TEST YOUR BIM KNOWLEDGE

BIM QUIZ

This section tests your overall knowledge of BIM and VDC. These questions are part of the BIM Practitioner Exam that was given by the Institute of Virtual Design and Construction which is now a part of TBF Academy. If you want to know more on these types of tests and find out how to become a certified BIM Practitioner, please contact TBF Academy at **learn@ivdc.org**.

Circle the correct answer.

Question 1:
What dimension of BIM integrates various aspects such as operation, management, sustainability, safety, energy, lighting, etc.?

3D — 5D
4D — xD or nD

Question 2:
In Finith Jernigan's famous book titled "little bim, BIG BIM", he defined how many "flavors" of BIM which are used to identify the quality and effectiveness of BIM?

3 — 5
4 — 10

Question 3:
What is an integral part of the process and contractors are encourage to engage in as an approach for their practice moving forward?

Level of Development (LOD) — BIM Execution Plan (BEP)
Parallel Adoption — Integrated Project Delivery (IPD)

Bonus Question: (True or False)
Families are created to form components that are either repetitive or unique in some fashion. Within a BIM model, all the components and elements represented are derived from a family one way or another.

True — False

Issue 4 answers:

1. *BIM Execution Plan*
2. *Construction Phase*
3. *Time and Money*

Bonus Question. *True*
Communication >This is considered as the heart of BIM...
Point-of-Origine of the model >This is the first critical item...
Analysis > A series of gathered metrics and simulations...

BIMMATCH

Draw a line in column B that connect Column A with the correct definition in column C.

Column A	Column B	Column C
Coordination		The ability to exchange building model data and operate on that data interchangeably from one software vendor to the next.
Interoperability		This is a working practice whereby individuals work together to a common purpose to achieve business benefit.
Collaboration		In BIM, this refers to a process that all trades of different disciplines work together to resolve issues and clashes with each other's work or scope.

Check out the next issue for the correct answers.

BIMWORD SEARCH

M	X	U	D	O	P	E	N	G	I	S	C	H	E	D	U	L	E	K	O	Z	C	Q	J	W
P	A	R	A	L	L	E	L	K	M	L	O	N	E	L	Y	I	D	F	L	A	V	O	R	S
Q	W	S	O	C	I	A	L	F	Y	R	E	G	M	A	S	T	E	R	Q	G	Y	L	K	O
R	G	X	T	I	Y	S	D	B	I	X	W	A	I	R	F	C	Q	Y	M	C	A	D	E	M
A	K	B	H	T	C	B	L	O	D	O	F	L	N	N	A	G	J	H		X	U	G	B	N
R	C	U	F	Y	O	E	K	A	I	Z	E	N	T	B	T	S	K	B	O	M	K	R	F	I
L	A	T	Y	G	M	L	Y	S	E	L	E	M	E	N	T	E	O	A	C	L	A	S	H	C
H	I	S	G	M	P	E	A	S	H	C	U	L	G	W	Q	Z	R	E	L	M	Z	D	Y	L
I	T	N	J	L	O	M	G	E	D	R	O	B	R	I	A	H	B	F	D	Y	T	B	V	A
C	E	O	K	R	N	Q	A	M	W	G	H	M	A	S	T	D	E	O	A	B	N	R	Q	S
A	G	B	X	I	E	S	O	B	R	K	X	V	T	B	O	I	N	T	E	C	Y	T	G	S
D	R	L	Y	O	N	Z	E	L	E	P	O	P	E	N	D	C	T	I	L	G	E	W	D	K
Z	O	V	F	B	T	G	J	Y	B	X	M	J	D	Z	K	U	L	E	O	U	A	S	Y	V
K	H	D	U	C	L	I	T	B	F	W	V	Y	A	N	A	L	Y	S	I	S	J	B	R	O

Upload a picture of your completed word list on our Facebook page for a chance to win an awesome TBF shirt !

Words can be found horizontally and vertically only.

AECO
agcXML
Analysis
Assembly
ArchiCAD
Bentley
CityGML
Clash
Component
Element
Flavors
Integrated
Interfaces
Kaizen
~~Lean~~
LOD
LOI
Linking
Lonely
Master
OmniClass
OpenGIS
Parallel
Schedule
Social
WBS

THE BIM FACTORY

BIM & TONIC is a quarterly newsletter from THE BIM FACTORY covering important topics, stories and issues involving BIM and VDC within the AEC industry, Vietnam as well as projects and activities internally within our company. We chose the term TONIC for our newsletter because TONIC, as defined by dictionary.com is "***a medicine that invigorates or strengthens***" and "***anything invigorating physically, mentally, or morally***". We believe that our newsletter does just this and hope you feel the same way. Happy reading!!

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BIM & TONIC

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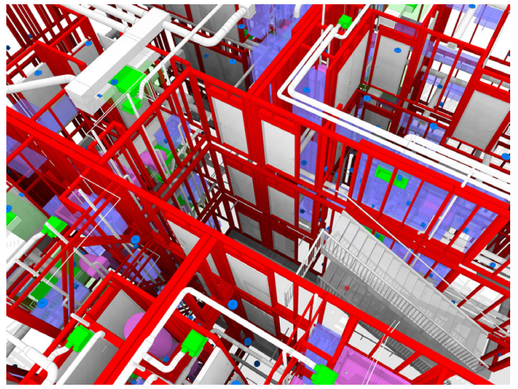


Modulus Chasis Sprint Project | Katerra Construction LLC

FROM OUR COO

In this 5th edition of our newsletter - our biggest issue ever - I would like to send special thanks to all of our TBF team members present and past who have endure our company's challenges in the last 3 years. Going on our 4th year of the company, we are now on track to succeed like no other BIM company. Because of our persistence and determination to overcome challenges, we have earned ourselves the title as one of the *leading authorities of BIM solutions in Vietnam*. I am very proud to be associated to this very talented group of amazing people who not only look to provide the best BIM solutions, but also eat, sleep and dream of BIM on a continuous basis. Even though we know in order to be the best, we will always have to perform at the highest level *consistently* and I know we are not planning to slow down anytime soon.

Maryline VO | COO

IS **BIM** BECOMING MORE **DIFFICULT** ?

Han Hoang | CEO

As BIM is becoming a common and a must have trade in our industry, ironically, the process of understanding and rationalizing it is becoming more difficult to comprehend by not only the newcommers to BIM, but also the so-called experts within our industry.

There are a few factors which complicate this matter. It involves the realization of what BIM actually means, the new expectations of BIM, and the overall general purpose of BIM. In this article, I would like to summarize these three particular areas in order to address the primary reasons why BIM is simply getting much more complicated than we originally thought.

The realization of what BIM means.

In the past, BIM simply means a process to support a project in order to reduce the risks during design and construction. Now, with the abundance of technical BIM tools in addition to projects getting more and more complicated in scale and scope, BIM is expected to be more involved and solve much more than simply extract correct quantities and notify clashes. From sustainable systems analysis to integration of Geographic Information System (GIS), BIM solutions has become much more complex not only as process for collaboration, but also the tools that are expected to do wonders.

In addition, because of the bigger and more complicated projects has become, the BIM scope requires a much more specialized type of knowledge from the project team from designers to sub-contractors. This new level of knowledge and skill set requires a much more dedicated type of training and education at every level.

Interoperability is actually complicated.

Working with different types of applications sounds like a nightmare to begin with let alone trying to make all of it work on a single project. OpenBIM an initiative of BuildingSmart which established IFC (Industry Foundation Classes) as an open, neutral data format dedicated to improving processes within the industry through defining the use and sharing of information. It sounds simple enough to utilize a single set of standard to make it easy for project teams on different applications to share data. However, learning a whole new standard and often companies having to work with many different sets of standards based on project types can be extremely time consuming and costly. Until IFC becomes part of every best practice for every trade within our industry, interoperability will always be an immediate concern.

A do-it-all BIM tool.

As much as software vendors try to create a single tool that can handle the entire BIM process such as Autodesk's Revit, it has become obvious that no single BIM tool can possibly do it all. Even on a typical small project, multiple applications are still required to complete the work. Therefore, not only an effective BIM best practice solution is necessary, but also a solid set of standards are needed to make everything work cohesively together.

In general, as projects get bigger and more complex with multiple players jumping over to BIM, this is when it requires much more attention to details and careful early planning in order for it to succeed. We often think that because the project is already in BIM, it should be easier to manage. On the contrary, with multiple BIM parties involved, it actually becomes much more difficult and complicated to manage. In order for BIM to get easier for industry, we just have to keep in mind to do lots of planning, preparation, execution, and then more planning.

This article is revised and was based on an original post from thebimhub.com. Source: **www.cadalyst.com/cad/building-design/bim-becoming-more-difficult-32720**

BUILDING INFORMATION MODELING (BIM)

INTERNATIONAL MARKET TO HIT $12 BILLION USD

A recent Research and Markets study found that the international building information modeling (BIM) market will reach **$11.7 billion by 2022**, with a compound annual growth rate (CAGR) of 21.6% between 2016 and 2022.

The research firm said it expects the Asia-Pacific region to experience the most growth in demand due to its rising construction activity and the push of BIM mandates.

