are informal one-to-one consultation sessions that are held regularly at BCA, the Singapore Contractors Association Limited (SCAL) or the Specialist Trade Alliances of Singapore (STAS).

Companies can ask BCA officers about the range of schemes, application processes, employee-upgrading avenues, labour-saving equipment and discuss cost-effective solutions.

Since 2010, about 3,400 construction firms have received more than $150 million from the Construction Productivity and Capability Fund (CPCF) to boost productivity.

If you’re interested in attending the clinics, book a session with BCA, SCAL and STAS, or visit http://www.bca.gov.sg/cpcf/cpcf.html to find out more.

### CALENDAR OF EVENTS

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Event</th>
<th>Venue / Organiser</th>
<th>Contact Person &amp; Details</th>
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<tbody>
<tr>
<td>17 &amp; 18 Feb 2014</td>
<td>2-Day BIM Planning Course (Building Developers and Facility Managers)</td>
<td>(9th Run)</td>
<td>Marketing &amp; Business Development Unit Tel: 62488843 / 824 Email: <a href="mailto:bca_academy@bca.gov.sg">bca_academy@bca.gov.sg</a></td>
</tr>
<tr>
<td>21 Feb 2014</td>
<td>Code of Practice on Buildable Design (Re-run)</td>
<td></td>
<td>Marketing &amp; Business Development Unit Ms Nurhadhinah Osman Tel: 6730 4503 Email: <a href="mailto:nurhadhinah_osman@bca.gov.sg">nurhadhinah_osman@bca.gov.sg</a></td>
</tr>
<tr>
<td>3, 6 &amp; 10 Mar 2014</td>
<td>Workshop on Site Management of Precast Concrete (13th Run)</td>
<td></td>
<td>Marketing &amp; Business Development Unit Tel: 62488843 / 824 Email: <a href="mailto:bca_academy@bca.gov.sg">bca_academy@bca.gov.sg</a></td>
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<tr>
<td>5 Mar-10 Apr 2014</td>
<td>Certificate in Construction Productivity Management (13th Run)</td>
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<tr>
<td>10 &amp; 11 Mar 2014</td>
<td>Workshop on Managing Project Teams Effectively (7th Run)</td>
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<tr>
<td>23 Jan 2014, 27 Feb 2014, 26 Mar 2014, 28 Apr 2014</td>
<td>MEP BIM e-submission Briefing</td>
<td>BCA Academy, Blk B, Level 2, IT Lab 3 / BCA</td>
<td>Mr Liu Ziwen Tel: 6730 4527 Please send your registration by e-mail to <a href="mailto:liu_ziwen@bca.gov.sg">liu_ziwen@bca.gov.sg</a></td>
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<tr>
<td>23 Jan 2014, 27 Feb 2014, 26 Mar 2014, 28 Apr 2014</td>
<td>Architectural BIM e-submission</td>
<td>BCA Academy, Blk B, Level 2, IT Lab 3 / BCA</td>
<td>Ms Mary Ann A Samaniego Tel: 6730 4539 Please send your registration by e-mail to <a href="mailto:mary_ann_samaniego@bca.gov.sg">mary_ann_samaniego@bca.gov.sg</a></td>
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<tr>
<td>24 Jan 2014, 27 Feb 2014, 26 Mar 2014, 28 Apr 2014</td>
<td>Structural BIM e-Submission Briefing</td>
<td>BCA Academy, Blk B, Level 2, IT Lab 3 / BCA</td>
<td>Mr Sonny Andalis Tel: 6730 4438 Please send your registration by e-mail to <a href="mailto:sonny_andalis@bca.gov.sg">sonny_andalis@bca.gov.sg</a></td>
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BACHELOR OF CONSTRUCTION MANAGEMENT (Building)

A bachelor degree in construction management with niche specialization in Building Information Modelling (BIM) is now available for full-time and part-time studies.

Jointly offered by Building and Construction Authority (BCA) and University of Newcastle (UoN) Australia, the Bachelor of Construction Management (Building) programme (BCM) equips graduates with strong grounding in construction management and BIM to practice as BIM Managers, construction managers, project managers, quantity surveyors and facility managers.

Students from the BCM programme will learn the application of BIM in construction technology and services, project planning, building measurement, cost planning and estimating, construction ecology, contract administration, building law and economics. In their final year, students will apply what they have learnt by working on construction projects using BIM or embark on research topics involving construction management in the built environment.

