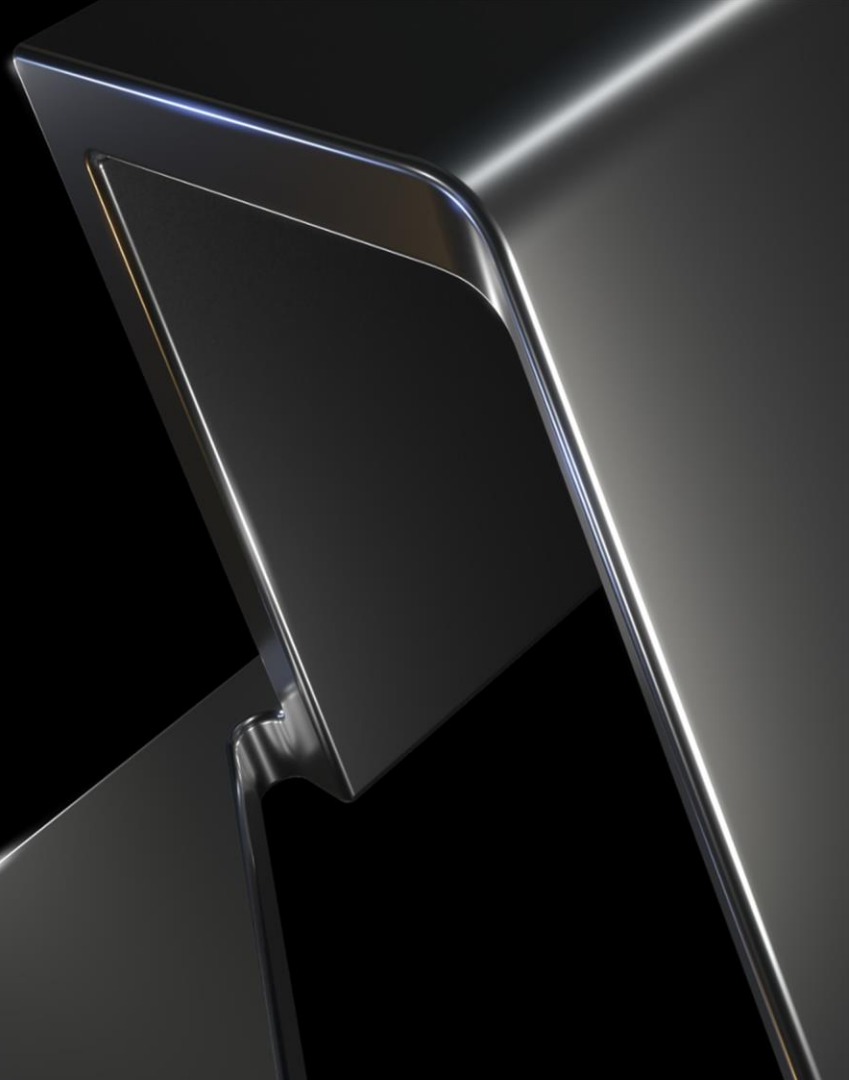
AUTODESK UNIVERSITY

Explore your plant with digital twin



Christian Gartner

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Jan Liska

Solution Architect | jan.liska@autodesk.com

Christian Gartner

Solution Architect Smart Service

Christian has been working at Andritz since 2010. He has more than 10 years experience in software development and managing software implementation projects. In his current role he is responsible for the architecture within Smart Service and work closely with the various project teams.

Jan Liska

Solution Architect

Jan has been working with Autodesk since 2003, initially as software engineer in Inventor product development and then moved to Customer Success Organization. He's currently involved in number of customer projects which are utilizing Forge platform.

Agenda

- ANDRITZ Group
- Metris – ANDRITZ Digital Solutions
- Metris Digital Plant Documentation
- Lessons Learned

ANDRITZ GROUP

INNOVATIVE TECHNOLOGIES
FOR THE PLANET

THE ANDRITZ GROUP

ANDRITZ is a globally leading supplier of plants, equipment, systems, and services for the pulp and paper industry, the metalworking and steel industries, hydropower stations, pumps, solid/liquid separation in the municipal and industrial sectors as well as for animal feed and biomass pelleting

