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BIM 360 for EPC Contractors: From Business Needs to Full Adoption

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Learning Objectives

- Learn how to develop a business case to measure the benefits of BIM 360 implementation on projects.
- Discover BIM 360 technical strengths and limitations.
- Learn how to improve productivity, reduce rework and time waste, and enhance collaboration using cloud services.
- Discover the advantages of a fully cloud-managed project by analyzing a real-world case powered by BIM 360.

Description

Wondering how BIM 360 software can improve design workflows for an engineering, procurement, and construction (EPC) contractor? This class will showcase how worldwide general contractor Maire Tecnimont has planned the implementation of BIM 360 on projects, and its disruptive impact on the traditional workflows. The session will analyze the platform strengths and limitations, and will demonstrate how to redesign the traditional waterfall approach in order to get the most out of the BIM 360 features. Attendees will discover how to do the following: effectively design the document management structure; manage both Autodesk and third-party models; maximize the design collaboration process; set up document approval workflows; and capitalize on the cloud repository for developing custom applications. In conclusion, through the showcase of an industrial plant project, we will explain why BIM 360 is the solution that lets team members effectively collaborate to maximize efficiency and project quality regardless of where they are located.

Speaker(s)

Marco Mellacqua

Marco is a Plant Information Management Coordinator at Maire Tecnimont a worldwide general contractor with a specific focus on the oil & gas, petrochemicals and fertilizer processing industries. In the last years he has been strongly involved in the Company digital transformation process. Actually he is collaborating in several digital initiatives that aim to integrate digital technologies into Engineering and Construction business areas in order to make processes more efficient and effective and consequently to deliver more value to Clients. On the executive projects instead, he is taking care of the information management plan and its deployment ensuring the

correct use of tools and methodologies and collecting feedbacks to implement in the above mentioned digital initiatives.

Fabio Bitetto

Fabio is a Plant Information Management Coordinator at Maire. Despite his young age, Fabio made several work experiences in which he grew his BIM and project management expertise focusing especially on energy and utilities. He also collaborated with the City of Milan for the European project “Horizon 2020”, focused on smart cities and energy efficiency. Fabio started the development of BIM in Maire Tecnimont, focusing on Underground Services. In the 2019 he has started a new experience as Plant Information Management Coordinator, managing all the Information Management aspects on projects.

Maire Tecnimont Group

Think about 9,000 highly skilled professionals operating in the oil & gas processing, petrochemicals and fertilizer industries. This is Maire Tecnimont Group. An industrial leader in Engineering & Construction, Technology & Licensing, and Energy Business Development and Ventures. Listed on the Milan Stock Exchange, the Group is among the top-ranking worldwide engineering contractors.

The Business Needs

Looking at how productivity has evolved in several sectors in the last 25 years, it is immediate to see how productivity in construction has been relatively flat compared to what has happened in other industries where, thanks to technological innovation and processes digitalization, productivity has rapidly increased. For this reason, in the last years Maire Tecnimont has done a huge investment in the digital transformation process with the aim to become the EPC Contractor of the future. Several digital initiatives raised and one of the main responds to the need to have a BIM centric common data environment where all business functions, partners and vendors can effectively collaborate. The pain points identified during the analysis of the process as-is were:

- Engineering disciplines design on different models, with no cross-visibility, leading to inconsistencies.
- Inefficient approval processes due to not digitalized documents;
- Engineering cannot estimate impact of changes, because has no visibility on construction progress;
- Construction has no real-time visibility on design changes, leading to reworks;
- Documents not properly collected and often in paper form;
- Information on process and asset is not used to offer value added services to the client.

As per stakeholder's collected user stories is raised the need to have a digital platform that allows the real time information sharing across disciplines, a proper data maturity management, an easy interaction between users and the implementation of approval logics on models and deliverables. Furthermore, the proper collection in a single environment of all the documents and finalized data enables the opportunity to leverage such information to develop the digital twin and in general for the operational phase of the plant.

