CS463487

Digital Project Management Workflow:

A Case Study with 300 BIM 360 Users in One Project

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Learning Objectives

- Understand how BIM 360 benefits project management team with case studies
- Learn how to utilize BIM 360 for design coordination and management with a typical process
- Learn how to set up BIM 360 for project management in construction phase: on-site safety and inspection
- Learn pros and cons from the case studies

Description

This class is designed for project management (PM) team in terms of managing the project during the design as well as construction phase, which is enhanced by BIM 360. Along with the BIM models are being developed widely in the construction industry today, the design collaboration and coordination is one of the challenges for PM team, especially the project with many designers in different locations. Managing several kinds of documents in the construction phase such as: RFI, submittals, inspections, report... is also suffering PM team without standardization and response-in-time procedure.

However, all those challenges can be minimized. With BIM 360 and project case studies, this class provides the method to set up the BIM 360 as a CDE for design collaboration and coordination, using a couple of BIM 360 features and customized workflow. Moreover, a digital procedure with BIM 360 build in this class will help a PM team in standardizing and digitizing site workflow on RFIs, transmittals management, site inspection, safety, QAQC, reports…, which is relating to more stakeholders in the project.

Speaker(s)

Hung Lam is a BIM/VDC Specialist and Digital Consultant. Previously, he was a BIM Manager of Project Management Team at Alpha King, a real estate developer company in Ho Chi Minh City, Vietnam. He has more than 7 year-experience in BIM for building and civil projects for Project Owner/Developer and General Contractors in managing on-site BIM implementation in multidisciplinary building & civil projects as well as BIM 360 administration. He currently serves as a BIM Leader in Kajima Vietnam Company Limited.

Phuc Le is a Digital Consultant, BIM Advisor, BIM Application Expert & Forge Developer. He currently serves as Technical Specialist at Autodesk Asean, supporting firms and organizations in the AEC sector to successfully implement Building Information Modelling, Cloud Collaboration, Computational Design and Generative Design.

About The Company and the Projects

Alpha King Real Estate Development JSC is a fully foreign-owned company mainly engaged in the development of multi-purpose real estate projects, from grade A office building, commercial centers to luxury apartments. Alpha King has a team of experienced experts from 12 countries well-known for real estate design, consultancy, management with a desire to innovate wherever they come. The company has established a track record of Hong Kong, Australia, China and the US.

The Company has been developing their first 3 high rise building projects in Ho Chi Minh City, Vietnam:

- Centennial Ba Son — Residential Building
- Alpha Town — Office Building
- Alpha City — Mixed-Use Building

All 3 projects are the most luxurious ever in the City with:

- Prime location
- Unique design
- World-class service
- International standard
- Cutting-edge technology

This industry talk provides insight into why and how BIM 360 can be used as digital project management solution for design and construction projects. By providing examples and lessons learned from project owner and developer's point of view, this handout will serve as a reference for any firm looking to implement BIM 360 on an upcoming project. The focus will be on BIM 360 adoption in the design and construction phase as well as plans on using in the future.

At the time of Autodesk University 2020, the residential and office building project referenced in this class were in the construction phase, while mixed-use building project was under design for construction document phase.

