CS322873

Construction Future – Aggregating and Analyzing Data Using Forge and BI Platforms

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Learning Objectives

- Identify how to integrate data coming from different data sources and couple them to the model geometry
- Identify how Forge brings data to the center and how to facilitate the data analysis
- Identify the benefits of a data-centric dashboard accessible to everyone from any device
- Integrating external Business Intelligence data into Forge

Description

Saipem is a large, international turnkey contractor in the Oil & Gas Industry. Construction department always faced problems regarding the real status of projects (in home office) and the constructability (on site), as the integration between the 3D model and the data available was often outdated and completely disordered. The game is changing now: the use of Forge Platform allows Saipem to aggregate BIG Data from different sources (SmartPlant 3D, Tekla, Spoolgen, Oracle, Navisworks and others) to analyze them (Power BI) and to get an updated dataset of information applying a full BIM approach. During the class the audience will be presented with the benefits of the implemented solution compared with previously used ones, with a focus on feasibility, work front analysis, progress measurement, accounting and mechanical completion handling.

Speaker(s)

Alex is a Management System and Quantity Manager in Saipem. He has worked worldwide, in Construction for almost 10 years ensuring the implementation on the projects of the Management/Construction and Mechanical Information Systems (utilized for the management of construction quantities, planning, progress recording, quality assessment and accounting of construction works, including activities of coordination and implementation of spooling, welding and material traceability systems) and contributing to the growth of the in house platform. During the last few years, Alex focused his activities mainly forging a data-centric approach to the Saipem data driven organization.

Luca is a Senior Solution Architect in the Autodesk Consulting division in EMEA. He received his Computer Science bachelor's degree from University of Genova, Italy. He has worked worldwide, in IT as a consultant for almost 20 years, covering different roles and moving from pure software development to solution design and implementation, from gathering requirements to final delivery. Luca joined Autodesk in 2008 and he is based in Italy, working in Europe and Middle East, where he has been designing and implementing solutions for several Autodesk customers in the AEC and MFG industries. During the last few years, Luca focused his activities mainly on BIM, Collaboration and Data Management domains, working close to customers to define and implement the Technology Platform to support their needs. Luca started to work with Forge Platform in 2015, at the very beginning of this platform life.

Session Details

This session is delivered in the form of an Industry Talk of about 60 minutes, where the speakers describe their experience in defining a solution that supports different stakeholders to easily review and understand the current status of projects relying on a data-centric dashboard accessible to everyone from any device.

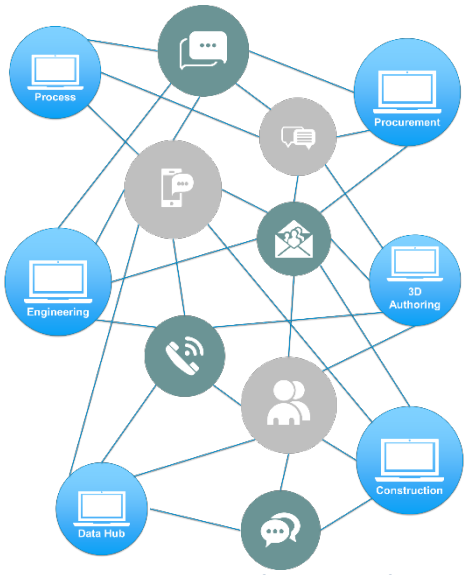
The session aims to describe the reasons which led Saipem to take the specific decision as well as the role played by Autodesk Customer Success Organization Team.

During the session, the evolution of the solution will be presented together with the goals achieved so far, as well as plans on further developing the solution.

The following is a deeper overview of the Learning Objectives of this class.