Why BIM 360?

After a deep market investigation of the eligible technologies, Autodesk BIM 360 platform has been identified as the digital platform to manage a real design collaboration process. The main reasons can be summarized as follow:

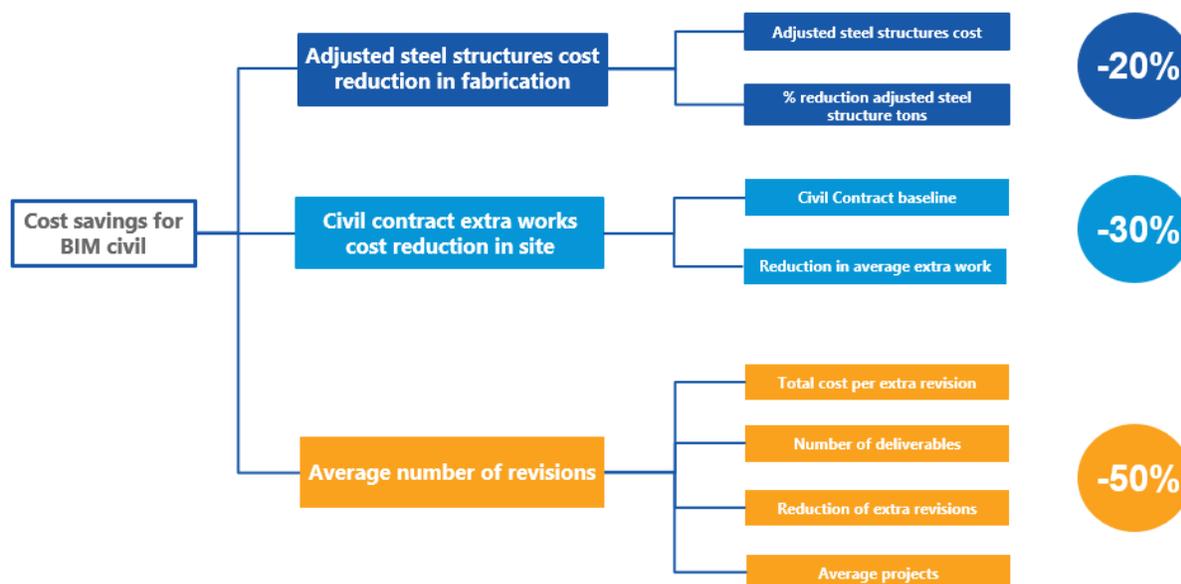
- Cloud-based constantly evolving application;
- A model centric approach to design and construction;
- Out of the box functionality of collaboration, mark-up and information sharing;
- Possibility to easily involve partners and subcontractors in the process;
- Compatibility with almost all the tools used in the Company;
- Possibility of platform customization/extension through Forge APIs.

At a glance the benefits expected were the design rework reduction with an the highest quality possible, a better document management with consequent time reduction and the optimization of change costs.

Business Case Development

Analyzed the business needs and wishes and identified the platform to host such process, it has been developed a dedicates business case. The aim of the business case is to monitor the platform adoption, its development cost and to measure the investment return. The business case has been developed focusing on civil discipline since for several reason is the easiest to implement and it is the first that gets the implementation advantages. Have been identified some key performance indexes to be monitored along the projects. The same can be summarized as follow:

