AUTODESK. UNIVERSITY

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Virtual Construction-Site Management with Advanced Workflow in BIM 360

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Learning Objectives

- Create an innovative workflow to manage the railway's construction sites
- Implement workflows that are valid either if the project has been developed with BIM methodology or with the traditional way
- Implement clear metric analysis to show the improvement in the processes

Description

This class explain how to manage and improve the construction process of linear infrastructure projects with BIM 360 in order to improve data quality and reduce costs and time by 60%. The digitalization of these processes allows us to retrieve relevant data and information directly in the construction site, reducing wastefulness and promoting sustainability.

Currently we are managing about 150 projects with BIM 360 docs, field and project management. For these projects we mainly implemented three processes: the quality check, the inspection survey in field and the design variation check. The workflows are valid either if the project has been developed with BIM methodology or with the traditional way.

The management of the company is able, through data and statistics, to analyze the progress and the status of the works trough powerful dashboards made with Forge.

The workflows improvements are shown with a clear metric analysis.

Speakers

Stefano Libianchi

Stefano Libianchi is a BIM Expert in FSTechnology a company belonging to the Italian State Railways Group Ferrovie dello Stato Italiano.
He participates in the researching of new technologies and innovating workflows with BIM and GIS.
He worked in the department of strategy, Innovation and System in Italferr.
He worked as Freelance BIM Technical Consultant with Autodesk from 2015 to 2018. During this years Stefano acquired experience in BIM management and delivery methods working as BIM Coordinator in the Red Line North Underground's project in Doha.
Before the Doha project he worked as Architect in different projects.

Rosaria Ferro

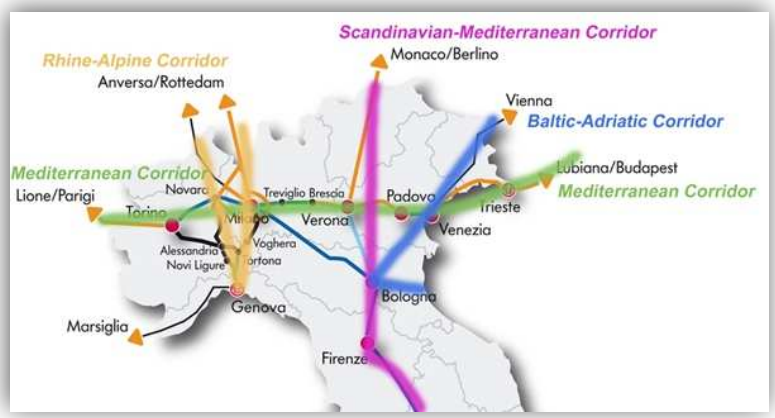
Introduction

FSTechnology

FS Technology is the hi-tech company of the FS Italiane Group. The mission of FS Technology is to strengthen and support digital innovation in group companies, and ensure top levels of quality, efficiency and time to market in customer services. Special attention is paid to the optimisation of predictive diagnostics in industrial processes that involve the adoption of new technologies such as blockchains, Artificial Intelligence, robotics and the IoT and to the centralised management and standardisation of processes and tools.

Italferr

Italferr is a company belonging to the Italian Railways Group Ferrovie dello Stato and has 34 years of experience in large infrastructures projects such as conventional and high speed rails, underground, stations and tramway lines.
Our expertise ranges from Project Management to Construction Site Management, Concept and detailed design to testing and commissioning of railway lines, Innovation solutions and Research to Integration Systems handling, etc.
At present, we are managing almost 1000 projects, and among these are 130 construction projects in Italy and abroad.
The main projects in Italy are high speed rail, high capacity and corridors design and construction.