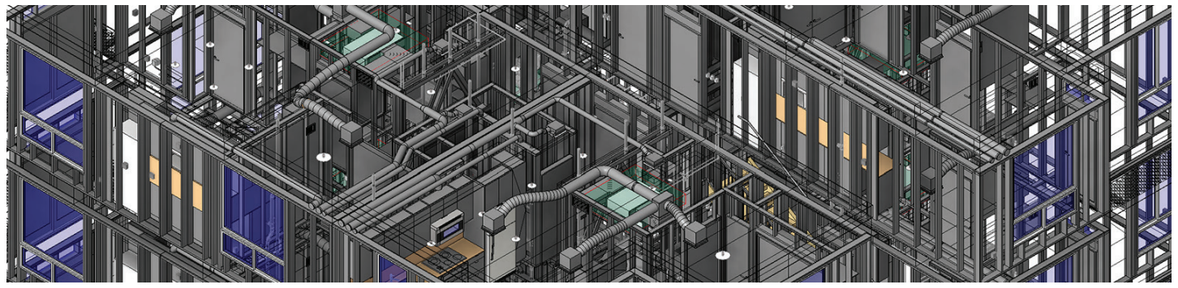
BIM is growing in all areas of construction around the world, and adoption — especially in Asia — has been driven by emerging BIM mandates, a thriving real estate market and acknowledgment by contractors and other industry player of the benefits of BIM.

Research and Markets also said that BIM's capabilities are challenging traditional CAD software's place in the industry, particularly in the areas of **cost control, handling of data and the ability to integrate other processes.** The company also predicted that some of the primary global BIM players will include Trimble Navigation, Autodesk, Nemetschek Group, Beck Technology and AECOM.

Industry leaders have praised the U.K. BIM mandate that went into effect earlier this year. According to the Royal Institute of British Architects' National Building Specification (NBS), certain contractors doing work for the U.K. government must implement Level 2 BIM, which requires construction project stakeholders — architects, contractors or suppliers — to have the capability to exchange project data via a common file format. ***Check our issue #4 for description for Level 2 BIM.***

While there are some U.S. BIM requirements from agencies like the General Services Administration, Coast Guard, Army Corps of Engineers and Department of Veterans Affairs, experts agree that there likely is no U.K.-comparable mandate in the near future for the U.S., partly due to the fragmentation of the U.S. construction industry.

Even so, a McGraw Hill Construction 2014 Smart Market Report revealed that BIM adoption by contractors in North America grew from 17% in 2007 to more than 70% in 2012, meaning that it's not so much an "if BIM" scenario in the U.S. as it is a "when" scenario.



Software are expected to lead the global BIM market between 2017 and 2022.

The software segment held a major share of the BIM market in 2016. The high demand for cost-effective construction processes & their ease of handling and benefits of design modeling software are some of the factors responsible for the high adoption of building information modeling software in the architectural, engineering, and construction (AEC) industry. However, the BIM market for services is expected to grow at the highest CAGR during the forecast.

The present market is dominated by the players such as Autodesk Inc. (U.S.), Nemetschek SE (Germany), Trimble Navigation Limited (U.S.), and Bentley System, Inc. (U.S.), among many others.

The market for industrial application is expected to grow at the highest rate between 2017 and 2022.

There would be a significant rise in the market for the industrial application between 2017 and 2022. The growth of the BIM market for industrial application is attributed to the fact that building information modeling provides digital prototyping analysis and simulation, thereby shortening the construction period while consistently improving productivity and reducing risks associated with construction projects in the industrial sector.

The BIM market in the North American region is expected to capture the largest market share during the forecast period.

The market in the North American region is expected to hold the largest market share between 2017 and 2022. The stabilized constructions of commercial and residential buildings coupled with growing awareness about the benefits of BIM among the constructors and contractors in North America have been the key driving factors for the North American market. The European market is expected to hold the second largest share during the forecast period. The building, civil infrastructure, and industrial applications are expected to be the leading segments in the European BIM market.

The contents for this article was compiled from h**ttp://www.constructiondive.com/news/report-international-bim-market-to-hit-12b-by-2022/420710/**

BIMACRONYMS

The most commonly used BIM terminologolies in our industry.

Here are some of the BIM acronyms that are most commonly used definitions in our industry today.

aecXML: Initially developed as an integrated framework to harmonize ifcXML and aecXML, as an umbrella schema, that could support multiple subschemas. It carries description and specifications of buildings and their components, but does not geometrically or analytically model them.

agcXML: The Associated General Contractors (AGC) developed agcXML in 2007, a schema that supports construction business process, based on the Common Object Schema (COS) master schema of the aecXML effort. agcXML's schema incorporates exchange of information commonly included in the RFI, RFP, Owner's agreements, Change Order. Application for Payment, Tender documents, and submittals.

CityGML: CItyGML is a common information model for the representation of 3D urban objects. It defines classes and relations for relevant topographic objects in cities and regional models with respect to their geometrical, topological, sematic, and appearance properties. CityGML files can contain multiple representations for each object in different LOD simultaneously.

gbXML: This is a schema developed to transfer information needed for preliminary energy analysis of building envelopes, zones, and mechanical equipment simulation by multiple platforms.

Let us know by emailing us at **info@the-bim-factory.com** of any other acronyms you want to discover and define for our next issue.

ifcXML: It is a subset of the IFC schema mapped to XML and relies on XML Schema, XSD, derived from the IFC EXPRESS release schema for its mapping.

IFD | "International Framework for Dictionaries": The IFD is currently being undertaken by the Construction Specifications Institute (CSI) in the United States, Construction Specifications Canada, buildingSMART in Norway, and the STABU Foundation in the Netherlands. IFD is the development of standards for building product specifications, particularly specification data, so these can be sued in different applications, such as energy analysis, carbon footprint, and cost estimation. It was formed to address the naming of attributes in different languages and properly interpret the meanings.

WBS | "Work Breakdown Structure": Another critical component of a schedule is a Work Breakdown Structure (WBS). The WBS is a hierarchical reflection of all the work in the project in terms of deliverables. In order to produce these deliverables, work must be performed.

XML-Based Schemas: Extensible Markup Language (XML) provides alternative schema languages and transport mechanisms, especially suited for online use. XML expands upon HTML by providing user-defined tags to specify an intended meaning for data transmitted.

OWNERS ENGAGEMENT WITH BIM

The following is an adaptation of an article from the 2014 McGraw-Hill SmartMarket Report - THE BUSINESS VALUE OF BIM FOR OWNERS

Training Investment / Lack of Skilled Users

+ In the US, this challenge is most deeply felt by the owners with a very high level of BIM involvement (32%) and those with large annual construction programs (28%).

+ In Asia, this is mostly felt by owners wanting to replicate the success of the US and UK but is largely affected by the lack of skilled users even at the lowest level of engagement.

Cost/Funding/Initial Investment

+ In the UK, where only 11% of the large budget owners cite this as an obstacle versus 27% of the smaller ones. This may reflect the investments that the larger and more BIM-active organizations have already made, and, therefore, they no longer see investment as an obstacle to growth.

Upper-Level Buy-In

+ More large owners (28%) cite industry wide buy-in as an obstacle than small ones (7%). This is probably because larger owners do projects in more geographic regions and require extensive resources, so they encounter a greater diversity of BIM buy-in by AEC firms and pockets of lingering resistance to BIM adoption.

Lack of Standards for BIM Across the Industry

+ The importance of established industry standards from contractual obligations to copyrights to cross interdiscipline information sharing environment. Especially in Asia, standardization can have much more implications to the implementation success than those in US or UK.

Owners' Perspective on the Single Greatest Obstacle to Expanding BIM Use.

Source: McGraw Hill Construction 2014

Ranking	US	UK	Asia
1	Training Investment /Lack of Skilled Users	Cost/Funding /Initial Investment	Training Investment /Lack of Skilled Users
2	Cost/Funding /Initial Investment	Training Investment /Lack of Skilled Users	Upper-Level Buy-In
3	Buy-In Among Industry/Adoption	Buy-In Among Industry/Adoption	Lack of Standards for BIM Across Industry
4	Upper-Level Buy-In	Lack of Standards for BIM Across Industry	Buy-In Among Industry/Adoption
5	Not as Adaptable for Small Projects Lack of Standards for BIM Across Industry	N/A	Cost/Funding /Initial Investment

As BIM matured, the more experienced users documented and institutionalized proven practices within their own organizations to more consistently and reliably achieve the benefits of BIM, and several industry groups initiated guidelines and standards programs for broad dissemination. Examples include the National BIM Standard from the buildingSMART alliance at the National Institute of Building Sciences, Level of Development standards from the BIMForum, Owner's BIM Guide developed by Penn State University, and various types of BIM agreements, amendments and execution plans.

For more information on this article or obtain a PDF of this report, please visit **http://i2sl.org/elibrary/documents/Business_Value_of_BIM_for_Owners_SMR_(2014).pdf**

Happennings at TBF

This section is dedicated to all the happennings and on-going activities at our company.

TBF & IPP Agrees to Collaborate.

On March 3rd, 2017 Our CEO Han Hoang and **Imex Pan Pacific (IPP)** VP Business Development **Mr. Phillip Nguyen** signed an MOU to collaborate together for the foreseeable future to build the most desirable development and staff housing in Vietnam by utilizing our unique one-of-a-kind integrated fabrication process.