The BIM content is richly embedded into the construction management curriculum to contextualize a practical approach towards managing projects in BIM environment. Such robust and comprehensive curriculum earns BCA accreditation by various distinguished professional bodies, namely, the Chartered Institute of Building, the Royal Institution of Chartered Surveyors, the Australian Institute of Quantity Surveying and the Australian Institute of Building. Similarly, the qualification in BIM earns recognition from the BCA Contractor Registry System (CRS) and the Project Public Panel of Consultants (PPPC) for quantity surveying discipline.

An advanced standing articulation would also be worked out for students with relevant academic qualifications to enable them to complete the four-year degree programme within a minimum of 2.5 years (full-time studies) and 3.5 years (Part-time studies). In addition, Scholarship and sponsorship for this Programme are available for interested students under the BCA-Industry Built Environment Scholarship and Sponsorship Scheme. For more information, visit www.buildingcareers.sg

ABOUT THE UNIVERSITY OF NEWCASTLE

The University of Newcastle is a research-intensive institution with an exceptional record of achievement. Newcastle is ranked 8th in Australia (Times Higher Education ranking 2013-2014) and is among the top three per cent of the world’s universities, according to both the Times Higher Education (THE) World University and QS World University Rankings. The University is equally proud to be a young university competing among the world’s best with a current ranking of 26th on the QS Top 50 under 50 years. Times Higher Education ranked Newcastle 40th in their top ‘100 under 50’ list in 2013 – a list that acknowledges the achievements of the world’s newer institutions. It recorded the biggest improvement for an Australian university on the list in 2013.

For more information, visit www.newcastle.edu.au

Gain first advantage through the Bachelor of Construction Management (Building). The programme offers you a niche specialisation in Building Information Modelling (BIM) for construction management. BIM is the new frontier for managing construction projects for higher quality, improved productivity and timely completion.

- Recognised professional qualification by BCA Contractors Registration System (CRS)
- Recognised as academic qualification by PSPC in quantity surveying
- Relevant diploma graduates will enjoy advanced standing
- Scholarship/Sponsorship is available
- Direct Honours degree programme
- Project based assessment

Full-time/Part-time Intake starting in FEBRUARY 2014
Registration closing 30 Jan 2014

FOR PROGRAMME ENQUIRIES
email to bcm_uo@bcas.edu.sg or call 6248 9916 / 6730 4503
or visit www.bcas.edu.sg/BCM.aspx

SPECIALIST DIPLOMA IN BUILDING INFORMATION MODELLING

Building Information Modelling (BIM) has become one of the most exciting developments in the building and construction industry in recent years. As an integrated design and documentation tool used to enhance communication and collaboration among all the project stakeholders, BIM has already begun changing the way architects, engineers, contractors and building owners work together. With strategic implementation, BIM will significantly improve the design and construction process through more integrated project coordination.

BIM has also been identified as one of the key technologies to be adopted under BCA’s S$250-million Construction Productivity and Capability Fund (CPCF) to help the local construction industry improve productivity and enhance its capability.

The Specialist Diploma in Building Information Modelling (BIM) aims to impart in-depth knowledge on BIM fundamentals and to develop strategic skills for BIM project planning and implementation. It will focus on BIM applications for effective design analysis, productive design and construction coordination and holistic facility management. BIM standards and guidelines as well as BIM project case studies will also be included.

Upon graduation, participants can look forward to career opportunities such as BIM Project Coordinators/leaders, BIM Managers/Consultants/ Specialists.

CONTENTS

BIM Fundamentals
- BIM Concepts & Terminologies
- BIM Benefits & Evolution
- BIM Modelling Requirements
- BIM Modelling Methods
- BIM Discipline Models
- BIM Model & Exchange
- BIM Software Tools, Interoperability & Design Integration
- BIM Application Areas
- Advanced BIM Technologies

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TECHNOLOGY ADOPTION

MECHANISATION CREDIT (MECHC) SCHEME
Provides assistance to companies to defray up to 70% of equipment cost.*

PRODUCTIVITY IMPROVEMENT PROJECT (PIP) SCHEME
Provides assistance to companies to defray up to 70% of the cost for adopting more productive work processes.*

BUILDING INFORMATION MODELLING (BIM) FUND
Provides assistance to companies to defray up to 50% of the cost of incorporating BIM into their work processes. The assistance is capped at S$20,000 for firm level scheme and S$35,000 for project collaboration scheme per application. Each company can submit up to a total of 6 applications.

*Terms and conditions apply.