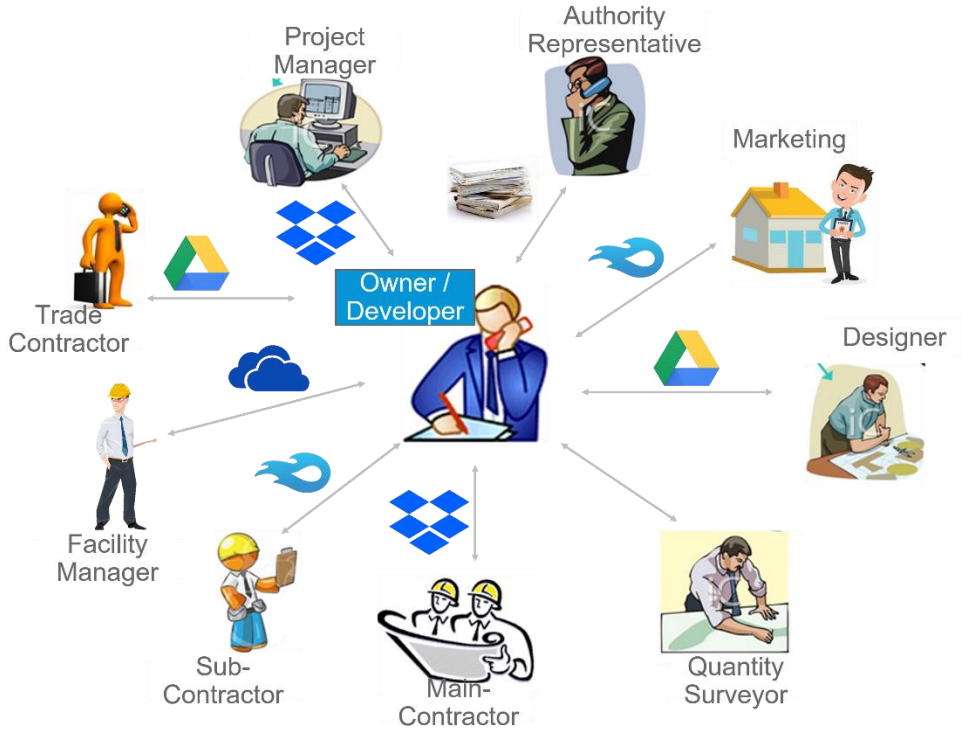
The decision to adopt BIM 360

Cost, Schedule and Quality are always the 3 business key factors in construction. They become more challenging for the project owner/developer to manage the project from planning, design, construction to operation phase, especially for high-class projects. From 2017, the Company decided to utilize Autodesk BIM 360 cloud service to digitally manage the projects, which is resulted from the awareness of current industry challenges and the state-of-the-art technologies.

Communication Challenge

With the experience from completed projects previously, the team realized that the communication is the most important and critical thing to manage if they want to succeed. As a project owner/developer, the team has been getting the most of communication lines along with the project progress from many stakeholders in the projects. There are hundreds of communication lines between designers, engineers, consultants, contractors, trade-contractors, quantity surveyors, PM, CM, etc…Moreover, stakeholders are not in the same location, they come

from various cities in the globe. Each of them differs to use tool for communicate and data transfer: Googledrive, Dropbox, FTP, Onedrive, etc…, which is a headache to the team.
Additionally, the need to access company server data are usually in matters with accessing permissions, VPN set-up, permission change as per staff transfer…



Communication challenge

Industry Challenge

Over the years, 2D CAD workflow has showed many disadvantages: drawings not consistent, essentially required skills to understanding, many versions to be managed, which was leading the projects to problems.

BIM and Digital technology

The team has been implementing BIM for our projects from the beginning of project development, including BIM from concept design with analysis and simulations that are improved with parametric design, BIM in construction phase with 4D planning and simulation. They are all latest technologies in AEC industry. All stakeholders in the project are contractually required to implement BIM in the projects and utilize 3D model for coordination and collaboratively work with each other. By applying the latest technology in project, the 2 of 3 buildings were selected as the pilot BIM projects in Vietnam.

This results to the need to have a “single source of trust” for all stakeholders involved.

“The first 3 rules of construction: Document, Document and Document”, the quote comes from management board with regards to their previous project experience

The Company decided to host and organize a cloud service that is advantageous, various features and serve the projects from the whole life cycle as well as native with BIM formats for all

stakeholders in the projects to communicate, transfer and submit data, collaborate without distance and more.

BIM 360 is the chosen platform by the co-operation with Autodesk Vietnam and Alpha King, which was enhanced by the MOU between the 2 companies in 2018.

Value added by using BIM 360

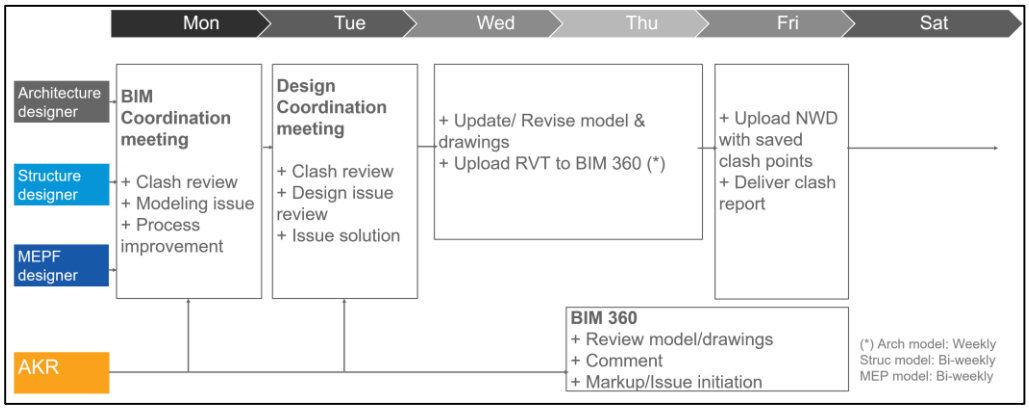
To learn the value that BIM 360 brings to a project, we will explore the benefits from the design phase to the construction phase with specific use cases.

