Construction site management with advanced workflow in Construction Cloud

Marcella Faraone

Head of Competence Center BIM GIS | https://www.linkedin.com/in/marcella-faraone-835987133/

Agenda

About us
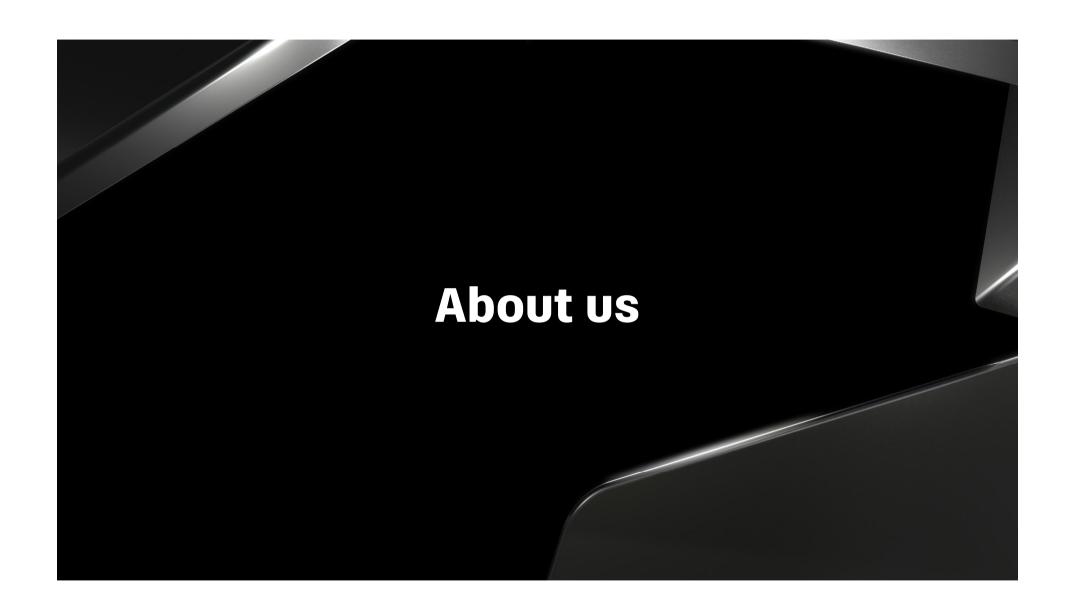
    Fstechnology

    The Competence Center BIM GIS

Virtual construction site management with advanced workflow in BIM360 (2020) (CS468465)

Adoption of the Build module and advantages

Integration with other company database and Legacy IT systems with Forge and Construction Cloud Connect
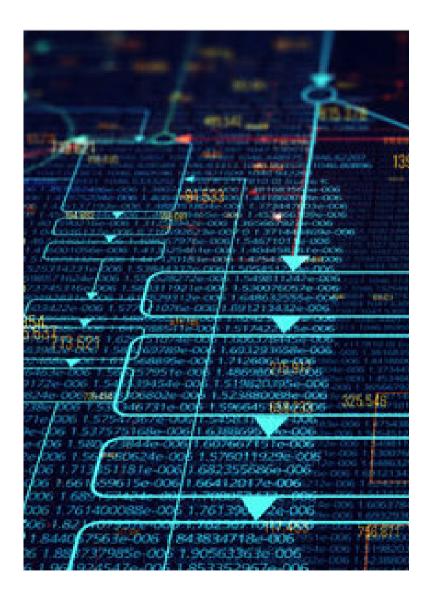
Use case (waiting for GeoBIM)

    Check of work site through drone surveys

Informazione pubblica

About us

FSTecnology

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.

Informazione pubblica

About me

In brief

I'm employed by Fs Technology, Italy, Rome. Head of Competence Center BIM GIS, I'm responsible for researching new technologies and innovating workflows with BIM and GIS

I Promoted the introduction of BIM in Italferr in 2012

BIM management experience acquired in the Red Line North Underground project in Doha

Together with my team, at the end of 2017, I started the successful project of integration between BIM and GIS. For this work, we received the Special Achievement in GIS Award at the 2019 by Esri