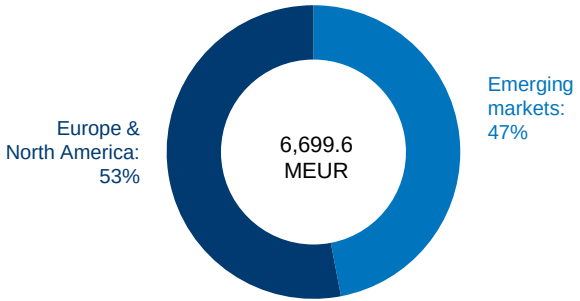
Global presence

Headquarters in Graz, Austria; over 280 production sites and service/sales companies worldwide

KEY FINANCIAL FIGURES:

	UNIT	H1 2021	2020
Order intake	MEUR	3,591.8	6,108.0
Order backlog (as of end of period)	MEUR	7,403.5	6,774.0
Revenue	MEUR	3,027.0	6,699.6
Net income (including non-controlling interests)	MEUR	134.8	203.7
Employees (as of end of period; without apprentices)	-	26,711	27,232

REVENUE BY REGION 2020 (%)



A WORLD MARKET LEADER WITH FOUR BUSINESS AREAS

ANDRITZ

PULP & PAPER

48

% order intake*

PRODUCT OFFERING

Equipment for production of all types of pulp, paper, tissue, and board; boilers for power generation; flue gas cleaning systems; recycling and shredding solutions; plants for the production of nonwovens and panelboard

HYDRO

22

% order intake*

PRODUCT OFFERING

Electromechanical equipment for hydropower plants (turbines, generators); pumps; turbo generators

METALS

19

% order intake*

PRODUCT OFFERING

Presses/press lines for metal forming (Schuler); systems for production of stainless steel, carbon steel, and non-ferrous metal strip; industrial furnace plants

SEPARATION

11

% order intake*

PRODUCT OFFERING

Equipment for solid/liquid separation for municipalities and various industries; equipment for production of animal feed and biomass pellets

* Share of total Group order intake 2020

Metris

ANDRITZ Digital Solutions

BROAD PRODUCT OFFERINGS IN DIGITALIZATION

With the **technology brand Metris**, ANDRITZ offers a broad portfolio of intelligent, digital solutions and products.

Metris technologies are tailored to the customer needs and optimize industrial procedures and processes.

METRIS SMART SERVICE

Metris Smart Service covers all ANDRITZ digital services for **customer interaction** based on **connected, intelligent software solutions** supporting various business processes.