From design phase

The BIM 360 platform is very important to make the “design with cloud collaboration” happen. Since the project designed by 3D BIM software from early stage, Revit was utilized. All designers were contractually required to deliver the design by 3D Revit models. With BIM 360, the design phase collaboration and coordination were improved by the followings:

Improve BIM collaboration workflow

BIM is about collaboration and as such. The team was adopting a weekly collaboration workflow integrated with Revit, Navisworks and BIM 360 platform to control the design quality and schedule, which was indicated in the BIM Execution Plan and the contract with involved designers and consultants.



A weekly collaboration workflow enhanced by BIM 360 platform

In comparison with traditional workflow, the team is able to see that all the issues related to the design (coordination, design code, unmanaged version…) now centralized to the BIM 360 platform. The team now can control the category of issues, the assigned designer, the due date of resolving issues as well as BIM clash detection in report. Moreover, project consultants/designers can access to a single data storage to work and keep track of design progress. That adds value to the team.

Issue management

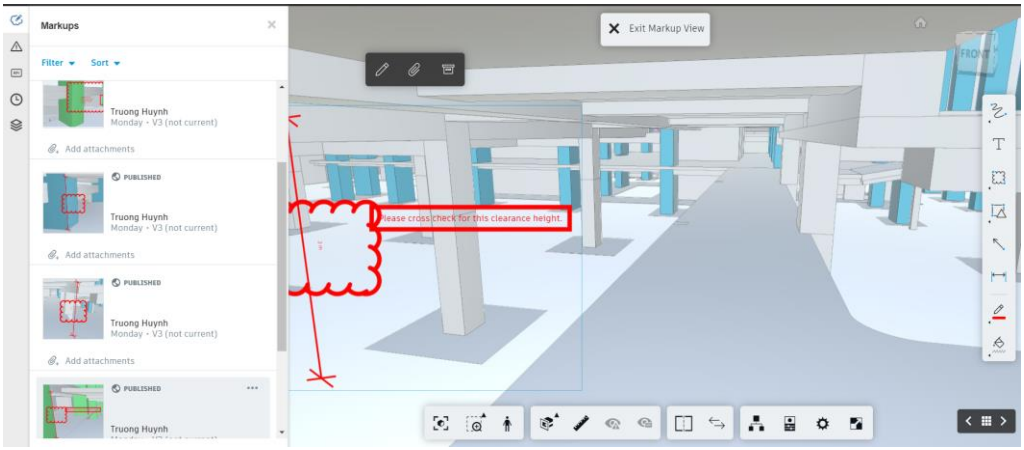
As mentioned above, all issues are managed systematically by BIM 360. Stakeholders involved in project are able to quickly open the related drawings or 3D elements that mattered. The system automatically sends emails to the responsible parties. It helps to save the time in collaboration

BIM Model Review

The BIM 360 is native with Revit model and Navisworks model file, so that it helps to view the model directly in BIM 360 application. The team members do not need to have Revit or Navisworks installed in required strong performance computer. Also it is convenient for the team in the coordination meeting in which most of members cannot bring such strong computer to the meeting room to open and view the design model.