During the last two years I focused my attention mainly on construction phase setting up workflows for inspection survey, safety and environmental check in the work site
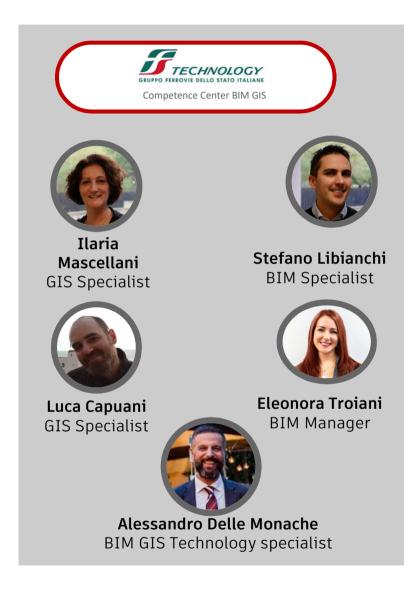

Informazione pubblica

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 especially:

Italferr the engineering company of the Ferrovie dello Stato Italiane Group

Rete Ferroviaria Italiana is the company of the Ferrovie dello Stato Italiane Group is the owner of entire railway infrastructure

Informazione pubblica

Competence Center BIM GIS

Ilaria Mascellani
GIS Specialist

Stefano Libianchi
BIM Specialist

Luca Capuani
GIS Specialist

Eleonora Troiani
BIM Manager

Alessandro Delle Monache
BIM GIS Technology specialist

Partnerships

AUTODESK   Simone Cappochin

esri

ENGINEERING   Raffaele Ausiello

Mauro Balcerini

Informazione pubblica

FS TECHNOLOGY
GRUPPO FERROVIE DELLO STATO ITALIANE
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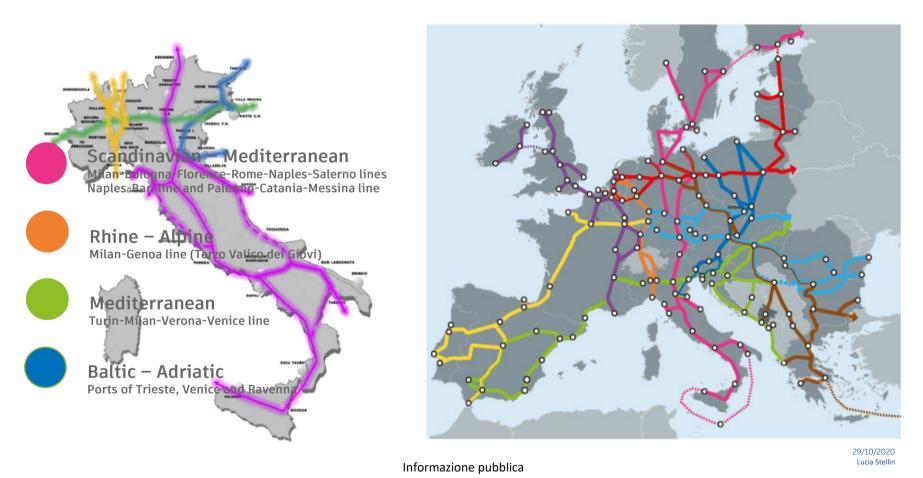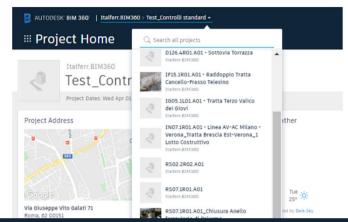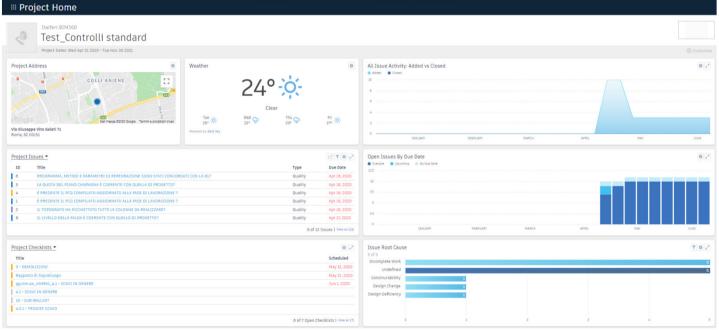
Virtual construction site management with advanced workflow in BIM360 (2020)

Trans-European Transport Network (TEN-T)

Scandinavian – Mediterranean
Milan-Bologna-Florence-Rome-Naples-Salerno lines
Naples-Bari line and Palermo-Catania-Messina line