More information on this very special process from our sister company **THE FAB FACTORY** coming soon.

Thank you to Mr. Phillip Nguyen for his trust, commitment and support of our company and we look forward to many years of success together.

TBF celebrates Birthdays in Q1.

We recently held an event to celebrate all the birthdays we missed in February, March and April. It was a fun-filled event with games and activities for all the birthday boys and girls. All of us at TBF wish Khoa, Toan, Duc, Ngoc, Nhung, Khanh, Ngan, Tuyen, Duy, Andy and Hoang.

The most utilized piece of equipment at TBF getting a face-lift.

A closer look at our very own TBFoosball table.

No other machine or piece of equipment at TBF has been utilized and abused more than our very own TBFoosball table. Since its inception at our factory on Hong Ha, this is a place where we can find our most dedicated personnel completely focused on the task at hand. After 4 years of action, finally, it is getting a make-over.

This machine is the most busy just before lunch and before everyone leave for the day. It is also a place that is the loudest and where you can just hangout and take a break with an assurance to either lose a cup of coffee or win a free one.

TBF Celebrates International Women's Day.

On March 8th, 2017 We proudly celebrated **International Women's Day** with the best and hardest women in the BIM business. International Women's Day is a global day celebrating the social, economic, cultural and political achievements of women. The day also marks a call to action for accelerating gender parity. Especially in our type of business which is dominated by mostly men, it is refreshing to see the power of women who are able to make a major impact in our industry.

This day is also a time to reflect on progress made towards gender equality, to call for change and to celebrate acts of courage and determination by ordinary women who have played an extraordinary role in the history of their countries.

For more stories like these, please check out our Facebook page at **https://www.facebook.com/thebimfactory**

INDUSTRY LEADERS

FOCUSING ON THE PEOPLE WHO ARE MAKING AN IMPACT IN OUR INDUSTRY.

ACCORDING TO DR. TRAN HONG MAI, THE FUTURE AND SUCCESS OF VIETNAM'S BUILDING INDUSTRY WILL BE HEAVILY DEPENDENT ON HOW WE UTILIZE BUILDING INFORMATION MODELING.

Dr. Trần Hồng Mai

A true believer of BIM, **Dr. Trần Hồng Mai** is one of the primary people behind many inititives to promote and institute decisions and decrees involving the usage of BIM for the Ministry of Construction in Vietnam.

Dr. Trần recieved his Master of Construction Economics from the Hanoi University of Construction in 1997. Prior to his master's degree, Dr. Trần earned his Bachelor Degree in Engineering at the University of Mining and Geology in Bac Thai Province (now Thai Nguyen Province).

In 2001, Dr. Trần served the Deputy Director for the research division within the Ministry of Construction called the **Institute of Construction Economics (ICE)**. Then in 2010 to the present, Dr. Trần took over as Director and was given the responsibilties of launching and finalizing various reports, decisions and decrees to be submitted to the appropriate government entities and circulars promulgated for approval to become official documents assigned by the Ministry of Construction.

Dr. Trần has participated and lead various proposals and contents related to Building Information Modeling (BIM) legal documents since he joined the Institute of Construction Economics (ICE).

In 2014, Dr. Trần along with Dr. Nguyen Viet Hung launched the initiative to implement BIM in the construction industry by creating the first ever **Vietnam BIM Roadmap**. Aspired by the initiative of neighboring countries who have launched their own BIM initiatives such as Singapore and Malaysia, this ambitious roadmap provided a plan to fully implement BIM for majority of the construction projects in Vietnam by 2025.

In order to advocate for BIM, Dr. Trần understands that not only the government entities who are required to push for the mandates need to understand the impact of BIM but also the private sectors who would have to utilize it. In 2016, Dr. Trần spearheaded the pushed along with then Prime Minister Mr. Trinh Dinh Dung for the Decision 2500/QD-TTg approving the scheme for applying BIM in construction and facility management activities to begin in 2017.

The primary aim of the Vietnam BIM Roadmap which began in 2014 is to improve design and construction quality, efficiency in construction management and investment projects, as well as to promote modern advancements within the construction sectors in order to compete with the rest of the world. As a rapid growing nation, the Vietnamese Government understands the importance of competing on the same playing field. Therefore, Dr. Trần and his team understands the significance of this initiative and have been rigorously following the initial roadmap.

One of the many unique traits from Dr. Trần is his ability to learn from others. Dr. Trần is relentless in identifying the lesson learned from other countries who have already gone down this path. He intends to identify their success as well as failures in order to leapfrog Vietnam to achieving its goals.

Some of the preparation and development tasks which he will need to be implemented will be quite daunting such as the establishment of a steering committee nationally and internationally as well as the research and development of the National BIM Guidelines, BIM Training Plans and create BIM Standards and contents related to contracts and legal documentations.

But no doubt, with Dr. Trần's leadership behind the steering wheel of this important initiative, we are certain he will achieve his pursuit to enhance the competitiveness of Vietnam's construction industry with BIM in order to provide transparencies for foreign direct investment projects, increase efficiency and productivity, improve quality and most importantly, the reduction of overall costs.

Vietnam's BIM Roadmap.

The current timeline for Vietnam's BIM Roadmap:

2017 - 2019: **Preparation and Tasks Development.**
- *Raise awareness and encourage the usage of BIM.*
- *Create legal framework to apply BIM.*
- *Create BIM Guidelines.*
- *Create training curriculum framework.*

2018 - 2020: **Implement BIM Pilot Projects.**
- *Identify 20 pilot projects for design and management.*
- *Identify 10 pilot projects for Facility Management.*
- *Evaluate BIM implementation pilot projects status.*

2021 - Beyond: **Roll-out BIM Implementation.**
- *Based on summary, assessment, MOC to issue circular.*
- *BIM to be applied widely in design activities.*
- *BIM to be applied widely in construction activities.*
- *BIM to be applied widely in facility management activities.*

LEARN **BIM**
TBF ACADEMY

Construction Classification System | **OmniClass**

OmniClass has been developed by the International Organization for Standardization (ISO) and the International Construction Information Society (ICIS) subcommittees and workgroups from the early 1990s to the present.

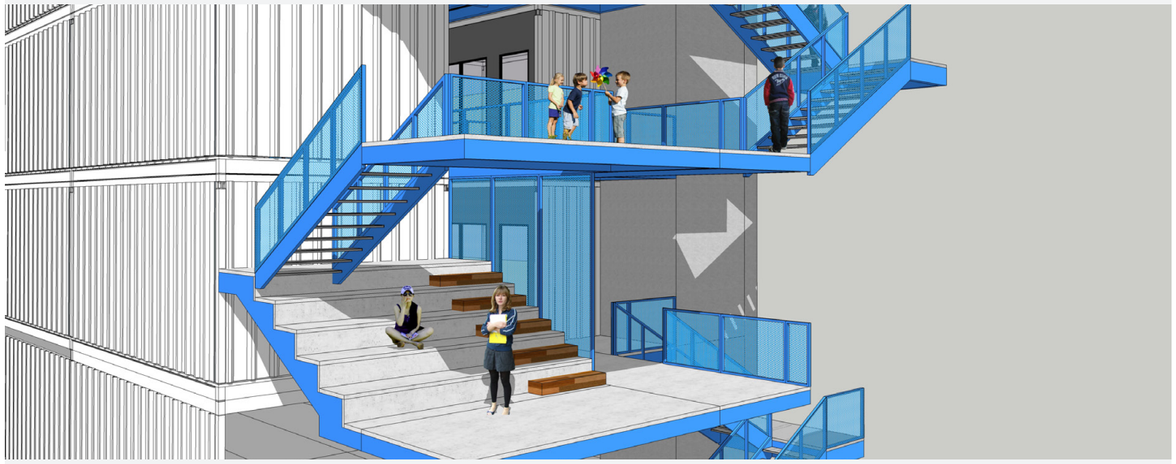
Currently it consist of 15 tables and these tables are being defined and structured by volunteer industries members. They are evolving quickly for adoption and use in BIM tools and methods. Similarly to both Masterformat and Uniformat which are outline document structures that are excellent for aggregating information from project drawings,

OmniClass was developed specifically in order to map the individual objects within a building model.

THE FAB FACTORY

A NEW MODULAR EDUCATION

THE FAB FACTORY IS LOOKING TO UTILIZE MODULAR DESIGN AND PREFABRICATION TO CHANGE THE WAY AN EDUCATION FACILITY IS CREATED.



Our latest project at THE FAB FACTORY (TFF) involves a whole new approach to education design and build. Commissioned by Apollo English, TFF utilized a modular process for the design and the fabrication of the building called Apollo Center. As a result, this unique process created an entire different identity to the already popular Apollo's brand.

Apollo English school was founded in 1995 and was the first fully foreign-owned English education and training organisation in Vietnam. Since then, the company has become a leader in the rapidly expanding Teaching English as a Foreign Language (TEFL) and business training market and the Apollo brand is already a recognized model throughout the country.

At the request of the CEO, Apollo wanted a new modern approach to their identity while focusing on sustainability and upgrade their facilities to a fresh and modern look for the students and faculties. Our approach to this project was to minimize site impact, reduce construction waste and hit a very tight time frame set out by the school calendar.