Enhance Design Communication

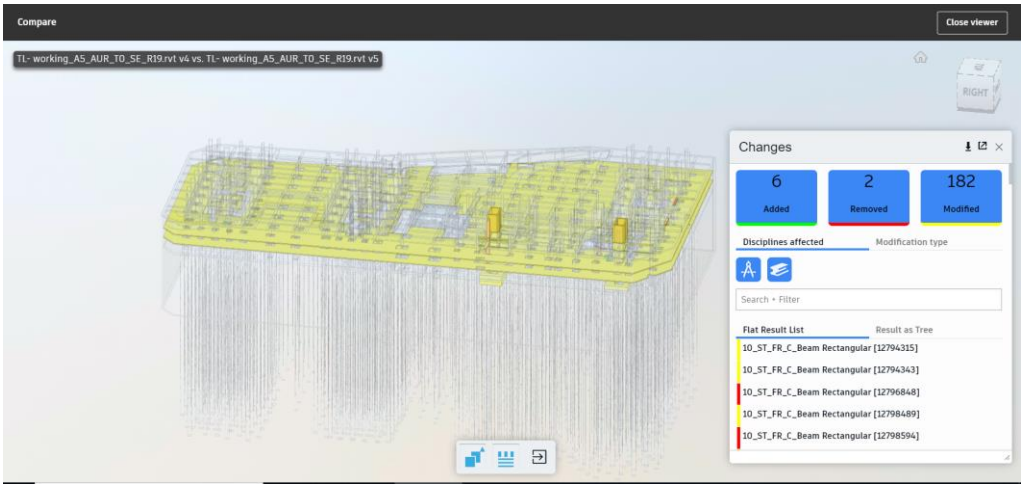
By featured tools for markup and comments, the team easily to initiate markups and comments to responsible stakeholders about the design. It adds value as well.



Mark up and comment on the design model to communicate with designers

Manage change and version

Design is always growing with changes and versions. BIM 360 features to keep track and record the version of the design model and drawings. It also generates the comparison between the newer and older version to control which elements were deleted, added or modified, especially working with thousands of elements in BIM models. Clouding or tagging the changes was an unrealistic request, but BIM 360 eliminated this concern by providing visual change analysis.



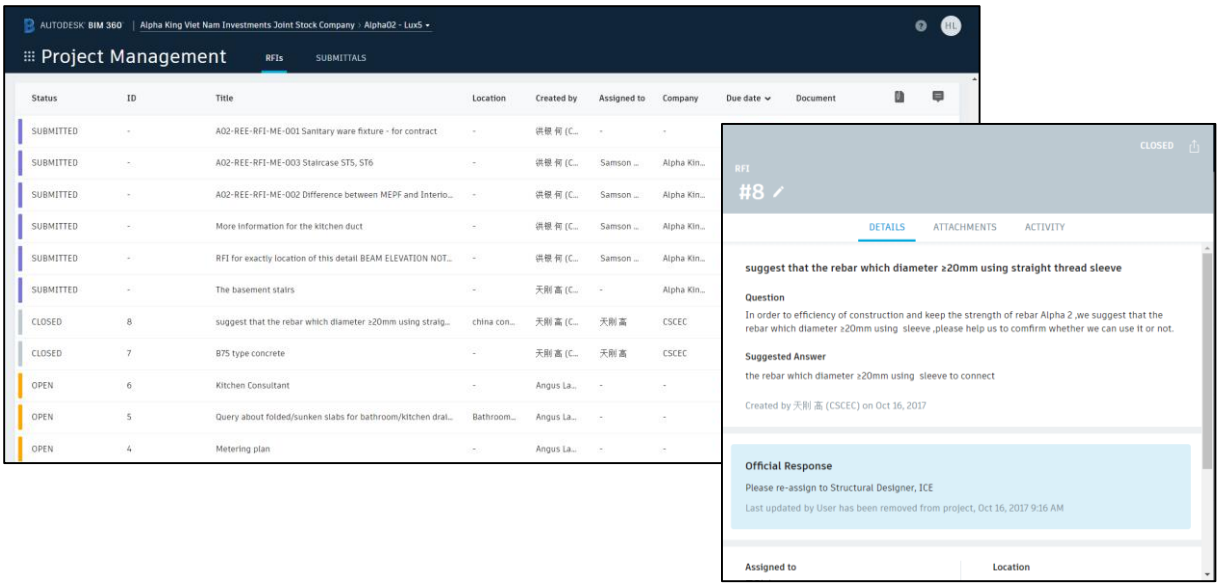
Manage change in BIM 360

To construction phase

In the construction phase, there are more stakeholders involving and the communication becomes more massive. By digitizing the site workflow, the team can improve the project management with BIM 360.