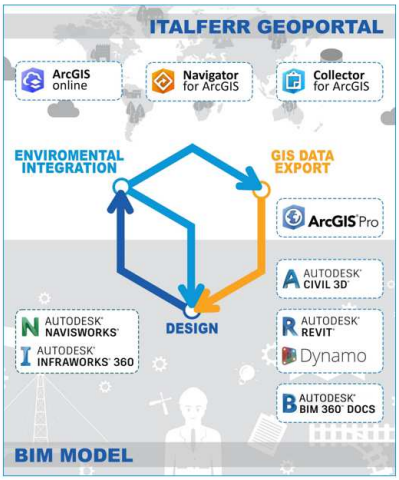


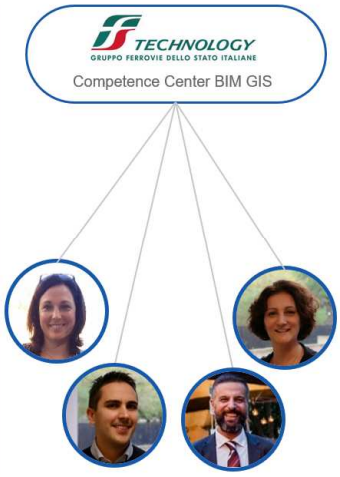
The corridors (TEN-T project)

Italferr has been involved in reorganization design of railways, metropolitan, nodes in major italian cities (Roma, Milano, Torino, Bologna, Firenze and Napoli) and Technology innovation of conventional rails.
The main activities of Italferr abroad are Feasibilty studies, Detailed Design, Technology Innovation, Consultancy work, etc.

The Competence Center BIM-GIS

The Competence Center BIM GIS is a team inside FSTechnology. The main objective of our team is the research of new technologies to improve the processes and the workflows for the entire lifecycle management of an infrastructure. Considering the core processes of the group, we mainly support linear infrastructure project.





The project

The project has started at the end of 2018 with a mixed team composed of people coming from ICT structure (now FSTechnology) and Construction Management structure.

Along 2019 this process has been supported by Autodesk.

The goal is an incremental adoption of BIM 360 for Construction processes

We started with:

- Quality check and inspection survey in field
- Design variation check

Timeline

Actual workflow

Company procedure that defines the way to monitor the correct execution of civil works. In this procedure are established the roles and responsibilities, the way and the frequency of the controls.

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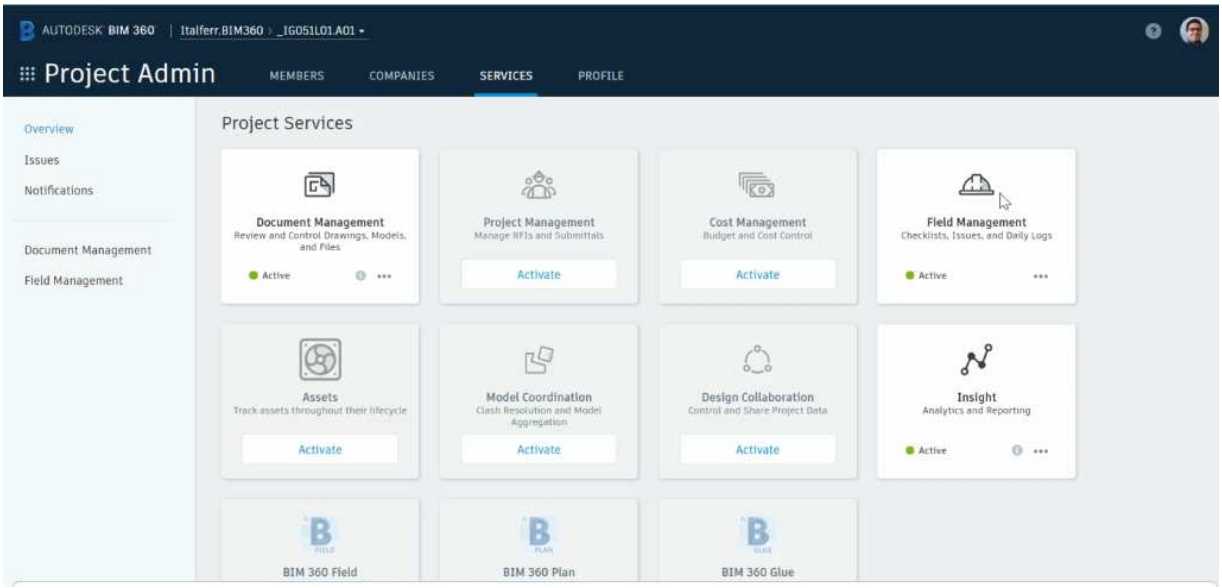
defines the way to monitor the correct execution of civil works