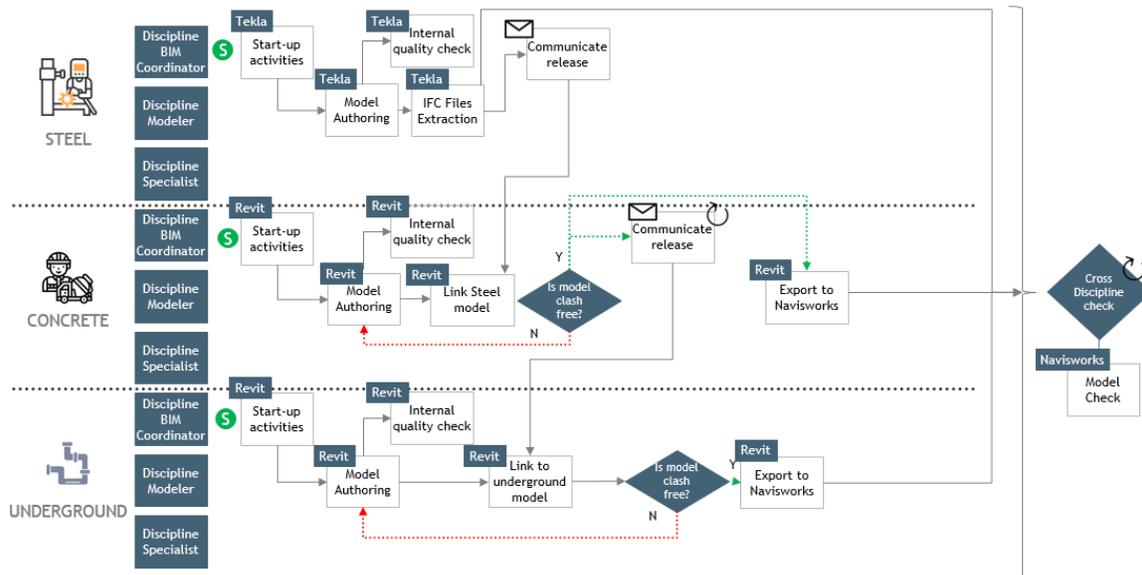
- Adjusted steel structures cost reduction in fabrication phase;
- Civil contract extra works cost reduction on site;
- Average number of documents revisions.



To these indexes have been associated costs and the supposed related savings for each of them. In this way, during project execution is it possible to keep under control if the overall process is gaining from the deployment of the collaboration platform and how much this gain is.

Process Assessment

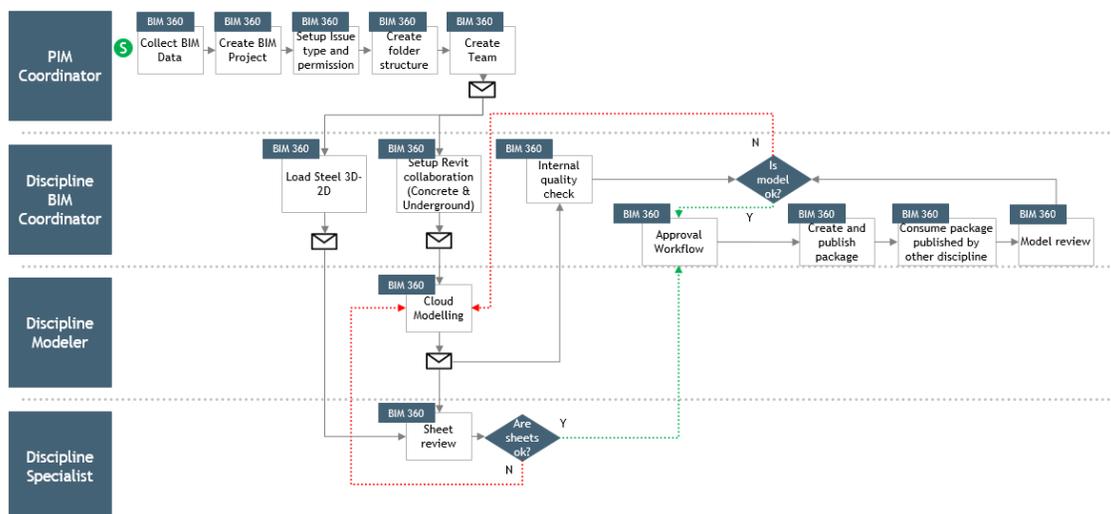
The assessment has started from the as-is process (before BIM360) that is summarized in the below schema:



The main criticalities of the process were:

- each discipline was working individually by sharing its design only once consolidated;
- the models were hosted on servers so with limited access for all process actors;
- the revision activity was mainly 2D based;
- the communication between discipline was done by mail;
- the interface with vendors was static and with limited control;
- the revision management was difficult due to the huge numbers of models and deliverables.