Digital RFI

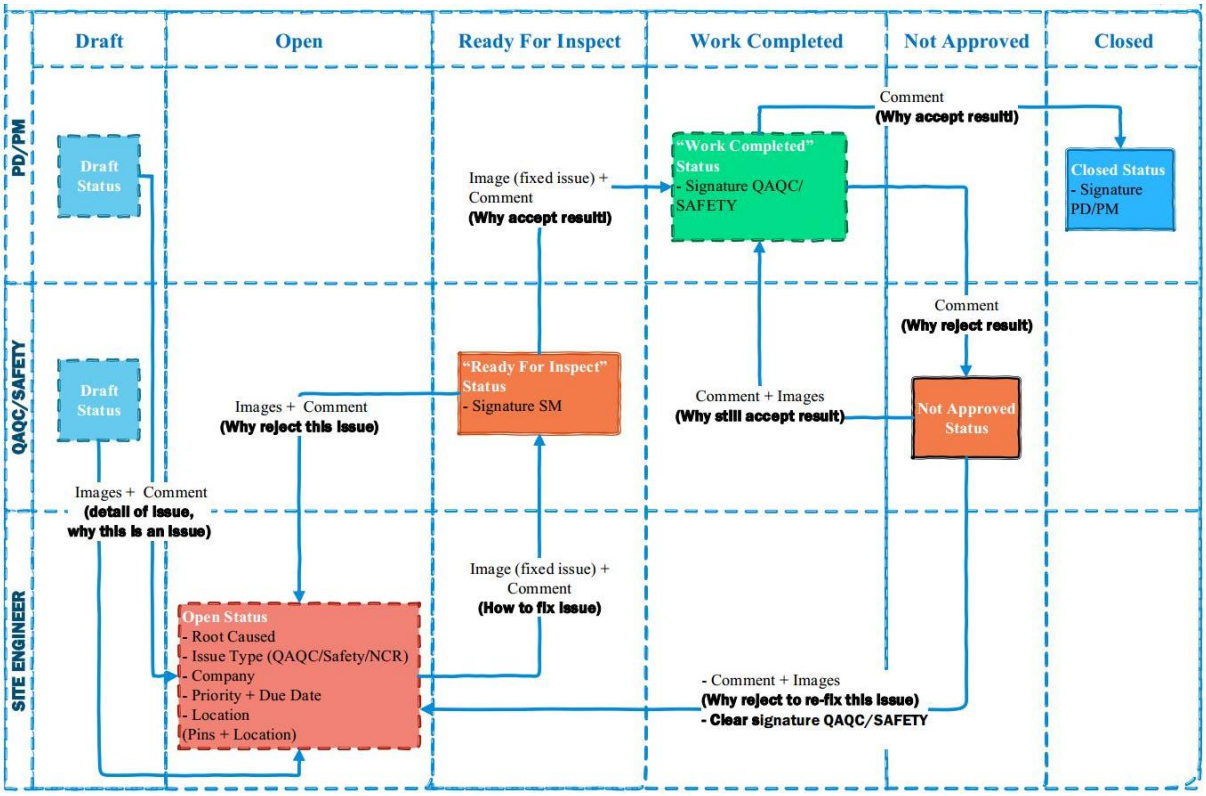
Like the issue management, RFI feature in BIM 360 can enable the PM to manage and control the schedule of RFI creation and reply, which can directly affect to design clarification and change. The construction schedule might be delayed if RFI system is not managed and controlled well. BIM 360 allows the PM to systemize the RFI list with features of assigning related stakeholders, related drawings or documents as well as managing the status of RFIs. It really benefits to the PM team on site.



Manage RFI in BIM 360

BIM 360 Build & Digital Inspection

The most helpful with BIM 360 in terms of digital project management workflow on site is the BIM 360 build module. It enables the digital workflow in Quality Control and Safety inspection on-site. Similarly to the design issues, the QA/QC and safety inspection also generates the issue if the item in the inspection form is failed. The issues then come to the responsible stakeholder to fix with a due date. Accordingly, the status of the issues come from Open to Close. For each step of the workflow, there is many information that needs to be filled in before changing the status of the issue. The workflow can be detailed in the figure below.