This checking activities are fundamental to ensure the correct execution of civil works. These checks particularly must guarantee:

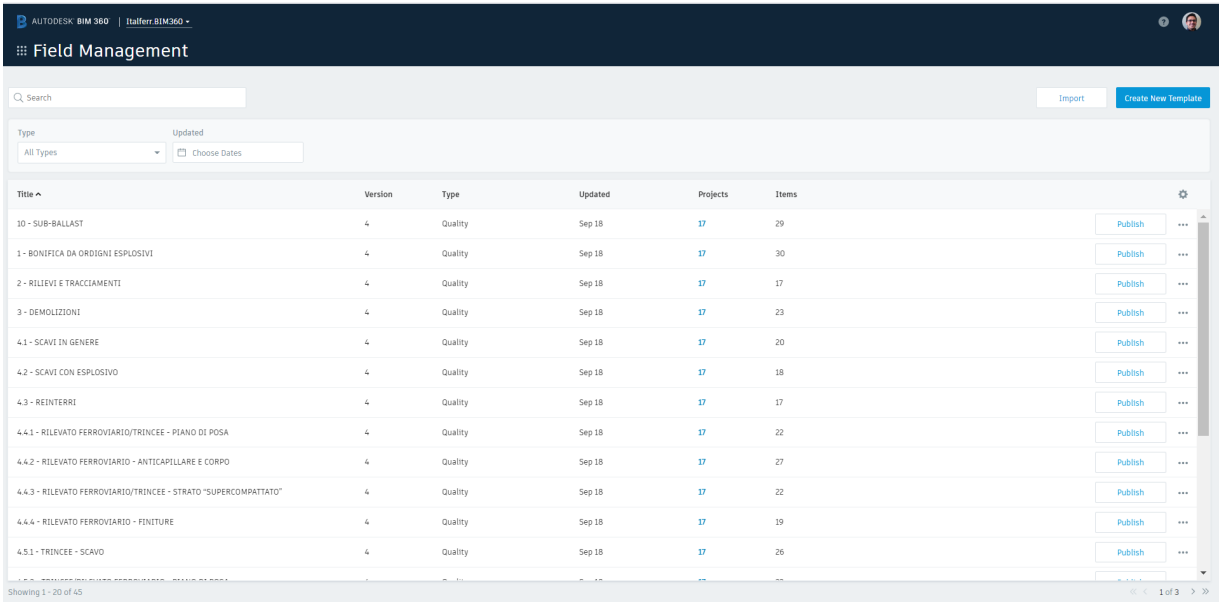
- autonomy and independency from Contractors;
- the necessary flexibility in order to assure different ways and frequency of the checks depending on the Contractors