Identify how to integrate data coming from different data sources and couple them to the model geometry

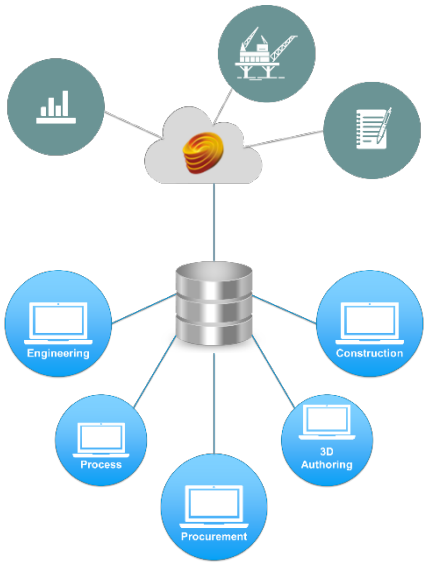
One of the challenges Saipem faced in the past, and is still facing to some extent, is the traditional approach to manage documents rather than data.
There are many problems with a document-centric approach; the most common ones are the use of documents as databases, which ends up in the creation of data silos, the increased number of entry points for individual portions of data and an almost not quantifiable amount of wasted effort and redundant processes.
In few words, the old document-centric approach led all departments involved in a project to rely on redundant emails, calls, folders, hundreds of different storage locations, siloed and inconsistent document databases, preventing a good and smooth collaboration.



Document-Centric Approach

Moving to a data-centric approach, gives the possibility of accessing data instead of documents in a seamless way while being sure that retrieved data is always the latest and most significant one. Transforming the internal processes from using document-centric model to a data-centric one has not been easy though; it required a huge commitment from different stakeholders as

well as changes in processes and workflows that for many years were accepted and fully adopted by all users.
The chosen approach was to start identifying few disciplines at first (e.g. Piping and Structural), and the tools used to elaborate complex analysis, related to costs, material availability, orders and scheduling, with the objective to try exporting this information to a database in an easy way.
By leveraging Saipem internal initiatives, and thanks to the deep know-how and expertise of Saipem experienced engineers, data has been made available and usable in a central repository conceived with the active support of Autodesk Consulting.