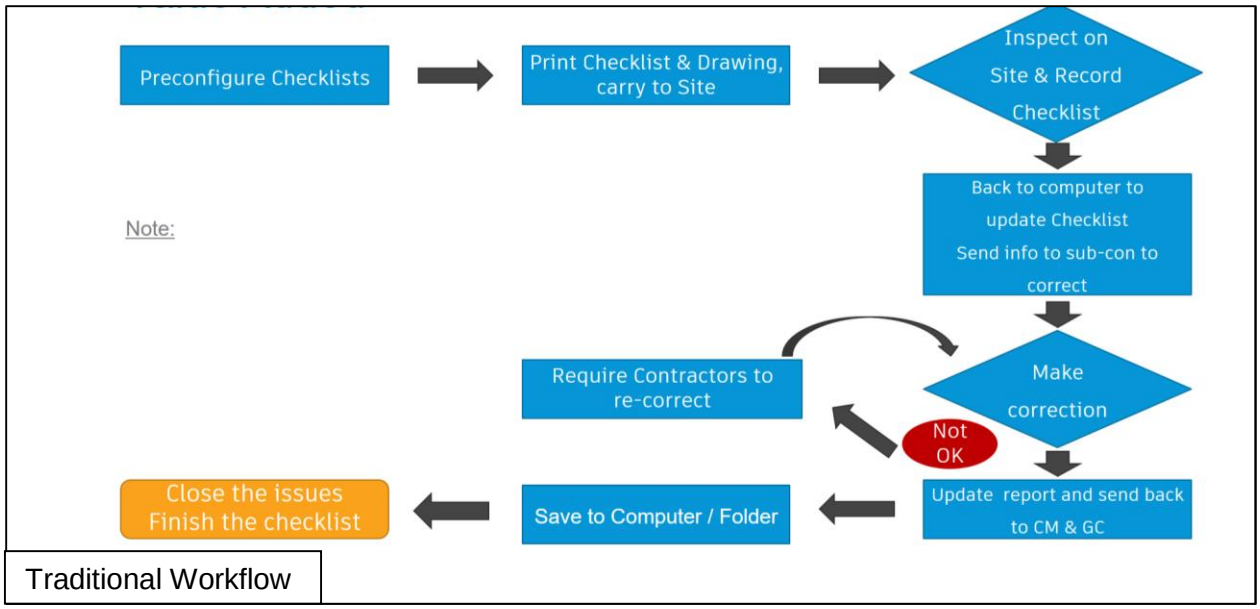
BIM 360 Build for digital QA/QC and safety inspection workflow

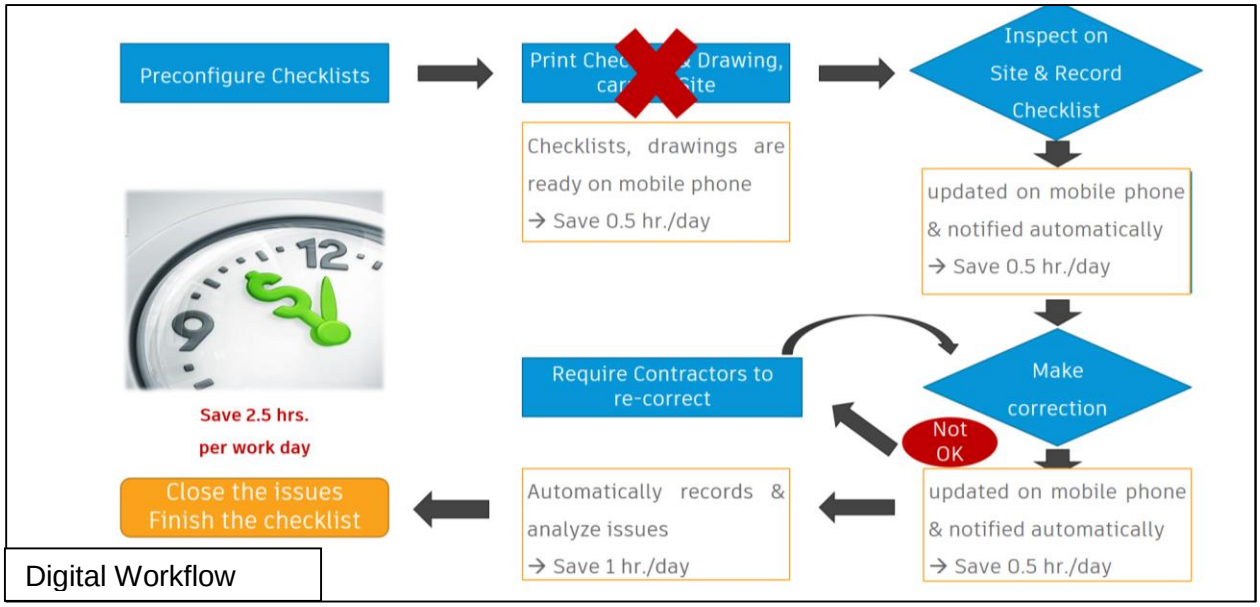
The site team (CM, Main Contractor and Sub-cons) are required to follow this workflow and agreed with the rules of BIM 360 Build implementation. One of the rules is the due date to resolve the site issues. This comes from a lot of meetings, trainings and discussion to find out the suitable workflow that integrated with BIM 360 Build.