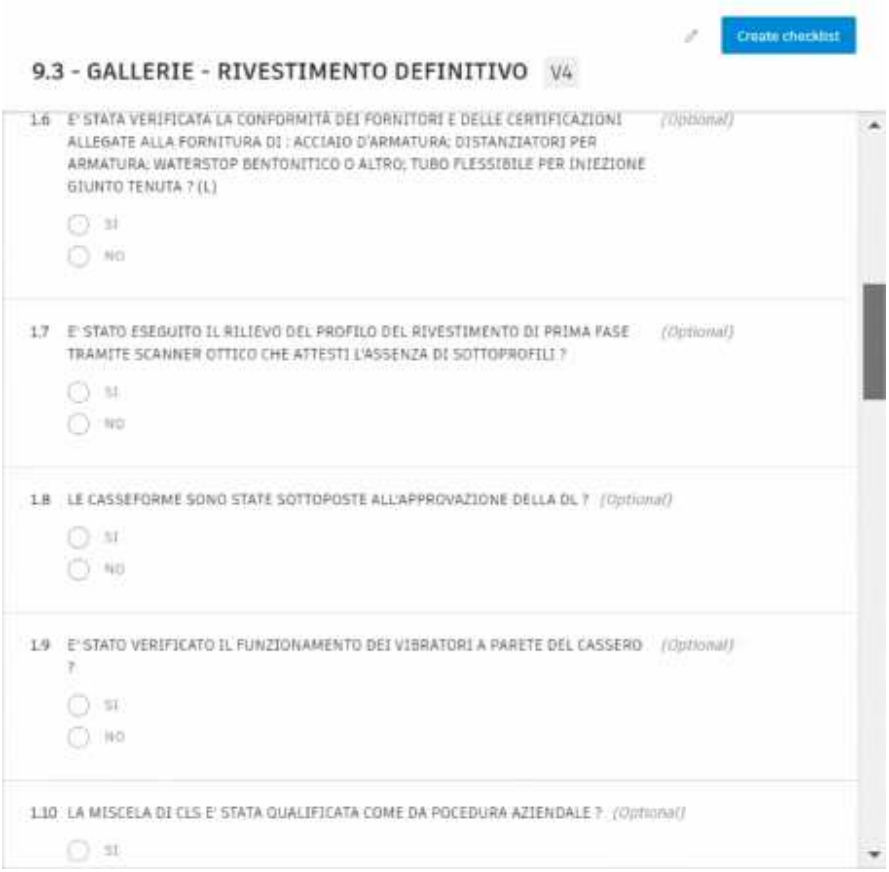
New workflow

using the Document Management and Field Management modules.



check list template

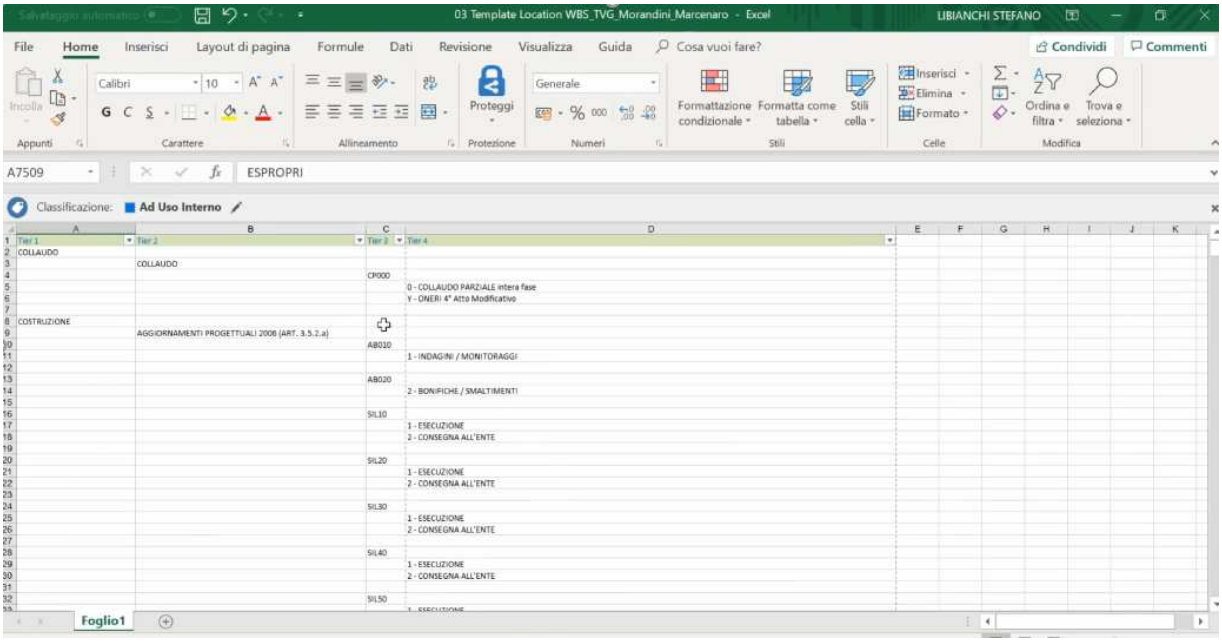




folder structure complex for an infrastructure project.