Currently under construction, this project is scheduled to be completed by October 2017. With only 6 months of design and production, the new Apollo center needed a completely new approach to design and construction. By utilizing modular design and prefabrication techniques, we were able to jumpstart the building process way ahead of schedule.

For more information on this process, please visit our website at **www.the-fab-factory** to find out more details.

MYTHS

BIM solves everything that is wrong with projects' schedule and costs.

BIM is sold as a process and technology which solves all the complications and issues of any building project when it comes to meeting a tight schedule and budget when used properly. In some way, this is true, but the most important thing to understand is the proper utilization of BIM and everything surrounding BIM. If utilized improperly, BIM becomes more costly and can potentially create adverse effects of the project resulting in more delays. Most of the companies get turned off by BIM because they don't see immediate impact. Once a company looks away, it is much more difficult to turn back to BIM the second time.

OUR COMPANY

TRAINING SET TO BEGIN AT **TBF ACADEMY**

TBF is set to roll out a series of training curriculum and contents for the industry.

As an on-going commitment to the Ministry of Construction as a training partner, TBF through its TBF Academy and Institute of Virtual Design and Construction (IVDC Vietnam) is planning to initiate a series of training materials and contents for 2017 for more than 2,000 individuals from Hanoi to Ho Chi Minh City.

Additionally, as a partner of Autodesk, TBF will also provide the Certified BIM Practitioner course materials covering from "What is BIM Information Modeling" to "Construction Management Tools". Some of the topics our courses will cover are:

- **"What is Building Information Modeling?"**
- **"BIM by Discipline & BIM Execution Planning"**
- **"Evolution & Benefits of BIM"**
- **"BIM Modeling Environments & Platforms"**
- **"BIM Implementation Tools"**
- **"Construction Management Tools"**
- **"The Federated Model**
- **"Conceptual BIM Estimation"**
- **"BIM Scheduling"**
- **"4D Models and Concepts"**
- **"5D Cost Modeling"**
- **"BIM Execution & Assessment"**

BIM EDUCATION PROGRAM

CERTIFIED BIM PRACTITIONER (CBP) 2017

SERIES 1 – WORKSHOP

S1.CBP.1 | S1.CBP.2 | S1.CBP.3 | S1.CBP.4 | S1.CBP.5

If you would like to know more about our training courses for 2017, please send us an email with your inquiry to **learn@ivdc.org** for more information.

Our **MISSION**

When THE BIM FACTORY was founded in late 2013, our CEO wanted to create a place where innovation and collaboration are the primary driven factors leading the company. He envisioned a place where people are dependent on the success of others and is always looking to reinvent the way BIM is utilized in Vietnam.

Four years later, THE BIM FACTORY is one the leading BIM company in Vietnam. Our BIM Production team works cohesively as a unit to complete many complex projects all over the world.

Our BIM Implementation team has collaborate with some of the biggest names in the industry to refine the process for Vietnam through our Institute of Virtual Design and Construction. In addition, we have been invited by the Ministry of Construction of Vietnam to participate as part of the professional panel for the Steering Committee for the Vietnam BIM Roadmap.

Meanwhile, our BIM Technology is looking for innovative ways to design through the automated process and fabricate building parts in a controlled factory environment.

Our mission as a company has always been to change the way companies operate in Vietnam.

With our approach to innovation and working together as a single unit - in and out of the office - we are proud at the fact that we are one of the few companies in Vietnam to be able to follow our mission since the beginning.

And we are looking to continue this tradition many years from now.

OUR FUEL

THIS MONTH IT IS MOTIVATION THAT WE ARE SEARCHING FOR.

Most companies believe that employee involvement is a bad word especially for companies in Vietnam where authority is a perception of success. Others perceive employee involvement as something that is extra done aside from their daily tasks. However, the best employee involvement is the self expectations and motivations each individual make voluntarily about their work every single day.

To reach that point, it is not easy for almost all companies. Most people want involvement in decisions that affect their work as a way to motivate themselves. Some may not want the final accountability because perhaps they were held responsible for a bad decision in the past.

Companies that are successful in fostering employee motivation strike a balance between needed policies and rule overkill. At TBF, we understand the need for this balance and we are always encouraging our staff to get involved at all levels whether it relates to work or not.

This unique project brings together the **virtual environment** along with the **real world fabrication** process.

OUR PROJECTS FOCUS

OUR CLOSER LOOK AT SOME OF OUR NOTEWORTHY PROJECTS IN THE LAST FEW MONTHS. THIS SECTION IS DEDICATED TO THE FEW PROJECTS THAT HAVE BEEN COMPLETED OR ON THE BOARD.

MODULUS
CHASIS SPRINT

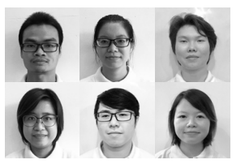
CLIENT: KATERRA CONSTRUCTION LLC

PROJECT LOCATION: UNITED STATES

PROJECT STATUS: Completed.

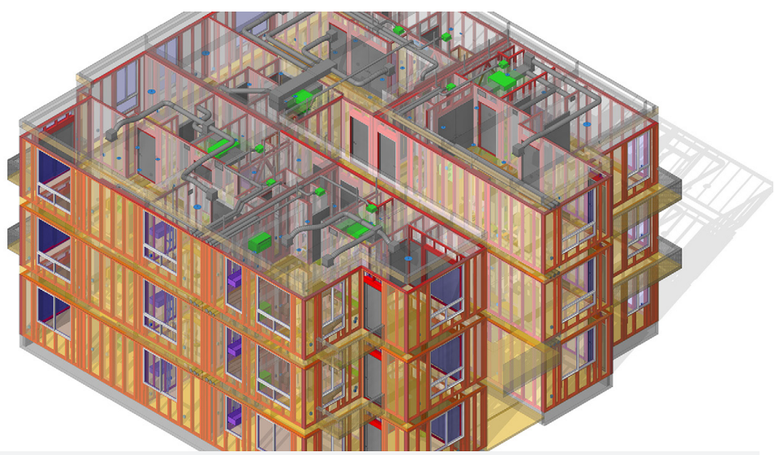
PROJECT TEAM:

ARCHITECTURAL TEAM:



STRUCTURAL TEAM:

MEPF TEAM:



Architectural, Structural, MEPF modeling.

Located in the United States, this unique project is designed by Katerra and will eventually be fabricated by Katerra Construction LLC. Utilizing a panelized system for fabrication, BIM played a major role in rationalizing the components and assemblies of the project.

Our project team of Architectural, Structural, and MEPF modelers created over 350 cut-sheets of the different components and assemblies for the 12-unit building consisting of 3 floors and almost 1,000 square meters of floor area.

In general, this project was quite difficult to manage due to a very short turn-around-time requirement from the client as well as many entities who were involved. Additionally, we had little experience with panelized construction, however, it took us a short period to learn how to illustrate the system properly since we utilized the BIM process for a few of fabrication projects ourselves here in Vietnam.

For more details, please visit **https://www.the-bimfactory.com/modulus-chasis-sprint**

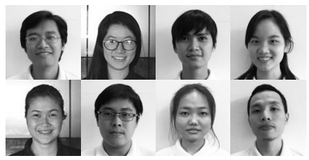
IMEX PAN PACIFIC
NHA TRANG COMPLEX

CLIENT: IMEX Pan Pacific Group

PROJECT LOCATION: Nha Trang | Vietnam

PROJECT STATUS: On-going | Completion planned for 2018.

PROJECT TEAM:

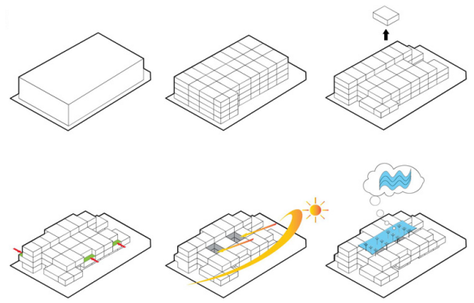


Transcending the shopping experience in Vietnam.

Our approach for the IMEX Pan Pacific's project located in Nha Trang, Vietnam is that of a youthful and sustainable environment focused on the better education environment within a city dwelling.

Utilizing prefabricated components and building methodologies, we aim to design and build this project in less than 10 months. Our modular strategies is a perfect fit for this type of building. As a designer and the builder, we wanted to create an environment located on the main street Tran Phu a must-see location when arriving in Nha Trang.

With its inclusive of indoor and outdoor spaces, the lower level is dedicated for Food and Beverages, while the upper floors includes Duty Free shopping and outlet retails. The top floor and roof is reserved for entertainment such as movie theater and rooftop bar and restaurants serving the street front.



OUR CEO TO PARTICIPATE ON THE BIM STEERING COMMITTEE.