Rhine – Alpine
Milan-Genoa line (Terzo Valico dei Giovi)

Mediterranean
Turin-Milan-Verona-Venice line

Baltic – Adriatic
Ports of Trieste, Venice and Ravenna

Informazione pubblica

29/10/2020
Lucia Stellin

Quality Checks and Inspection Surveys

Quality Checks and Inspection Surveys

Informazione pubblica

Quality Checks and Inspection Surveys

Informazione pubblica

PPA.0001656

defines the way to monitor the correct execution of civil works

STANDARD CONTROLS

Autonomy and independency from Contractors

Flexibility to assure ways and frequency of the checks depending on the Contractors

Quality Checks and Inspection Surveys

- ✓ 36 NEW CHECKLIST
- ✓ FASTER AND MORE FOCUSED CHECKS
- ✓ DIFFERENT WORK PHASES
- ✓ CLOSE ANSWER

PPA.0001656

defines the way to monitor the correct execution of civil works

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Informazione pubblica

Feedback from the Construction Site: Cancello – Frasso Railway Line

With this new workflow we have the possibility to compare always the design with the works because we have drawings or files in the cloud

Adoption of the Autodesk Build and advantages (2021)

Lack of capabilities in BIM360 Build

Subtitle

Duplicate previous check

Create report with georeferenced photo

Add workers section

Editing of the photo with the App

Upload group of photo with the app

Export in pdf format with only the filled in sections

Add vehicles section

Send check list in pdf format from the App

Add Meteo sections inside the check lists

Change creation time of the check lists

Limit of 1000 characters for open aswers

Photo Gallery

Historical of the activities of the check lists

Register and upload videos

Video visualization

Synchronization problems

Lack of capabilities in BIM360 Build

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Informazione pubblica

From BIM360 Build to Autodesk Build

Check List

Informazione pubblica

From BIM360 Build to Autodesk Build

Check List

Informazione pubblica

From BIM360 Build to Autodesk Build

Folder structure

Informazione pubblica

From BIM360 Build to Autodesk Build

Template import from Field Management

From BIM360 Build to Autodesk Build

Location import Field Management

Autodesk Build: improvements

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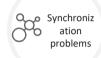
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Photo Gallery

Informazione pubblica

Autodesk Build: improvements

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- Video visualization
- Photo Gallery

Informazione pubblica

15:06

Progetti

PlanGrid   **Build**

Su questo dispositivo

TEST - Controllo Qualità   ...

Vedere avanzamento download   35,8%
Il progetto è ora accessibile, ma alcuni dati sono ancora in fase di download.

Nel cloud

ADSK - Controlli Standard - Sample Project   ...

Apice Hirpinia   ...

COL_Test   ...

Falconara   ...

Autodesk Build: improvements

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Informazione pubblica

Remaining expected capabilities

Subtitle

Editing of the photo with the App

Export in pdf format with only the filled in sections

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Informazione pubblica

Autodesk Build: first feedback from the field

Subtitle

The new app has been seen as an improvement

Synchronization issues resolved

Same functionality for IOS and Android

Informazione pubblica

Autodesk Build: first feedback from the field

Subtitle

Video functionality to record as is status of the construction site

Upload standard check list through pdf file
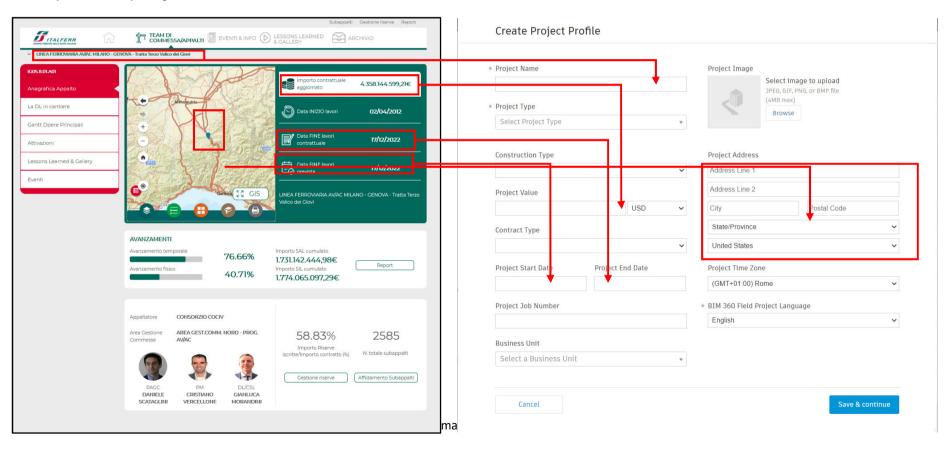
Integration of the app with other tools like winzip and sending pdf