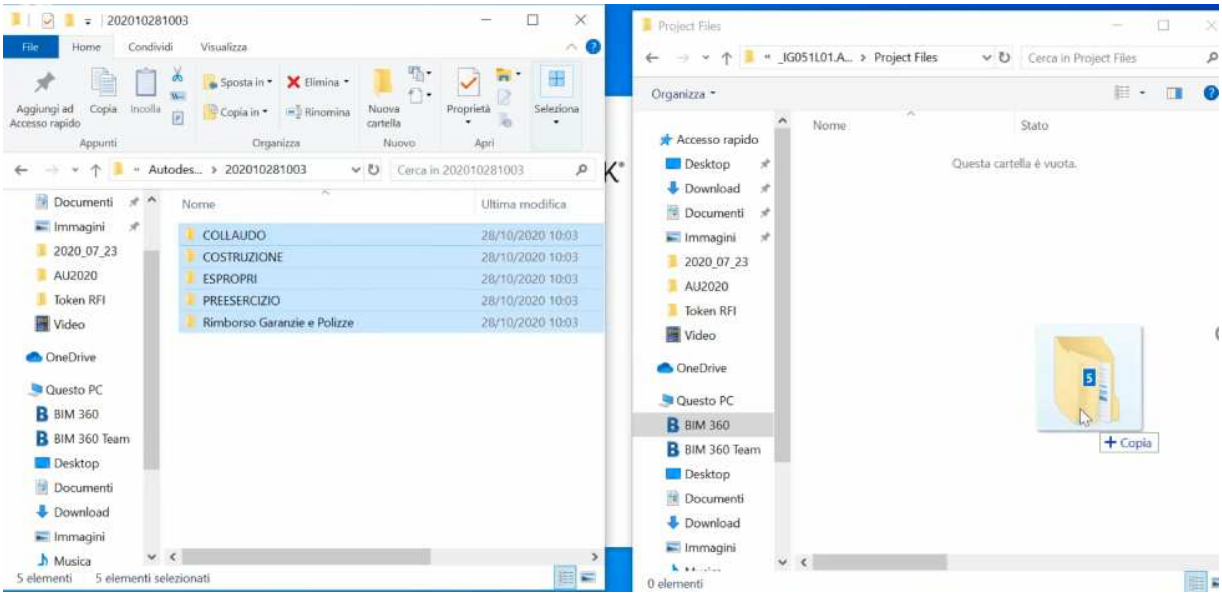
Solve with an automated procedure

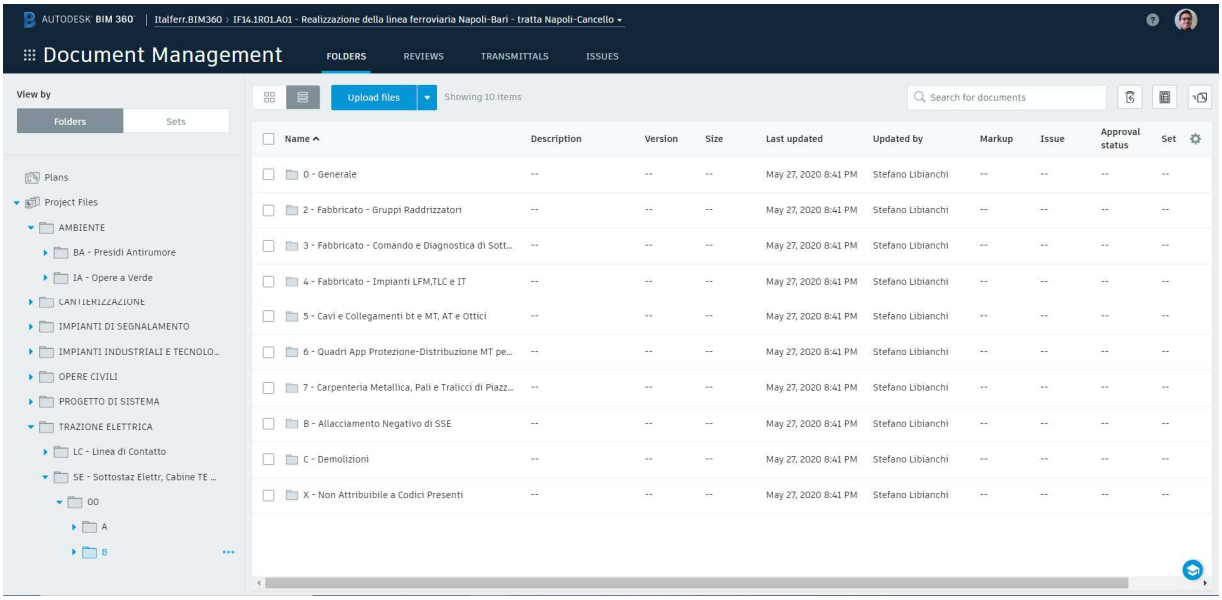
template that we use to insert the value it's the same for we can download to enter the locations,



this excel file contain the values wrote or exported from other databases. In this file there could be some compilation errors, such us values on the same line or empty lines, that during this procedure can be correct.