Engineering-Construction-Service Platform

Metris Spare Parts Catalog

Metris Digital Plant Documentation

Metris Remote Assistance

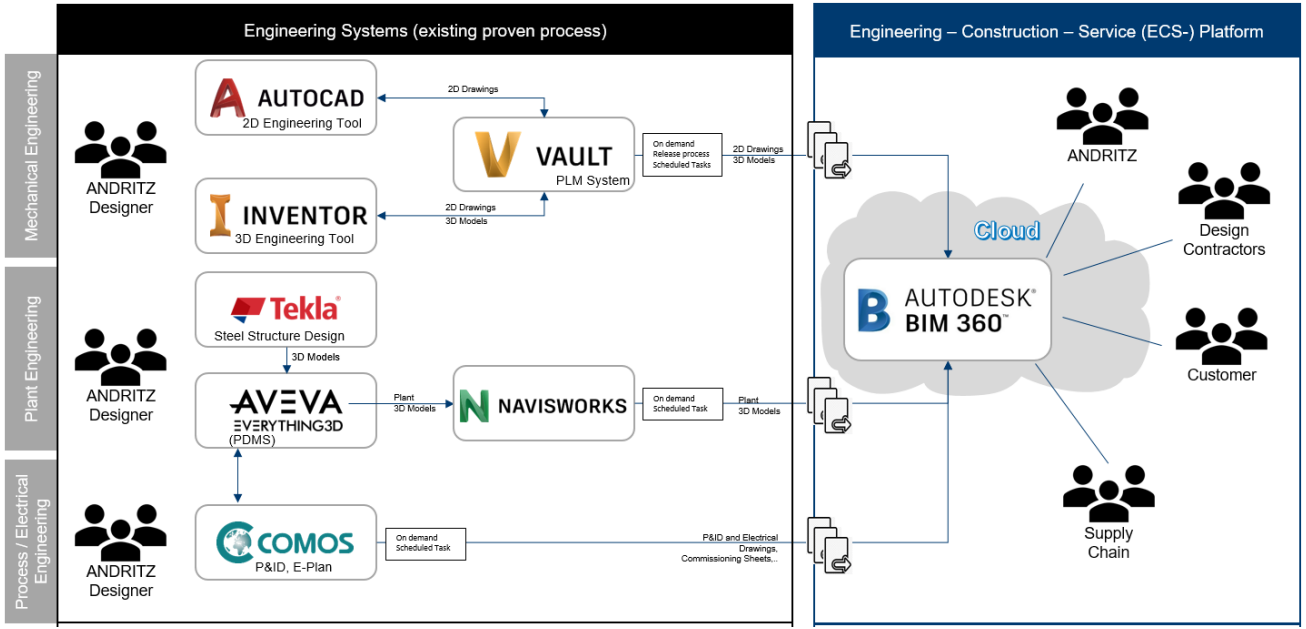
Field Service Management

Metris Customer Care Portal

Engineering-Construction-Service Platform

Introduction

Providing with Autodesk BIM 360 a central tool to access and collaborate on the latest engineering data and documents along the value chain of a project.
Furthermore, relevant site processes such as the design deviations process are handled with BIM 360.



Metris Digital Plant Documentation

Where we started

Problem faced by plant owners along their digitalization journey

Handover

- Enormous quantities of largely paper based documents (~100 folders / 30 years).

Challenges

- To Access, Navigate, Extract, and Maintain the As-Built status of the plant within one intuitive system.
- To Associate and Integrate all information within one intuitive system.

Facts & Figures*

- Industries spend up to 10% of revenue and 25% of their labor costs on document production and management tasks
- New users cannot find documents within 15 min
- 20% working time in document locating and general answering

* Hsu, Liang H., Peiya Liu, and Tim Dawidowsky. "A multimedia authoring-in-the-large environment to support complex product documentation." Multimedia Document Systems in Perspectives. Springer, Boston, MA, 1999. 11-64.

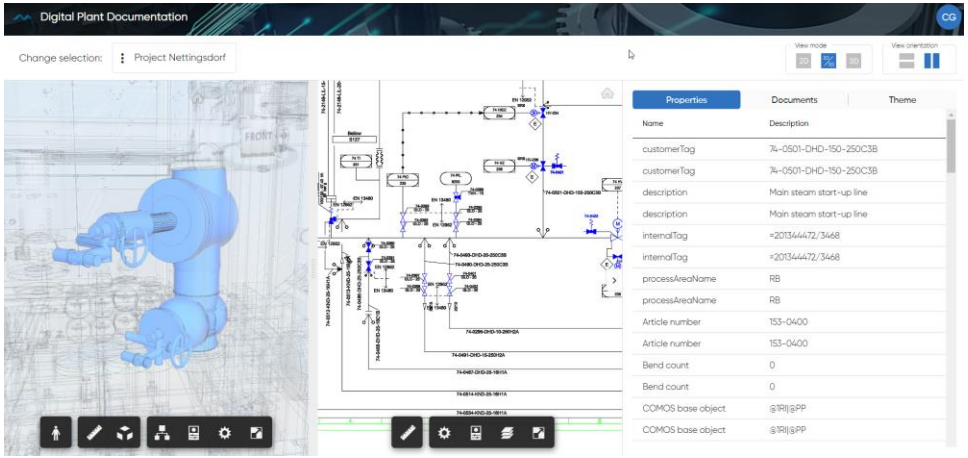
Our solution

Metris Digital Plant Documentation

Provide a digital version of a plant with all relevant information connected within one application

Main features

- Linking 3D and 2D engineering data
- Central access to engineering information (meta data)
- Color-coded 3D model
- Documentation linkage to DMS



Usage scenarios

- As ANDRITZ branded digital twin for engineering documents
- As final-customer documentation instead of paper folders

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File Edit Format View Help

digitalplant.andritz.com

Digital Plant Twin

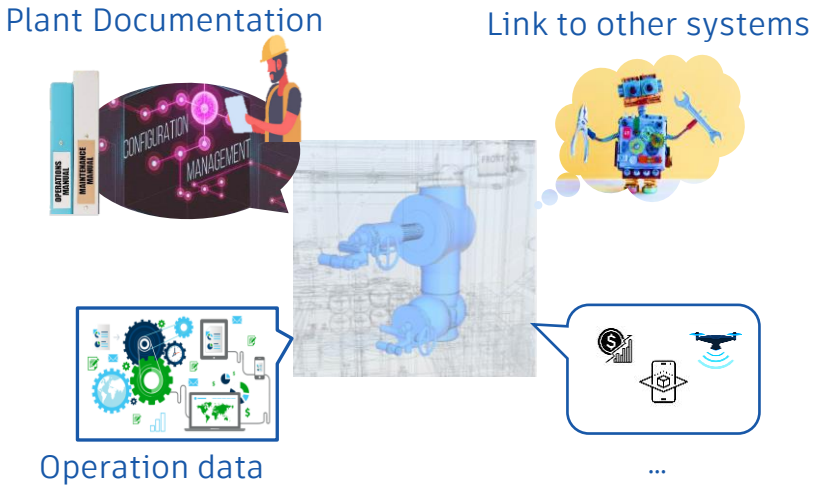
From Digital Plant Documentation to Digital Plant Twin