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Integration with other company database and Legacy IT systems with Forge and Construction Cloud Connect
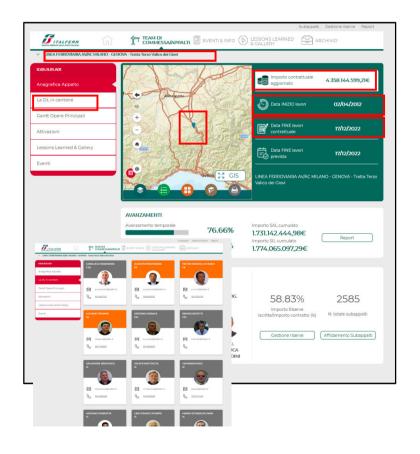
Connection with other system and tools
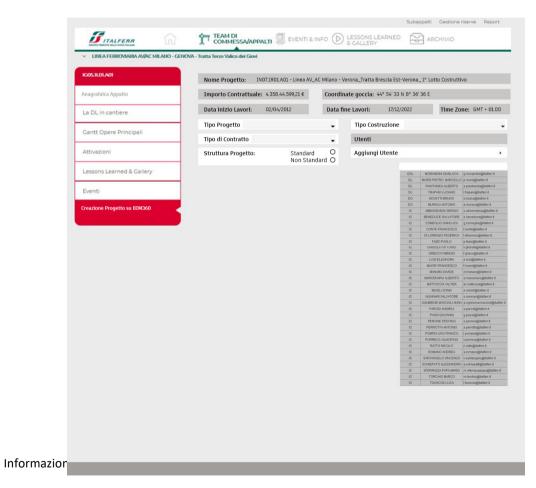
Import of project data

Connection with other system and tools

Import of users and roles

Use case
Waiting for GeoBIM:
Virtual Construction
site supervision

Virtual Construction site supervision

Subtitle

Aim of the project

Environmental check during construction

Construction safety check

Quality check of the works

Virtual Costruction site supervision

Workflow and technologies

- processing surveys made with drones and total stations (point clouds, orthophoto, fotogrammetry, termic camera, etc.)
- Setting up a workflow with Autodesk build and Esri platform

POC **First sprint**

November 2019 – February 2020

March 2021

June2022

Informazione pubblica

Cloud Collaboration

First step: setting up a workflow with Autodesk Build and Esri platform

Project creation in Autodesk Build

- Automatic creation of the project with Forge and ACC connect
- Update all information regarding the project from other systems and tools
- Upload of all project data (models, CAD, ecc)

AUTODESK CONSTRUCTION CLOUD™
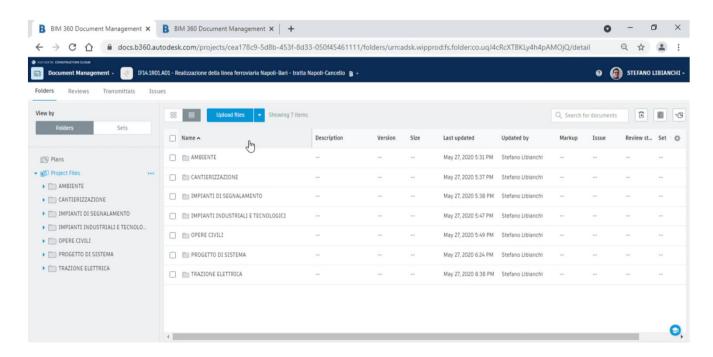
Project publication in Esri platform

Project publication in GIS webapp through ArcGIS Pro (Connection BIM cloud)

ArcGIS

Planning the survey

Creation of RFI (Request For Information) to identify the areas and part of the works to be surveyed