So the procedure recreates the "cascade" structure that are moved to the BIM360 via the Desktop Connector.

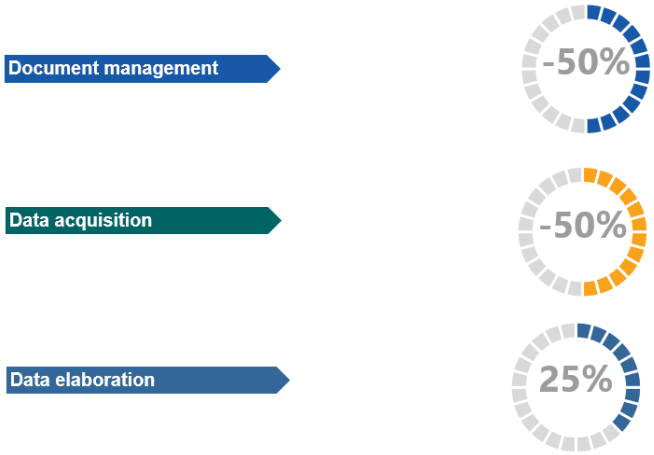




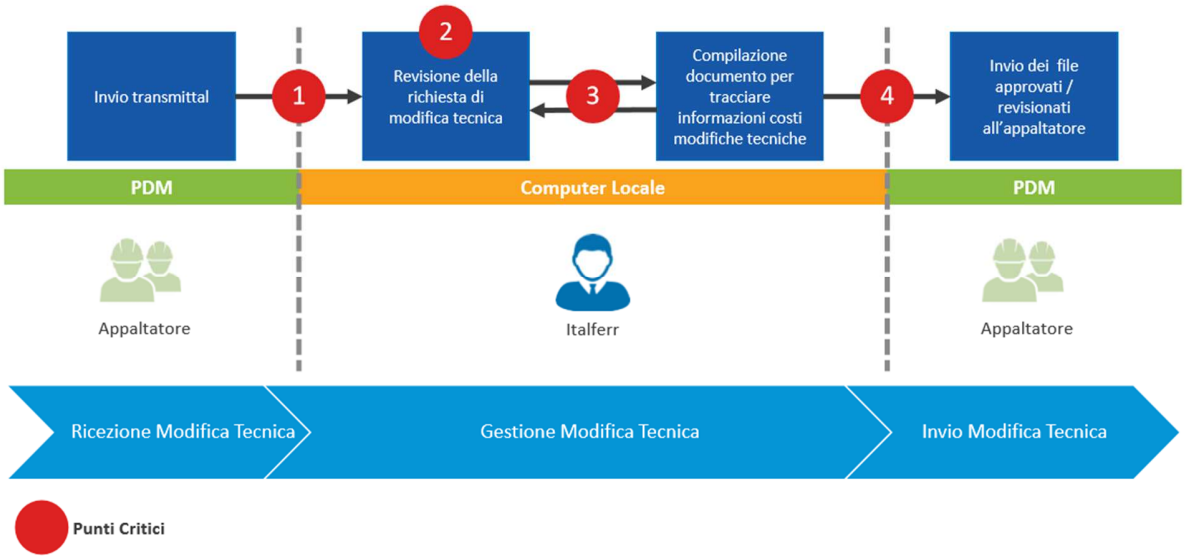
Feedback from construction site

Feedback construction site

Figures



Detail change register



Procedure

In a first moment, through Forge, we download the files uploaded from the our repository, PDM, by the contractor to upload them in BIM360.

At the same time, an automatic procedure reads the fields on the repository to write, on the register, detailed information about the file, dates and economic parts.

Figures


Document management
-50%
Data acquisition
-75%
Data elaboration
50%