With the implementation of BIM 360 the process was shaped as per below figure:

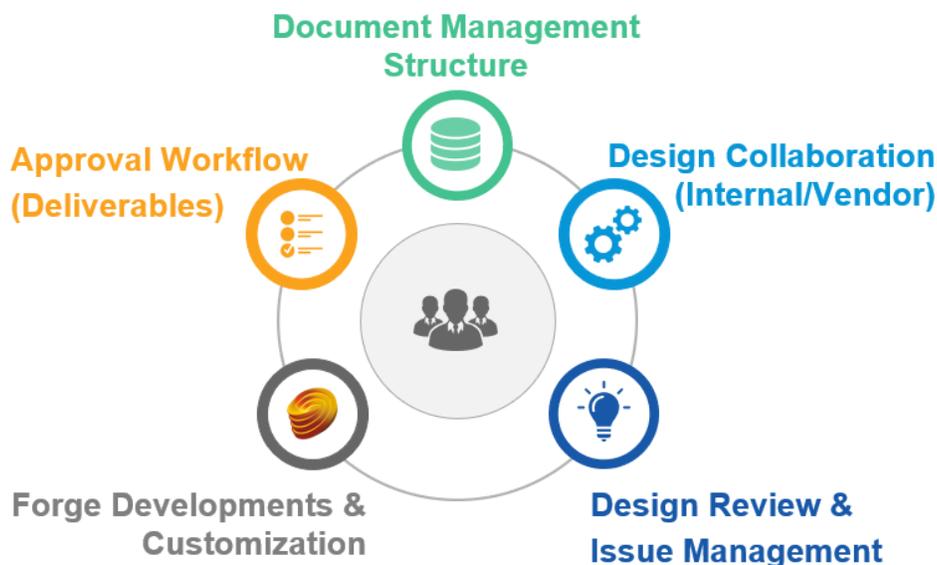


The collaboration within the process actors has been ruled and consequently improved as follow:

- the access to the platform can be performed anytime from any device;
- the access is extended to vendors and partners;
- the models and deliverables are stored with proper versioning that can be retrieved anytime and compared with current version;
- the model and deliverables can be commented anytime. The modification can be addressed to any team member managing also due dates for implementing the comments;
- the design sharing is enhanced by the design collaboration module where each team can share easily its design with other teams publishing packages that can be consumed or not;
- the document review can be addressed and ruled through dedicated approval workflows;
- the model checking and reviewing is facilitated by out of the box product features.

In particular have been deeply developed:

- Document Management Structure in order to fully support the plant design process with a subdiscipline split and several storing area dedicated to deliverables review and commenting, design review, vendor management, etc;
- Design Collaboration to rule file exchange between subdiscipline with the concept of design packages to be consumed;
- Approval Workflow to fulfill all review steps of a single document involving all actors in dedicated review sessions;
- Design Review logics and formats to make all plant discipline contents available to any internal or external actor enhancing communication through a proper issue management within the platform;
- Forge customizations that leverage the content available on BIM 360 fetched through BIM 360 APIs. The goal is to integrate such contents (models, deliverables, etc.) with other Company databases in order to perform specific analysis.



Conclusion

We have started to deploy only one project on BIM 360 platform as pilot project but the results have been quickly profitable that in a few months, also due to the need of working from home related to COVID 19 pandemic, all execution project have been moved on the platform with over 250 professionals collaborating in a single environment.

For every project of the above mentioned the key drivers are under control to confirm the assumptions made in the business case and to quantify the real generated savings.