April 7th, 2017

Our CEO - Han Hoang recently received a formal invitation letter from the Ministry of Construction (MOC) and the Institute of Construction Economics (ICE) requesting for him to serve as part of the panel of BIM experts for the BIM Steering Committee in Vietnam. The letter states:

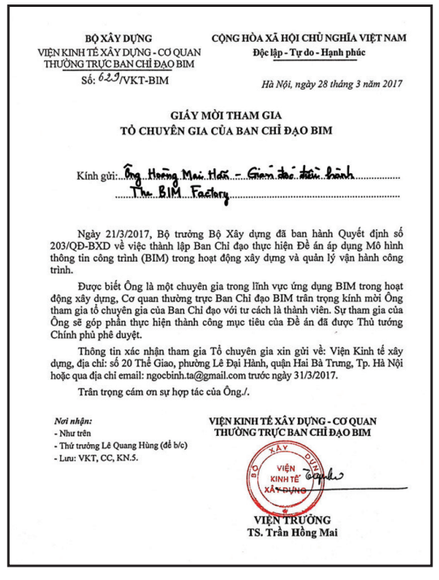
"***INVITATION LETTER TO ATTEND EXPERT TEAM OF BIM STEERING COMMITTEE***

On March 21, 2017, Minister of the Ministry of Construction issued Decision 203/QD-BXD on the establishment of the Steering Committee for Implementation of Building Information Modeling System (BIM) in Construction and Project Operation Management (BIM Steering Committee for short).

Understanding that you are a specialist in BIM section, BIM Steering Committee is pleased to invite you to our expert team as membership. Your participation will contribute to the success of the project that Prime Minister has approved."

Our CEO accepted the invitation and responded:

"We, as TBF, are very pleased to be included in the panel of experts to make all the important decisions which will affect the directions and strategies for implementing BIM in Vietnam across the entire AEC industry. We are looking forward to supporting the Ministry of Construction and the Institute of Construction Economics of Vietnam in every possible way to guide BIM down the path of success."



BỘ XÂY DỰNG
VIỆN KINH TẾ XÂY DỰNG - CƠ QUAN THƯỜNG TRỰC BAN CHỈ ĐẠO BIM
Số: 623/VKT-BIM

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Hà Nội, ngày 28 tháng 3 năm 2017

GIẤY MỜI THAM GIA TỔ CHUYÊN GIA CỦA BAN CHỈ ĐẠO BIM

Kính gửi: Ông Trương Mai Hải - Giám đốc điều hành The BIM Factory

Ngày 21/3/2017, Bộ trưởng Bộ Xây dựng đã ban hành Quyết định số 203/QĐ-BXD về việc thành lập Ban Chỉ đạo thực hiện Đề án áp dụng Mô hình thông tin công trình (BIM) trong hoạt động xây dựng và quản lý vận hành công trình.

Được biết Ông là một chuyên gia trong lĩnh vực ứng dụng BIM trong hoạt động xây dựng, Cơ quan thường trực Ban Chỉ đạo BIM trân trọng kính mời Ông tham gia tổ chuyên gia của Ban Chỉ đạo với tư cách là thành viên. Sự tham gia của Ông sẽ góp phần thực hiện thành công mục tiêu của Đề án đã được Thủ tướng Chính phủ phê duyệt.

Thông tin xác nhận tham gia Tổ chuyên gia xin gửi về: Viện Kinh tế xây dựng, địa chỉ: số 20 Thể Giao, phường Lê Đại Hành, quận Hai Bà Trưng, Tp. Hà Nội hoặc qua địa chỉ email: ngocbinh.ta@gmail.com trước ngày 31/3/2017.

Trân trọng cám ơn sự hợp tác của Ông./.

Nơi nhận:
- Như trên
- Thứ trưởng Lê Quang Hùng (để b/c)
- Lưu: VKT, CC, KN.5.

VIỆN KINH TẾ XÂY DỰNG - CƠ QUAN THƯỜNG TRỰC BAN CHỈ ĐẠO BIM

VIỆN TRƯỞNG
TS. Trần Hồng Mai

BIM IN VIETNAM

VIETNAM BIM NEWS

Image by Phu My Hung Development Corporation.

Crescent Phase 2

Phu My Hung Development's iconic commercial project Crescent Mall gets a new addition with Phase 2 underway in District 7.

Considered as one of the first real "shopping mall" in Vietnam, the Crescent 1 was claimed by many as a commercial success. Crescent Phase 2 aims to continue Phu My Hung Development's trendsetting work of Phase 1.

Adding a 25-level office tower to the mixed-used development, the current Phu My Hung Development Corporation's President **Mr. Gary Tseng** along with Engineer **Mr. Jess Wang** and Project Manager **Mr. Charles MH Luo** understand the importance of getting this phase of the work done properly and making sure the project meets the tight schedule and reduce major conflicts. Therefore, the PMH team met with our CEO and discussed the possibility of supporting this development with implementing BIM at the design and tendering level.

At the moment, TBF is assisting in the translation of the 3D modeling process to create a working BIM model for this project working along with Mr. Luo to take this entire process from design into the construction stage as well as all the way to completion and handover to the operation team to manage the building. Mr. Tseng and his team certainly sees the value of BIM and hopes that by implementing BIM at the early phase, it will pay big dividends for him and his team in the long run.

PM DECISION

Hanoi | Vietnam

The following is the decision released by the Prime Minisster at the end of 2016. This decision involves the approvial of the scheme on applying Building Information Modeling (BIM) in construction and for facility management activities within Vietnam effectively December 22nd, 2016. Below is the summary of the decision released by the PM in its entirety. This is a very important step towards realizing BIM for projects as well as developments in Vietnam.

DECISION No.: 2500/QĐ-TTg

Hanoi, December 22nd 2016

Approving the scheme on Applying Building Information Modeling (BIM) in construction and facility management activities

- Pursuant to the Law of Organizing the Government dated June 19th 2015;
- Pursuant to the Law of Construction dated June 18th 2014;
- Pursuant to the Prime Minister's Decision No. 134/QĐ-TTg dated January 26th 2015 approving the project on re-structuring of construction sector in association with conversion of growth model toward enhancement of quality, efficiency and competitiveness in 2014 – 2020;

At the request of the Minister of Construction, HEREBY DECIDES:
Article 1. Approve the scheme on Applying Building Information Modeling in construction and facility management activities (hereinafter referred to as the Scheme) as follows:

I. POINT OF VIEW, OBJECTIVES

1. Point of view
   a) Government encourages, and enables related stakeholders to apply BIM.
   b) Applying BIM according to an appropriate roadmap, with piloting period and evaluation before extensive implementation
   c) Organizations, individuals applying BIM are entitled to incentives according to Law of Science and Technology and other related Laws;
   d) Study international science, advanced technology and experiences and adapt to Vietnamese specific conditions.
2. Objectives
   a) Through applying BIM, enables at least 30% saving in term of holistic cost from related stakeholders, transparency and quality management, quality control improvement in construction, facility management activities. Including:
      - 10% saving of construction cost (includes 20% saving of wasted construction materials);
      - 10% reduction of total project execution time;
      - 10% reduction of design time and design adjustment time;
      - 40% reduction of RFI.
   b) Create a legal framework and social consensus for extensive BIM implementation.

II. WORK CONTENT AND SCHEDULE

1. From 2017 to 2019: Prepare necessary conditions and skills training for applying BIM, including tasks as follows:
   a) Raise awareness and encourage organizations, companies to apply BIM;
   b) Create legal framework to apply BIM, system of related technical and economic norms and standards;
   c) Create BIM Guidelines;
   d) Create curriculum framework for BIM training and implementing BIM training courses to improve capability for construction organizations at each level, project management units, project owners and consulting companies for BIM application.
2. From 2018 to 2020: Implement BIM in pilot projects, including tasks as follows:
   a) Apply BIM in the stages of: design, construction and project management for at least 20 class I and above construction works.
   b) Apply BIM in the stage of facility management for at least 10 important construction works with complicated technical requirements.
   c) Evaluate BIM implementation status though pilot period mentioned above and complete the preparation phase to apply BIM.
3. From 2021: Plan to implement the Scheme is detailed in the Appendix attached to this decision.

III. KEY SOLUTIONS

1. Related to mechanism, policy and standard
   a) Review, adjust and complete mechanism, policy and standard of construction investment, quality management and maintenance activities.
   b) Review, adjust and complete the system of related technical and economic norms and standards for BIM implementation.
   c) Create standard contract samples relating to BIM application; propose contents and deliverable criteria for BIM projects.
2. Related to human resource training
   a) Create BIM training curriculum and job requirements for related BIM positions.
   b) Implement BIM training widely in qualified BIM Training Units.
3. Develop cooperation with foreign countries and organizations in researching BIM management technologies.
4. Related to financial solutions.
   a) The State prioritize funding from its budget according to regulations to raise awareness.
   b) Project owners of BIM-applied projects in stages of: planning, design, construction or facility management, cost of BIM application can be included in the total project budget or maintenance cost.

If you would like to read the rest of the decision or download a copy of this decision, go to **https://www.the-bim-factory.com/our-news**

IN THE community @ TBF

WORKSHOPS

PLAY WITH SCRATCH AND LAMDINAO.

For this workshop, participants utilized a simple program called **Scratch** with a programmable electronic kit called **LamDiNao** to teach participants how to use it to build a "*piano*" out of fruits and vegetables.

Fablab participants working on their project in the Scratch & LamDiNao workshop.