Issue Priority	Maximum Days to fix the issue
High	1
Medium	3
Low	5

Most value added is saving time

By adopting digital inspection workflow in BIM 360, the team can get the benefit by cutting the working time in comparison with the traditional workflow. How the team saves time can be explained in the picture below.

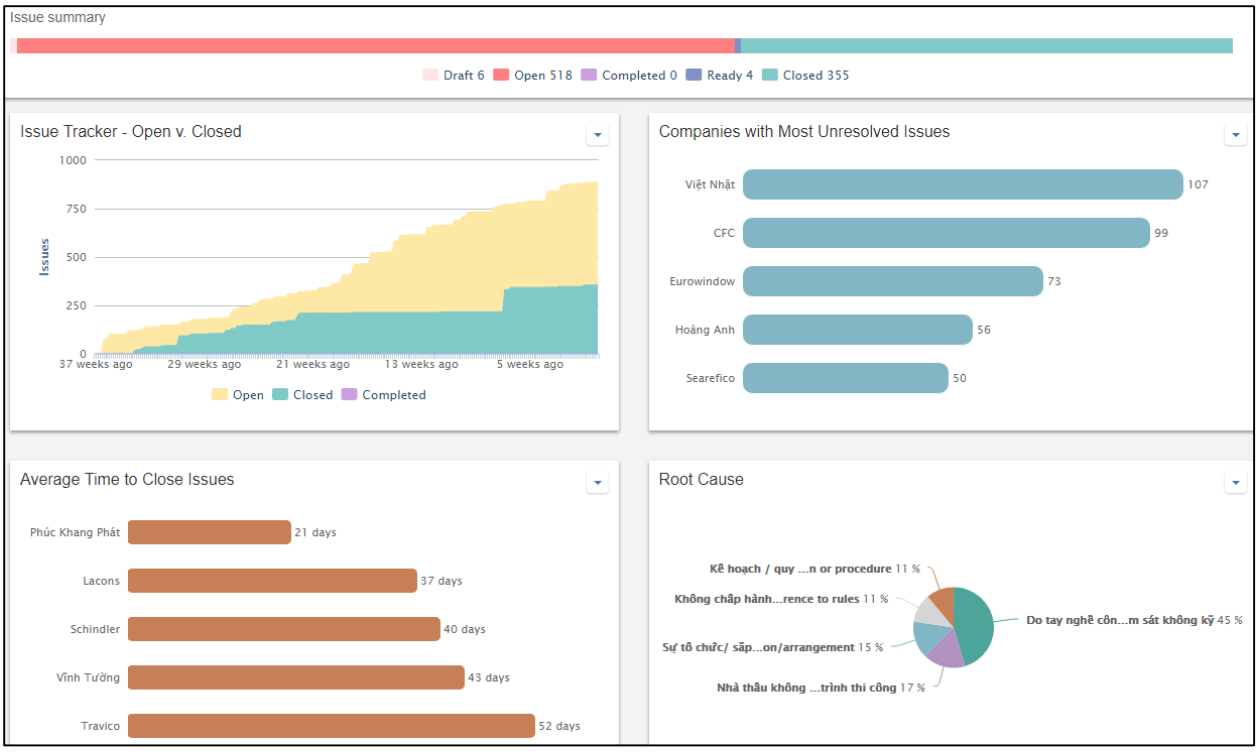




Saving working time by changing to digital inspection workflow with BIM 360

More value added in Report and Management of QAQC and Safety

By having those inspection data in BIM 360 system, the site team is able to generate the reports in terms of the summary of issues, trends of issues as well as the root cause of issues for future improvement. The latest feature of BIM 360 can apply Artificial Intelligence (AI) to bring insights of the project and prediction of progress due to the data of issues. That's why the team is required to follow the rules strictly.



Reports generated from BIM 360 platform

From such reports, the management board can quickly and timely make decision to keep the project on track. This adds the more value to the site team.