Digital Plant Documentation contains mainly static information.

Extending to a **Digital Plant Twin**, which offers an integrated overview of the plant condition while giving access to domain-specific expertise from connected systems and enables Operators to navigate to these systems for further analysis directly from Digital Plant.

Main features

- Integrate DCS data
- Link various (customer) systems (CMMS, Spare Parts Catalog, …)
- Dashboard for overall plant condition



Architecture

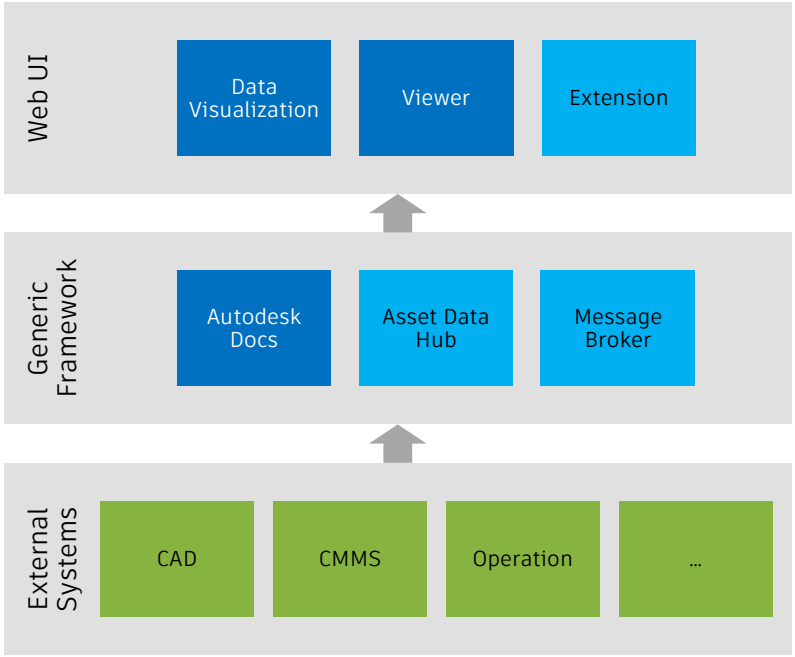
Overview

Web application

- Available anytime & anywhere
- Access to asset data via interactive 3D dashboard
- Integrate and navigate to domain specific solutions
- Cloud Infrastructure