FABLAB THAO DIEN

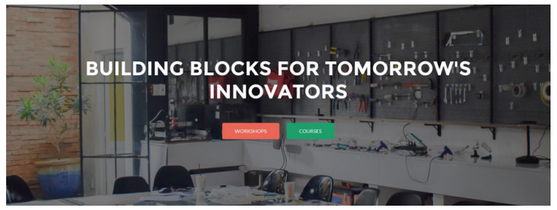
A MAKER SPACE IN THAO DIEN, DISTRICT 2, HCMC.

What is Fablab?

- A place where people can make anything.
- A place where makers to go learn, teach, and inspire other makers.
- A place where you can use digital fabrication tools.
- A place to go when you need to build and prototype your invention.

What is Fablab Thao Dien?

As part of the community outreach program and as a way to pay back to the youth in the community, THE BIM FACTORY along with the Fablab Saigon crew dedicated the TBF conference room and turned it into a Fablab. With various programs, workshops and events, Fablab Thao Dien is the newest location for a gathering of all makers and inventors to share ideas, thoughts and support each other.



For more information on this fablab, you can visit **www.fablabthaodien.org**

WORKSHOPS

LET'S MAKE A RACE CAR TOGETHER !

In this creative workshop by Ms. Clara Ngo, participants were asked by using minimal parts from a list to make a race car and then they race !!

This **STEAM** focused workshop taught participants - big and small - how to creatively design a race car. There were three criteria the instructor used to grade the participants. First, it has to go straight, second, it has to go fast, and third, it has to look cool. The participants were divided into teams of 2 and competed against each other.

Check out **https://www.facebook.com/fablabthaodien** to see the awesome racing videos of the competition.

A PRESIDENTIAL VISIT

President and First Lady of Israel Visits Fablab Thao Dien at TBF.

On Thursday, March 23rd, 2017, we had the pleasure and the honor of hosting **President Reuven Rivlin of Israel and First Lady Nechama Rivlin** to our Fablab Thảo Điền along with the members from **TOMVietnam** and **Fablab Saigon** to share our interest in supporting children with disabilities through the **TOM: Tikkun Olam Makers** community.

Our CEO Han Hoang had the luxury of moderating the event. We would like to thank our fearless leader **Arnon Zamir** for making this event a reality and the entire team Makers in Saigon for pulling this event off without any glitch.

On behalf of our CEO and the entire team at TBF, we are very honor to support any type of initiatives who are driven by the ability to do good things for those who needs it most.

TOM VIETNAM

TBF DONATES TO SUPPORT DISABLED CHILDREN

On February 25th, 2017, Fablab Saigon and Fablab Thao Dien held a reception for additional donations to the **TOM Vietnam 2016 - Technology Disabilities Day Sponsoring Group**. Through this, donor groups will have the opportunity to innovate and successfully created products (assistive devices or physiotherapy equipment).

Aside from the VND 10 million funding from Fablab Saigon, the groups received an additional VND 5 million from THE BIM FACTORY and USD $100 from Pini (Israeli volunteer). The two new sponsors are tech-savvy individuals who are interested in TOM Vietnam 2016 and wish to co-ordinate the product development with the groups.

Read in Vietnamese about this special event in this article by PC World Vietnam here:
http://www.pcworld.com.vn/articles/cong-nghe/song-va-cong-nghe/2017/02/1251150/tom-vietnam-2016-co-them-nguon-tai-tro/

Tikkun Olam Makers

The Power of TOM

WHAT IS TOM: TIKKUN OLAM MAKERS?

TOM is a proud start-up of the Reut Group, an innovative policy and strategy group courageously pursuing a 10-year vision to positively impact the lives of 250 Million people worldwide.

A global movement of communities, TOM connects makers, designers, developers and engineers with people with disabilities (aka - 'Need-Knowers') to develop technological solutions for everyday challenges. Designs are free and available for any user to adapt for their needs!

For more information on TOM, please visit: **http://tomglobal.org/**

ENGLISH vs. Tiếng Việt

Implement Pilot Projects.
As with any implementation strategy, the initiative of the first project is very critical and crucial to the success of the implementation. The Vietnam's Ministry of Construction have allocated a minimum of 20 projects for the next three years to to be utilized as pilot projects in order to gauge and measure the success of implementing BIM for Vietnam.

Interoperability.
The ability to exchange building model data and operate on that data interchangeably from one software vendor to the next. Such as import the ArchiCAD model into the Revit model and open it in MicroStation while preserving file fidelity and data integrity.

Object.
An object is represented by an element in a BIM model, which enables their parametric behavior. The object is programmable and can be edited to create different versions of the element. It is essentially an interchangeable code or "parameter" within a geometry that has specific behavior.

Triển khai các dự án thí điểm..
Như bất kỳ các chiến lược triển khai nào, các bước giải pháp của dự án đầu tiên là rất quan trọng và có tính then chốt cho sự thành công của việc triển khai. Bộ Xây Dựng Việt Nam đã chỉ định tối thiểu 20 dự án trong vòng ba năm tới để sử dụng như là các dự án thí điểm để đánh giá và đo lường mức độ thành công của việc triển khai BIM cho Việt Nam.

Khả năng tương thích.
Khả năng trao đổi dữ liệu mô hình xây dựng và vận hành trên dữ liệu có thể hoán đổi cho nhau từ một nhà cung cấp phần mềm đến nhà cung cấp phần mềm kế tiếp. Chẳng hạn như nhập mô hình ArchiCAD vào mô hình Revit và mở nó trong MicroStation trong khi vẫn giữ được độ trung thực và toàn vẹn dữ liệu.

Đối tượng.
Một đối tượng được đại diện bởi một thành phần trong một mô hình BIM, cho phép hành vi tham số của chúng. Đối tượng là lập trình được và có thể được chỉnh sửa để tạo các phiên bản khác nhau của thành phần. Về cơ bản, nó là một mã hoán đổi hoặc "tham số" trong một hình học có hành vi cụ thể.

If you have any suggestions for a word or a phrase to be compared between English and Vietnamese, please feel free to email us at info@the-bim-factory.com and let us know.

NHỮNG THỬ THÁCH TRONG TRIỂN KHAI BIM TRONG DOANH NGHIỆP XÂY DỰNG Ở VIỆT NAM HIỆN NAY.

The following is an article written by our very own BIM Manager Trang Nguyen regarding the current challenges of implementing BIM in Vietnam. We shorten it for the purpose of this newsletter. To read the article in its entirety, please visit **https://goo.gl/YZkiHK**

If you want to read the English version, you have to ask Trang if he can translate for you. To our Vietnamese readers, enjoy!

We encourage lots of questions and comments for Trang. He can be reached at **nhtrangnguyen@gmail.com** or **trang.nguyen@the-bim-factory.com**

Trang Nguyen
Senior BIM Manager

BIM rõ ràng có ảnh hưởng lớn.

Hiện nay, ở Việt Nam thuật ngữ BIM có lẽ đã không còn xa lạ với nhiều người, có thể còn nhiều người chưa hiểu rõ về BIM nhưng ít nhất là họ cũng đã từng nghe ai đó đề cập tới thuật ngữ này. BIM được hình thành với mục tiêu cải thiện mọi khâu trong quá trình tạo ra và sử dụng một công trình từ thiết kế tới thi công và vận hành công trình.

BIM rõ ràng có ảnh hưởng lớn to lớn tới mọi thành phần trong ngành xây dựng trên thế giới cũng như ở Việt Nam, từ đơn vị thiết kế, nhà thầu thi công cho tới chủ đầu tư cũng như đơn vị quản lý vận hành. Với tác động rộng khắp và toàn diện như vậy, để triển khai BIM rõ ràng là không dễ dàng cũng như khó có thể thành công trong một sớm một chiều được.

Ứng dụng BIM vào các hoạt động của doanh nghiệp giống như một cuộc đua đường dài gồm nhiều chặng và ngốn nhiều thời gian, nguồn lực. Và trong cuộc đua đó sẽ có vô vàn thử thách, trở ngại mà nhiều doanh nghiệp đã không thể vượt qua được ngay từ những chặng đầu tiên. Nếu công ty của bạn đang cân nhắc việc tham gia cuộc đua này, sẽ rất hữu ích nếu các bạn có thể hiểu thêm một chút về lộ trình đường đua và các vấn đề mà công ty bạn có thể đối mặt trước khi bắt đầu.

Với mục đích đó, bài viết này mô tả một số thử thách, khó khăn mà tôi cho là rào cản đầu tiên mà đa số các doanh nghiệp ở Việt Nam đang gặp phải trong quá trình triển khai BIM. Các doanh nghiệp đề cập ở đây có quy mô trên 10 người, có dự án với quy mô 20.000 m2 sàn trở lên. Các doanh nghiệp với quy mô nhỏ hơn điều kiện ở trên có thể không gặp phải các khó khăn này.

Các thử thách sẽ được sắp xếp vào bốn nhóm bao gồm những thử thách về chính sách, về con người, về quy trình và thử thách về công nghệ. Ngoài ra thử thách trong bốn nhóm này cũng có thể phân loại thành hai nhóm thuộc tính là thử thách mang tính chủ quan và khách quan.

Thử thách đầu tiên xuất phát từ nội tại của doanh nghiệp hoặc dự án.

Sức khỏe và văn hóa doanh nghiệp (hoặc dự án) thiếu lành mạnh.