AUTODESK CONSTRUCTION CLOUD™

Informazione pubblica

Cloud Collaboration

First step: setting up a workflow with Autodesk Build

Informazione pubblica

Cloud Collaboration
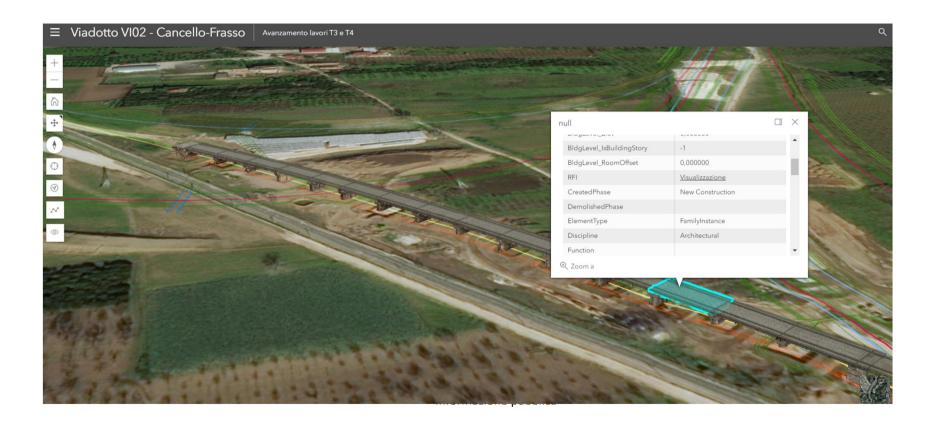
Project publication in Esri platform

To publish the project data (Revit models, Civil 3D models and CAD) in ArcGIS Pro scene, we used the Connection cloud functionality following the steps described below:
- Creation of a Local Scene in ArcGIS Pro 2.7
- Connection to Autodesk Construction Cloud with the Tool Connection>New Cloud BIM Connection
- One of the metadata added directly inside local scene database is the link of the RFI created inside Autodesk Construction Cloud

Informazione pubblica

Cloud Collaboration

Project publication in Esri platform

The survey

Informazione pubblica

Visualization of the results for further analysis

- Power BI dashboard
- Point cloud publication on ACC (Bubble view)
- Publication on GIS Local scene
- Site analysis with Hololens:
    - Remote Final testing of the works for handover
    - Remote analysis of the surveys

Publication of Bubble view Point cloud in ACC

Informazione pubblica

Publication of Point Cloud in Esri local scene

Step by step the procedure followed for publication
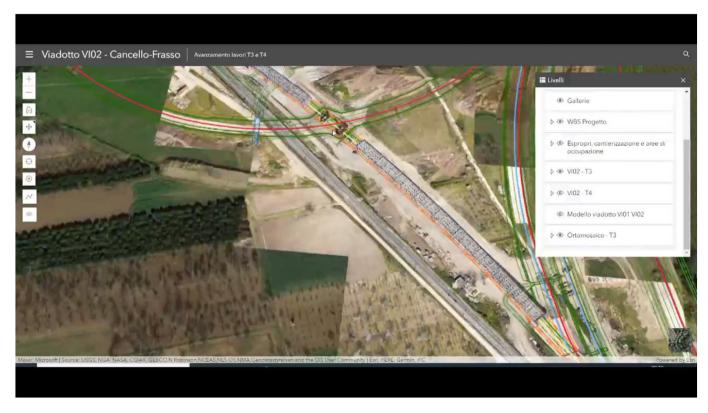
ArcGIS Pro

1. Add the Las to the local Scene (drag and drop from the Document Management)
2. Use of the tool define projection. Creation of prj files inside the Document Management
3. Use of the tool "Tile Las" e "Create Dataset Las" to trasform the Las in dataset Creation of lasd files inside the Document Management
4. Use of the tool "Create package layer" for every las layer to create the slpk files inside Document Management

ArcGis Enterprise

- Upload the slpk files inside the Enterprise Portal (create packages e services as hosted layer)
- Last step: upload of the created layer inside web scene

Publication of Point Cloud in Esri local scene

Informazione pubblica

Conclusions

Sample blank slide – subtitle (sentence case)

Collaboration with Autodesk to understand how to optimize this workflow when GeoBIM will be available.

In upcoming years we will be able to manage and improve the construction process of linear infrastructure projects in order to improve data quality, reduce costs and time by 60%, reduce wastefulness and promote sustainability

AUTODESK UNIVERSITY