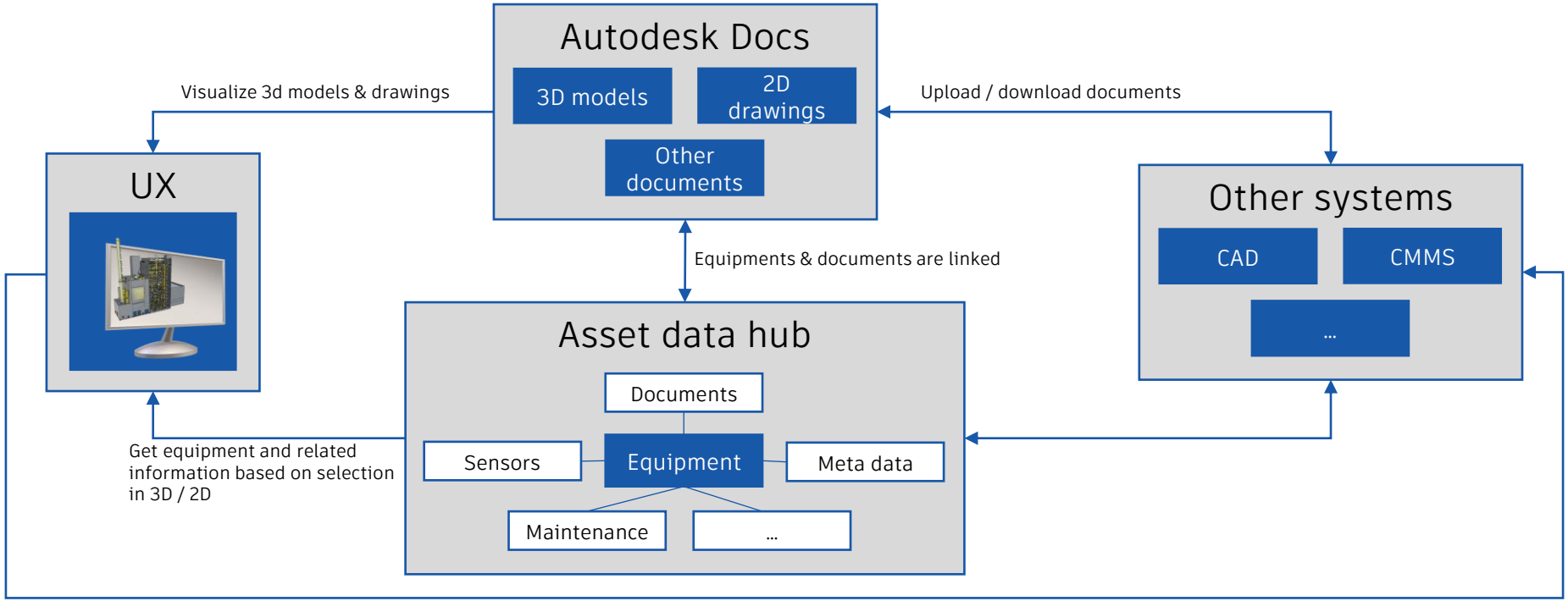
Generic framework

- Domain independent
- Autodesk Docs as CDE
- Central data & access layer for asset information
- Message broker for event notifications