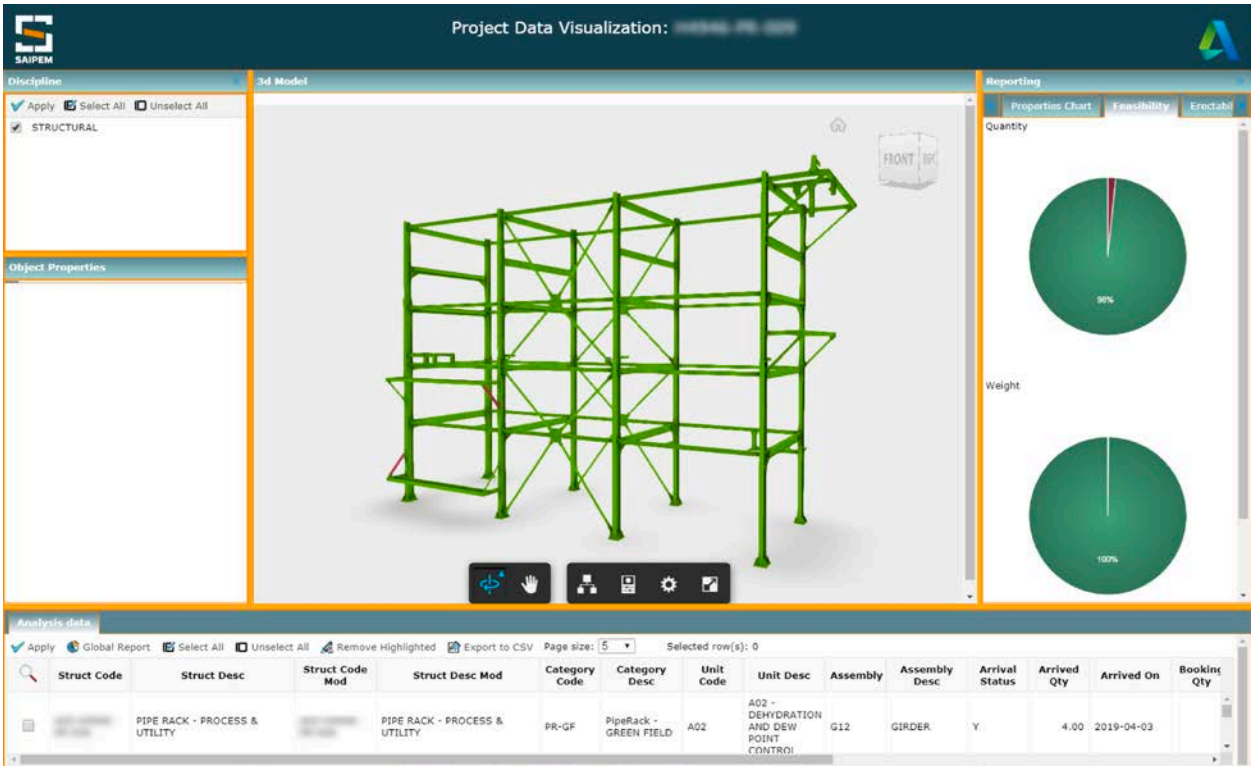


Data-Centric Approach

To summarize, being based on one single version of the truth, a data-centric approach enables an optimized data flows between people and processes.
Once data has been made available, the next step has been to try linking it to model geometry, thanks to the Autodesk Forge Platform and a web solution accessing the platform APIs.

Identify how Forge brings data to the center and how to facilitate the data analysis

As just described, one of the goals achieved since the very first release of the solution has been the possibility of linking information to geometry. Besides this, the most important achievement has been the possibility to validate the accuracy of the information coming from all systems, as well as the quality of the modelling and drawing process. Users begun to see data represented in the model context thanks to Forge and they were able to see discrepancies between the different data, allowing them to take initiatives to identify and solve quickly such gaps. With the evolution of the solution, new goals have been reached, scaling it up with new component and involving new stakeholders. The solution is now fully integrated with BIM 360 docs who acts as the Common Data Environment and the repository for all the files.
As an example, thanks to the solution, the users can easily understand, through a user-friendly and easy-to-use interface, the feasibility and erectability status of the structure and piping elements on site.



Forge-Based Dashboard Solution

Identify the benefits of a data-centric dashboard accessible to everyone from any device

The target users for this solution are mainly Project, BIM or Discipline managers, that not necessarily have deep technical skills. Historically the use of authoring tools or even 2D or 3D desktop viewers was to them a kind of showstopper. Moreover, understanding geometry and related information coming from other systems, both in a digital and paper-based format, was time-consuming and most of the time this was leading to headaches, mistakes and inaccurate analysis.

The solution helped speeding up the decision-making process, the reporting, increasing data accuracy and planning daily activities by at least 30%, thanks to the ability for the users to access all needed information and having them already related to the model, from any device and everywhere, in an easy-to-use interface that doesn't require any specific technical skill.

Integrating external Business Intelligence data into Forge

Integrating Power BI data into Forge allows users to move from a legacy system to a smart solution. Manage standard reporting and dashboards in a simple way with the possibility to customize and to share them worldwide in any kind of hardware/device.

Power BI is widely used in Saipem and integrates easily with the existing Forge solution allowing to enhance analytics and reporting capabilities. Forge Project Visualizer solution and a variety of Power BI dashboards used in Saipem collect data from the same data sources; therefore, to avoid duplication of work, such dashboard has been integrated with the Forge

based application embedding interactive visuals in the application in a smarter and more productive way.
Benefits gained with this integration can be easily identified in the simplification and speed up of onsite activities, with up to date analysis of feasibility, work front and erectability information.
For an operator working on site, it is immediately clear if it is possible to install a rack or a spool with a 3D visualization of the model, rather than using a printout list of materials.
A second achievement is related to standardization of Enterprise reports, configuring quickly project configurations (e.g. highlighting in the Forge Viewer all the welding to be completed, will give the possibility to sort all the information by material, unit, contractor or other topics, exploding all data as needed).