BIM là một giải pháp giúp cải thiện chất lượng và năng suất của các hoạt động dự án, từ đó nâng cao hiệu quả hoạt động của doanh nghiệp. Tuy nhiên, BIM không phải là cây đũa thần hay liều thuốc tiên có thể giải quyết tất cả các vấn đề của doanh nghiệp đặc biệt là các vấn đề về quản trị, điều hành. Nếu doanh nghiệp có một nền tảng kinh doanh không vững chắc, tham gia vào các dự án có rủi ro cao - chủ đầu tư không minh bạch, thiếu kinh nghiệm, pháp lý dự án không rõ ràng, các chỉ số tài chính như khoản phải thu quá lớn, v.v. Liệu bạn có cho là họ sẽ hoàn tất cuộc đua BIM với một thể trạng như vậy? Tôi cho rằng việc hoàn thành dự án theo cách thông thường, truyền thống thôi đã là một may mắn đối với họ.

Nếu doanh nghiệp có một môi trường làm việc có yếu tố "phe cánh" tiêu cực hoặc một cấu trúc mà những nhân viên được đánh giá chỉ dựa vào thâm niên hay mối quan hệ thay vì năng lực và kết quả công việc thực, hoặc doanh nghiệp có nền văn hóa thiếu minh bạch, trì trệ thì rõ ràng việc chấp nhận BIM đã là một khó khăn chứ chưa nói tới việc triển khai.

Ở cả hai trường hợp trên, việc ứng dụng BIM là vô nghĩa và không có thành quả nếu các vấn đề đã nêu chưa được giải quyết.

Lựa chọn các gói phần mềm phù hợp.

Phần mềm hay rộng hơn là công nghệ là một phần quan trọng góp phần hiện thực hóa những ý tưởng của BIM. Nó chính là vũ khí và những công cụ giúp con người thực thi được những quy trình mới, cách làm mới giúp cho quá trình thiết kế và xây dựng hiệu quả hơn, giúp tạo ra nhiều công trình với chất lượng ngày càng tốt hơn.

Thiếu hụt các công cụ hoặc không làm chủ được các công cụ đều không thể tạo ra kết quả khả quan trong hệ thống BIM.

Hiện nay, trên thị trường thế giới, số lượng phần mềm với nền tảng BIM khá phong phú, từ Mỹ, Châu Âu cho tới Châu Á, với nhiều nhà cung cấp từ những đại gia như Trimble, Autodesk, Nemetschek (Graphisoft, Solibri) Bentley, v.v. cho tới hằng trăm third party với quy mô nhỏ hơn có thể dễ dàng đáp ứng mọi nhu cầu của các doanh nghiệp.

Ở Việt Nam, mọi người vẫn còn quen với các sản phẩm của Autodesk, tuy nhiên với sự kết nối ngày càng cao với thế giới, các doanh nghiệp Việt đang có điều kiện tiếp cận nhiều lựa chọn hơn. Vấn đề ở đây có lẽ chỉ là lựa chọn những phần mềm phù hợp với mục đích sử dụng và hợp với túi tiền mà thôi. (Ở đây không đề cập tới tiêu chí sản phẩm bẻ khóa được!)

Đa số các doanh nghiệp dưới tác động của các chương trình marketing hoành tráng hoặc chăm chăm soi bảng báo giá của hãng mà không đánh giá kĩ những tính năng của sản phẩm có phù hợp với đặc thù của các dự án hoặc phong cách thiết kế của doanh nghiệp mình.

Trèo cao thì té đau

Cuối cùng, ngoài những thử thách đã đề cập trên đây, một vấn đề cũng không kém phần quan trọng, đặt mục tiêu quá cao so với thực lực trong việc thực hiện BIM cũng sẽ dẫn tới việc đuối sức và mất phương hướng trong cuộc đua. Như ông bà ta hay nói "Trèo cao thì té đau", một thành ngữ bất hủ, bất chấp thời gian cũng như đối tượng.

Bị dụ dỗ hay thúc ép từ các đồng nghiệp "máu me" hoặc các bậc tiền bối đáng kính, mà triển khai BIM vội vàng mà thiếu đánh giá thực lực hoặc chuẩn bị nguồn lực đầy đủ thì thất bại sẽ luôn là người bạn đồng hành thân thiết của doanh nghiệp của bạn. Cho nên hãy cẩn thận và tỉnh táo!

IMPLEMENTING INFRASTRUCTURE BIM

AN ESSENTIAL GUIDE TO IMPLEMENTING BIM FOR INFRASTRUCTURE.

As more of the infrastructure projects in Vietnam are required to implement Building Information Modeling (BIM), many in the industry are realizing they need to embrace BIM in order to meet the government's demand - *See "PM DECISION" on page 13 for details about the requirements for infrastructure projects*. Owners of civil infrastructure, including government agencies are starting to embrace the many benefits of BIM, and they are increasingly mandating various types of infrastructure BIM use on a variety of projects.

Rendering of Metro Station in Ho Chi Minh City, Vietnam - citypassguide.com

BIM Confusion.

Despite the buzz around BIM for infrastructure, there's still a significant amount of confusion about what it really means to "do BIM." Engineering firms and organizations considering moving to BIM often wonder about the best way to implement it.

Some worry about how much BIM will change their established processes. Others are hesitant—or they perceive themselves as too busy—to invest time to implement BIM. A few in the industry may even think they already use BIM, but, in fact, actually just use 3D drafting processes.

When you understand what BIM is, the implementation process required to get there makes more sense. People have a general understanding of BIM as an intelligent model-based process for planning, designing, building, and managing infrastructure.

However, to implement BIM, you must ready yourself and your team to think differently about how projects are executed. You will no longer be working with points, lines, arcs, and shapes that represent objects.

Instead, you will be creating and working with intelligent models. These models are spatially accurate and populated with intelligent objects. You begin by defining what these objects look like and how they should behave. Then you map a process that will help all project stakeholders get the most bene t from the intelligence within the model.

Sounds too simple? Compared to the breadth of knowledge required to engineer even the least complex of your projects, implementing BIM is straightforward. It does require some planning, time, and training in the beginning to get started. The process outlined in this paper is a high-level look at the steps that you need to take to start executing projects using a BIM process.

Getting started with BIM Infrastructure.

When getting started with BIM for infrastructure, should you just dive in and change every aspect of the way you work at once? Or should you have a highly detailed plan that accounts for every step along the way?

The first option will likely prove highly frustrating even if you include a training program for your team at the beginning. Your team won't have a clear idea of your firm's plan for getting to BIM or know what shared goals to strive for.

The second option has its pitfalls, too. Some organizations actually over-plan for a BIM implementation. They know it's important to have clear standards when implementing BIM, so they try to establish standards for everything they do before using BIM processes on a single project.

The best approach is to start by thinking about what you, your clients, and the rest of the team will want to do with the model during development of the project.

Also consider how the model could be used to manage assets once the project is built. Set high-level goals that support how the model actually will be used, and communicate those goals to the team. Note what key pieces of information, such as physical attributes, and relationships of objects within the model are important to achieve your goals. Then, you'll be ready to begin defining the standards that will help you get started.

Establish Infrastructure Standards.

To implement BIM, you'll need to establish standards for the objects you use in your designs. You'll also want templates that support your organization's preferences for how objects are represented. BIM standards come in a variety of formats, including:

+ Model templates.
+ A centralized library of content within your BIM tools.
+ A parameters file to be updated and shared across your team.
+ Discipline-specific object libraries; converted from existing details.

You'll need standards for all the objects you commonly use. The easiest way to get started is to begin with a library of BIM standards that match or are close to what you and your clients will need. You can modify the standards to better conform to your needs and preferences.

For instance, Autodesk® AutoCAD® Civil 3D® software includes a library of standards for many types of civil infrastructure objects, such as gravity and pressure pipe networks and grading.

The Existing Conditions Are Critical.

To begin using BIM on an infrastructure project, you start by creating an intelligent existing conditions model that can help accelerate the pace of your entire project. Contrast that with traditional conditions drawings, which often lack enough detail and depth to contribute to later phases of projects.

In a BIM process, an existing conditions model will be 3D, spatially accurate and data-rich—not just 2D or 2D elements displayed with 3D effects. You set yourself up for success by gathering all the data you need, and then assigning the correct object intelligence to elements within the model.

The process for creating an existing conditions model in Autodesk® InfraWorks 360TM software, a preliminary engineering and design tool that supports BIM processes, begins with data gathering. Likely, you will start with some type of survey data of the area in question. Laser scanning-based survey techniques generate detail-rich point clouds of data that can be brought directly into your software.

Augment your survey data with data from other sources. You'll find that much geographic information system (GIS), utility, aerial survey, planning, and environmental data is readily available for many areas. You can even incorporate information from sources like Bing® Maps into your existing conditions model.

The Importance of Data.

Data in many of the most common spatial data formats can be incorporated into your model with no need for conversion. The objects within the model have attributes that make them more intelligent. For instance, a pipe looks like a pipe in your 3D model. The pipe will also have a diameter, depth below ground, and a relationship with other objects within the model. This is unlike what you may be used to in traditional CAD-based preliminary design, where you see elements like utilities as a 2D layer that lacks a de ned relationship to items depicted in other layers.