Architecture

System & information flow



Digital Plant Documentation

digitalplant-dev.andritz.com/project

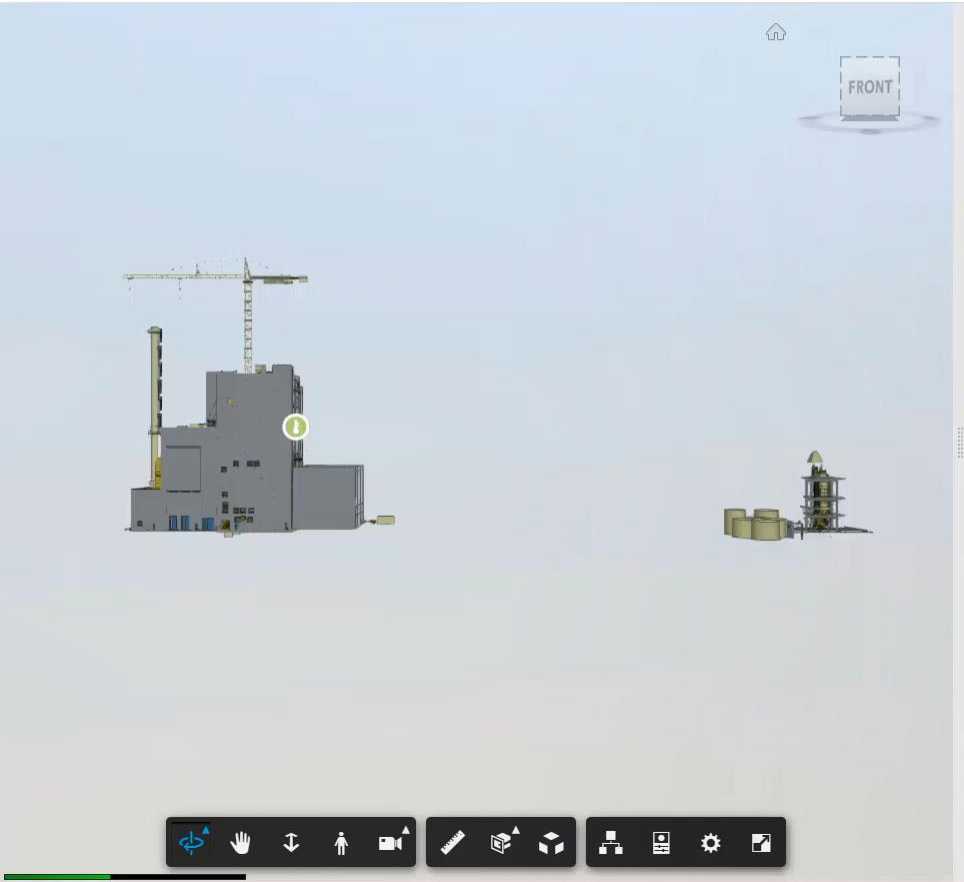
Digital Plant Documentation

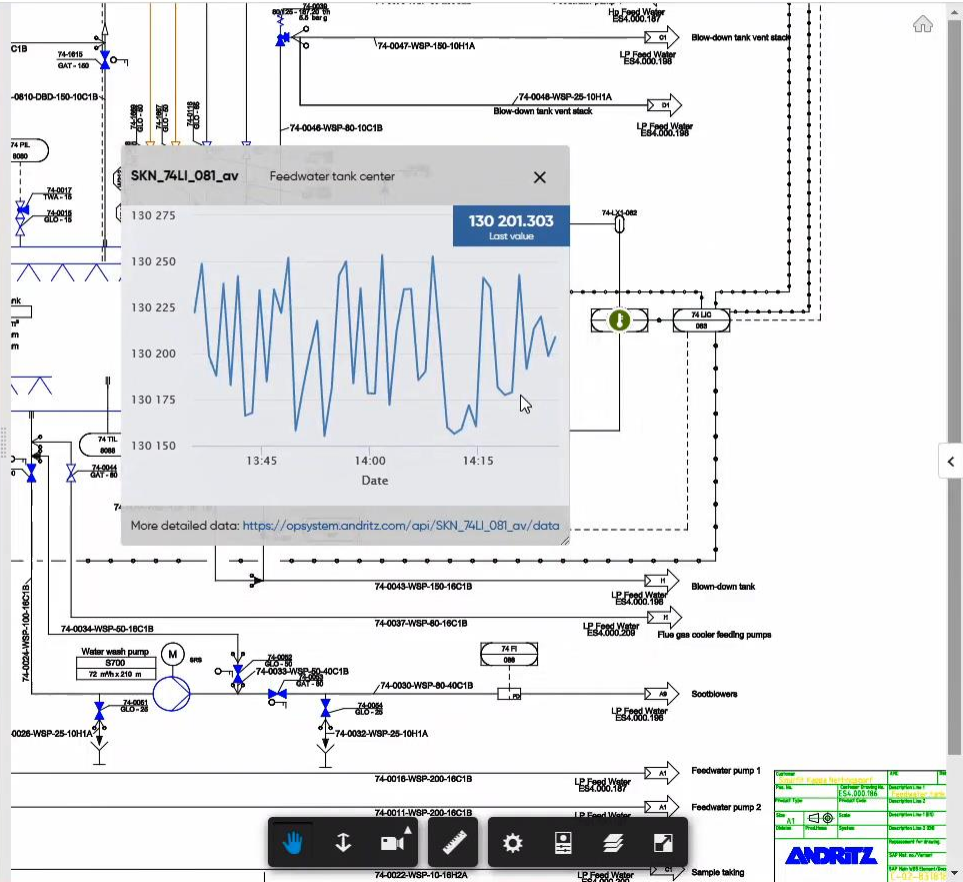
CG

Change selection: Project Nettingsdorf

View mode: 2D | 2½D | 3D

View orientation





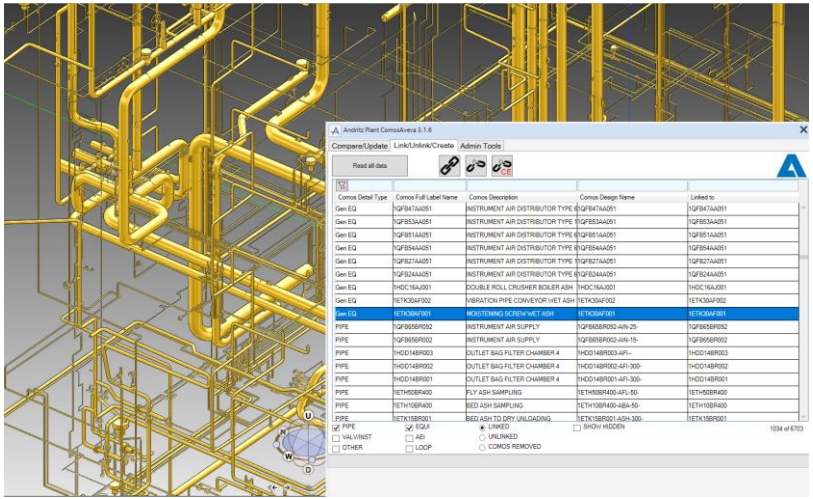
Lessons learned

Data quality

No added value without linked data

Problem

- Data stored in different systems without linkage
- Post-processing of existing data is very time-consuming and costly