Drawback to BIM 360 adoption

The engineers on site love "instant noodles"

This is a slang in Vietnamese, meaning that the very convenient and quick way to make action rather than doing many steps and input correct information as the workflow above in digital inspection with BIM 360. That's why there is still existing a "instant noodles" way to do inspection and fix the issue by using messaging application on mobile phone: Whatsapp, Viber, Zalo (a popular app in Vietnam). Group chat has been created to keep communication between parties in terms of QAQC issues and safety inspection. It eventually results in missing data of various kinds of issues managed by BIM 360 and therefore the report and insights of the project performance are not absolutely reflected. It has no track record, no summary, no report and importantly no lesson-learned.

Vietnam Authority auditing and inspection still in paper work

This is also a barrier for the site team as they have to do twice, one for BIM 360 system and one prepared for authority auditing, especially for QAQC inspection documents. The Vietnam construction authority is still working in paper work with stamp & by-ink-signature. They are developing a digital system for approval and auditing since they are going to mandate BIM for public projects.

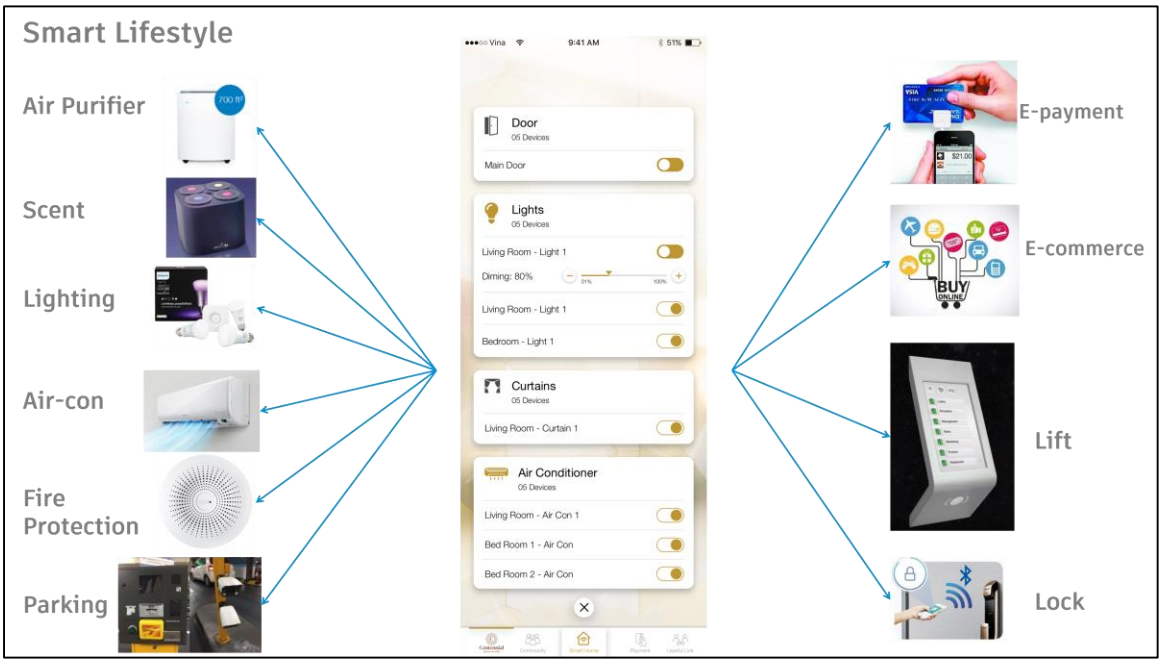
Conclusion

Learning from the project case study to efficiently adopt BIM 360, it's recommended that:

- BIM 360 platform (BIM CDE) should be hosted/organized by Project Management team or Project Owner/Developer
- Training and direction on the workflow for digital project management, agreed by all stakeholders
- Encourage the engagement of Consultants, Contractors and all stakeholders with awareness of long term benefits of project performance data.
- Hope for the future digitization of authority management procedure.

Future with Digital Operation

As a project owner, Alpha King has seen the benefits of BIM technology in the operation phase of the building cycle. The Company is investing a lot in exploring the potential application in terms of digital and technology for the operation phase of the project. This includes smart home devices with digital twin technology integrated with BIM models, e-commerce system for the mall management, e-payment system…, bringing world-class service and smart lifestyle to the customers with Alpha King Real Estate.



Digital operation

For more information, see Alpha King success story on Autodesk by the link: https://bim360resources.autodesk.com/customer-case-studies/alpha-king-real-estate-development-2