At this preliminary stage, you can more quickly add model elements. In a relatively short span of time, you can create and evaluate multiple alternatives and present different options more effectively within the context of existing conditions to project decision makers. By extending your model to the cloud, you can make it available on mobile devices in the field. You can explore the proposed project site with decision makers, who will be able to view the proposed alternatives more effectively in the context of actual conditions.

Decision makers see their options in a visually rich context, helping them to make more informed choices. After they make their decisions, you can bring the preliminary model into AutoCAD Civil 3D. The software will recognize the objects in the model. By applying your predefined standards to the objects, you add detail and more intelligence to the model automatically. This is an example of how you bene t from the effort you put into defining your standards. You can save more time on virtually every subsequent project that uses the same standards.

Do Infrastructure the Right Way.

Following a clear strategic BIM execution plan will help you implement BIM for infrastructure successfully. The steps you should take include:

+ Plan to educate staff on BIM as it requires a new way of thinking.
+ Identify standards and rules that are required on the project.
+ Account for software and hardware needs.
+ Establish a project plan for each BIM infrastructure project that outlines lifecycle data needs and processes for sharing the model.
+ Document, learn and refine processes.

Autodesk and THE BIM FACTORY can help you to execute BIM the proper way—while assist to avoid pitfalls along the way. Email us at **info@the-bim-factory.com** to learn more about how BIM can help with your civil infrastructure project.

This is an adaptation from an article by Autodesk **http://www.autodesk.com/solutions/bim/hub/bim-for-infrastructure-implementation-guide**

AUTODESK + THE BIM FACTORY

AUTODESK Asia Pte. Ltd. and THE BIM FACTORY Ltd. agrees to join forces for BIM projects in Vietnam.

On March 21st, 2017, THE BIM FACTORY along with **Autodesk Vietnam** and **Autodesk Asia** agreed to collaborate and support various clients with BIM and Infrastructure BIM works throughout Vietnam.

In addition to being a BIM consultant partner, TBF Technology also agrees to become Autodesk's regional reseller as well as opening the next **Authorized Training Center (ATC)** in Ho Chi Minh City.

Currently, there are two ATC located in Ho Chi Minh City, TBF would be the third and in addition to providing a convenient location for becoming a Certified Autodesk's product user, TBF will also provide training and education through our TBF Academy brand in collaboration with **Pegasus International | BIM Pro** to take on Hanoi, Da Nang and Ho Chi Minh City.

TBF, TBF Academy and TBF Technology are very excited for this opportunity with Autodesk and BIMPro and we are looking forward to a successful and spirited collaboration effort together.

Left to right - Dr. Anh (Pegasus), Ms. Lan (Pegasus), Mr. Han (TBF) Mr. Chinn Lim (Autodesk), Ms. Ngan (Pegasus) attended the Smart Cities and Clean Energy Seminar at SHTP in Ho Chi Minh City in April.

Emerging BIM talent.

Our future BIM leaders in Vietnam.

The future of our industry is solely dependent on the people who are skillful and talented enough to run it. Especially in Vietnam, where BIM talents are rare and truly hard to come by.

This section is dedicated to the people who we think are emerging as stars within our BIM industry in Vietnam.

Knowledge begins with the understanding of the topic and then mastering the subject by actively performing it. Here at THE BIM FACTORY, we not only expect our team members to become the experts of the BIM topics, but also becoming an active participant within the community. Plus, doing the actual work at optimal efficiency also helps to define the future leaders of our industry.

Binh Duy Duong

BIM Coordinator I

A true team player and even a faster learner.

Binh started out as a Modeler I and quickly realized BIM was actually a lot tougher than he thought. A natural Revit user, Binh knew he was good at Revit and understood his technical capabilities. He originally thought that his Revit skills could allow him to reach his goal of becoming a BIM Manager some day.

It wasn't until when Binh became a Modeler II where he was in charge of a few team members, Binh realized being a good BIM player was more difficult than it looked. Having to depend on the abilities of others and work with a tight schedule, Binh knew he had to work cohesively with his team and lead them down the right path in order for him to complete his tasks.

Towards the end of 2016, after being at TBF for 2 years, Binh was promoted to BIM Coordinator I where he excel at guiding his team to complete many difficult tasks. Although Binh knows he still has a lot to learn, but that is something he is very confident that he can achieve without really trying. Binh also knows that in order for him to succeed, he will need to continue to learn as long as he is in the industry.

In 2016, Binh was award Most Improved Employee. By winning this award, it shows how much Binh has grown in the last two years. Binh is also an Autodesk Certified Professional 2015 Revit and he earned his BIM Certified Professional certificate in 2015 and had the highest score on the final exam.

Read more about Binh and this award at:
https://www.the-bimfactory.com/tbf-awards-2016

Q & A with this month's Emerging BIM talent.

What attracted you to join TBF?

BD Opportunity. I think TBF is a place with different types of motivation and dedication. In the last two years at TBF, I've learned a lot, from how to fix the internet to how to make an action plan for the modeling process. People is also an important part of us. I came to realize how important people are in the process when I began working here. Like a bus, we need have correct people before we start to go. TBF's vision that also a point attracted me. By using BIM and VDC's technologies, TBF can improve the AEC industry in Vietnam.

What is proudest achievements at TBF?

BD My "*Most Improved Employee*" achievement at the end 2016. I was really surprised to receive it and was completed drunk that night because I celebrated too much. My team also is my proudest achievements at TBF. They are young, enthusiasm and we treat each other like a family.

What do you love most about your work?

BD The challenges that each task brings and the experience I get after we finished a task. This makes me feel like I was growing up and gaining more confident from one project to the next.

What advice would you give to someone who wants to get to where you are now?

BD Be prepared to do a lot of strange tasks. But by doing this, it will make you more flexible and have the ability to improvise. And make sure you set high goals at doing everything in order to achieve your target.

What is your biggest weakness involving your work?

BD In my current work, I still make many mistakes because my plans are not always good enough and this can result in many issues and problems. I need to improve more on the QA and QC process.

What have you learned the most being at TBF?

BD Technical skills, the process, and take responsibilities for what we do. Honestly, I'm not confident at the beginning but I learned a lot from the failures. Plus, people here still have the passion for what they do and to me that is very important.

What is your biggest strengths involving your work?

BD Passion, I believe that I have the passion in my work and now I trust that TBF is a sustainable environment for my development.

When did you first learn about BIM?

BD Maybe two years ago when I decided that I needed to work on the process more effectively than the traditional way. At that time, I found TBF and I wanted to join to seriously learn about BIM and what it does.

What do you see as the big trend in BIM in the next five years?

BD I believe that people in our industry are still looking at BIM as 3D. But as soon as we move to 4D BIM or may be jumping to 5D, then this will be the big trends in BIM in the next five years.

Where do you see yourself in 2 - 5 years?

BD I want to be a BIM Coordinator II then BIM Manager. But the most important thing that i want is to be successful in any position. I would also like in next 2 - 5 years to prepare myself for my own business.

Check out the other Emerging BIM talents currently on our website at **https://www.the-bimfactory.com/emerging-bim-talent**

BIM **TECHNOLOGY**

ACCELERATING THE TECHNOLOGY OF BIM AND VDC.

Our main goal is to take the technological advancements of BIM and VDC to a whole new level for our industry.

BIM Technology focuses on the trends and technology through research, training and development which will have a major impact on BIM and VDC in the near or immediate future.

We created a dedicated division of process and system engineers who look to transform the way at which we can design, analyze, and construct the built environments. We are constantly looking for ways to transform the built environment with advanced technological tools and applications.

A few of our focuses are:

+ Authorized Training Center (ATC)
An Autodesk Authorized Training Center is a place to develop the skills to make the most of Autodesk software and a place to take and prepare for Certification Exams.

+ Modular Fabrication Technology (MOD-FAB-TEC).
Redefining the fabrication process and creating a modular solution for the building industry.

+ Building Information Manufacturing.
Our industry will be forced to adapt manufacturing in the same way computer-aided design did for the design industry. We aim to stay one step ahead of this game.

+ Automated Building Assembly Technology.
Utilizing automated technology to construct and assemble buildings. The foundation of TBF Technology research and development is the creation of the automated assembled system for buildings.

+ 3D Laser Scanning.
+ Simple BIM Collaboration Tool.
+ ArchiCAD and Revit training and support.

For more information on BIM Technology, please visit our website **www.the-bim-factory.com/bim-technology** for more details.

TBF CLIENT HIGHLIGHTS

BIM CONSULTANCY SUPPORT

Client: **PHU MY HUNG DEVELOPMENT CORPORATION**
Vietnam
Scope: BIM Management | BIM Production
Duration: 6 months

Phu My Hung Development Corporation (PMH Corp) - The Infrastructure developer of the New City Center. The company was established on May 19th, 1993 as a joint-venture between the Ho Chi Minh City People's Committee (represented by the Tan Thuan Industrial Promotion Company) and the Central Trading & Development Group, headquartered in Taiwan.

PMH Corp. is the main developer of the New City Center (Saigon South) Master Plan which represents a historic opportunity for Vietnam and Ho Chi Minh City to re-establish its position in the global economy to become the most desirable international business location in Southeast Asia.

City of Phu My Hung, HCMC | Image by Phu My Hung Development Corp.