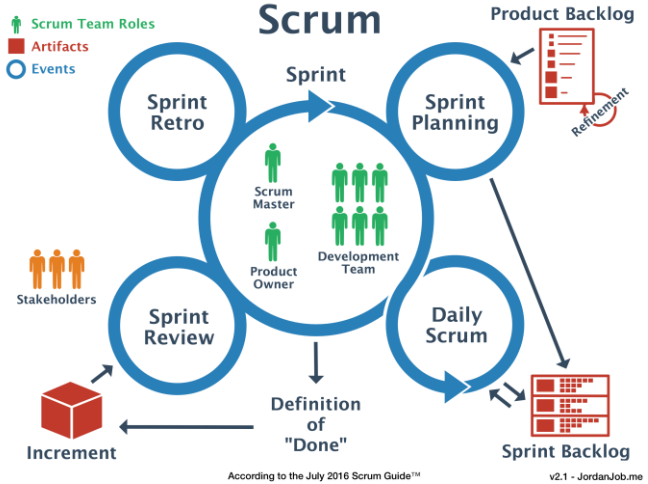
Solution

- Include in standard design process.
  - Adding meta data / asset linking
  - Link schematic drawings with 3D models

Implementation approach

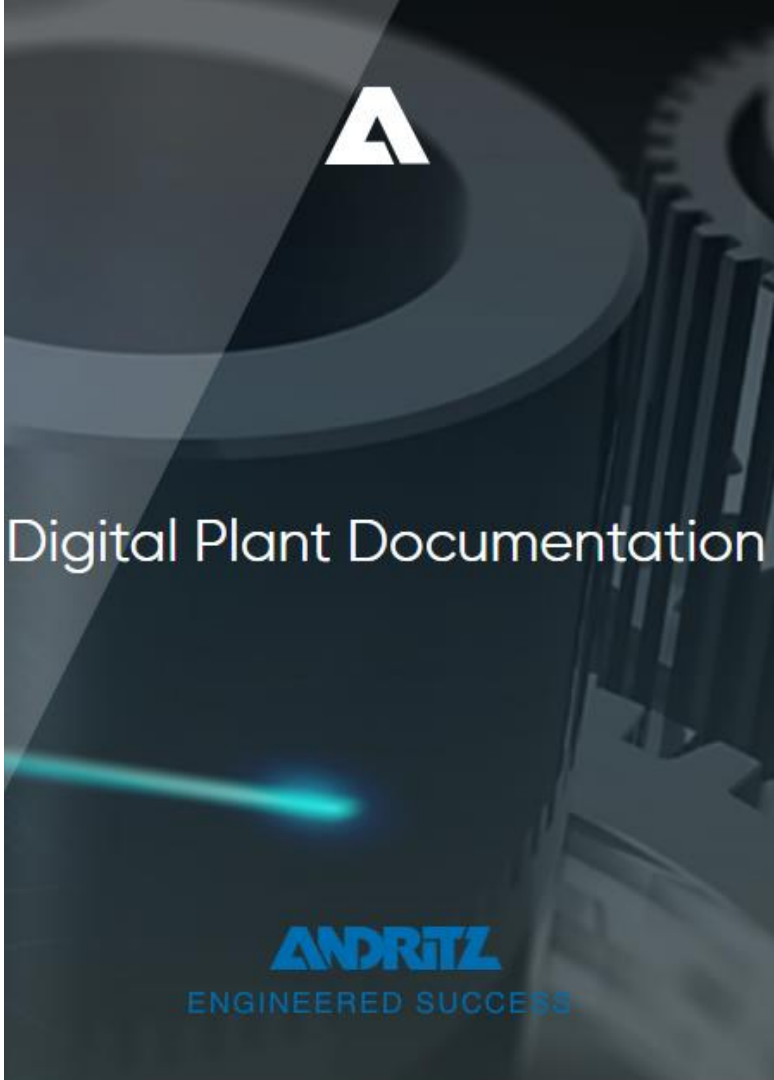
How was the solution build?

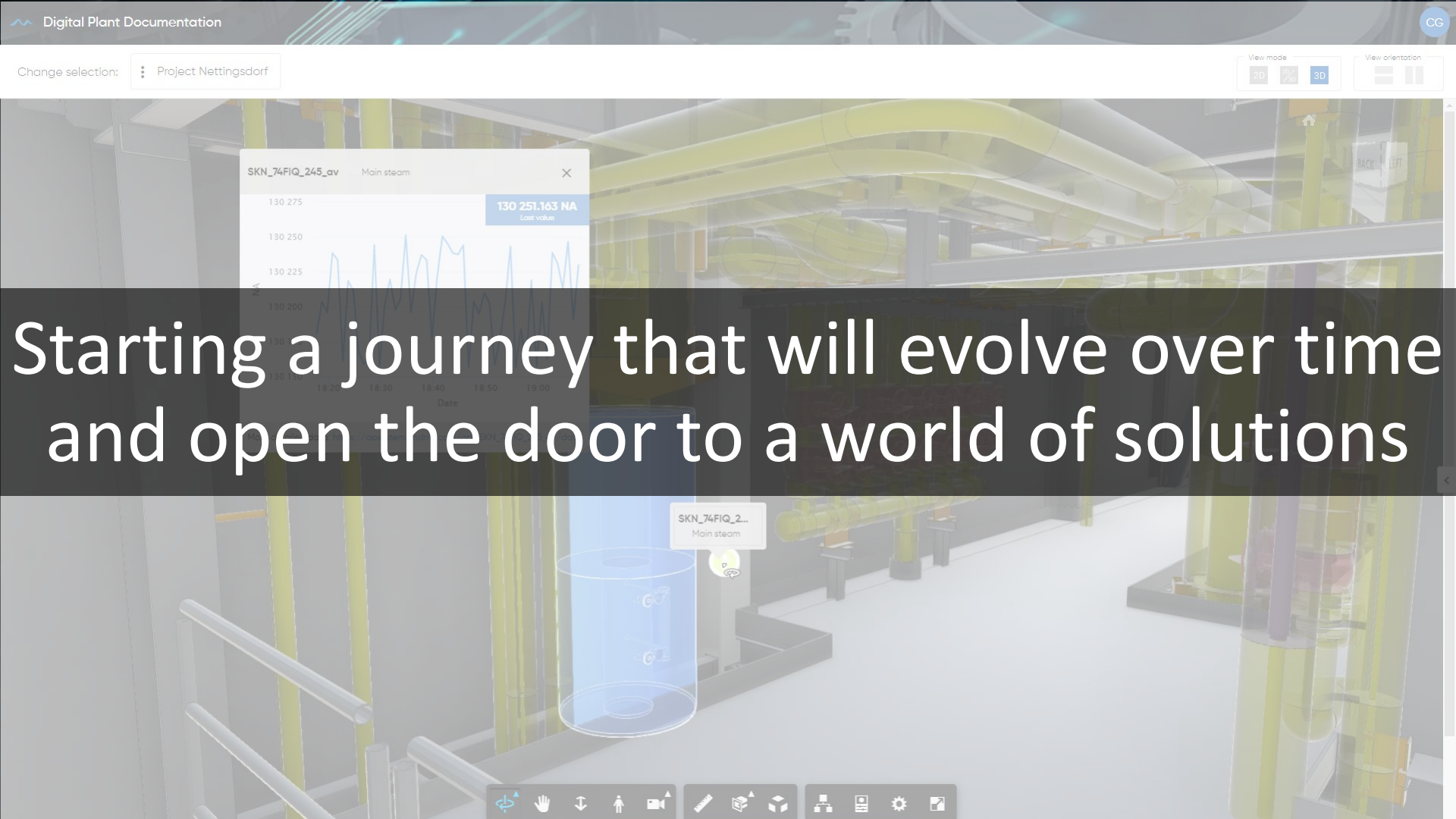
- Agile
- Incrementally implement functionality
- Listen to users
- Provide feedback to product development
- Avoid domain specific solution ➔ Build a generic layer with standard interfaces to be used independent of domain specific systems and processes



Benefits

- Seamless access to plant data – anytime & anywhere.
- Prevent faults and shorten downtimes - no need to search through several ring binders looking for circuit diagrams, parts lists and manuals.
- Finding instead of searching by identifying components directly in the 3d model.
- Direct and central access to all relevant asset information and documents at one place.
- Better and faster overview of plant condition provides time savings for several user groups.




Digital Plant Documentation
CG
Change selection:
Project Nettingsdorf
View mode
2D
3D
View orientation
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Starting a journey that will evolve over time and open the door to a world of solutions

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