TECHNICAL DOCUMENT

ABB QA Assignment

1 Objective

This is an assignment for QA at ABB Digital Position. The goal is to demonstrate your skills on QA Technologies without devoting too much time to it, estimated 3 hours.
You are free to use whatever you consider on terms of frameworks, libraries, environments…
The deliverable of the exercise will be the source code of it, some installation steps and any other documentation you might want to generate to demonstrate how you will finish this assignment on production.

2 Introduction

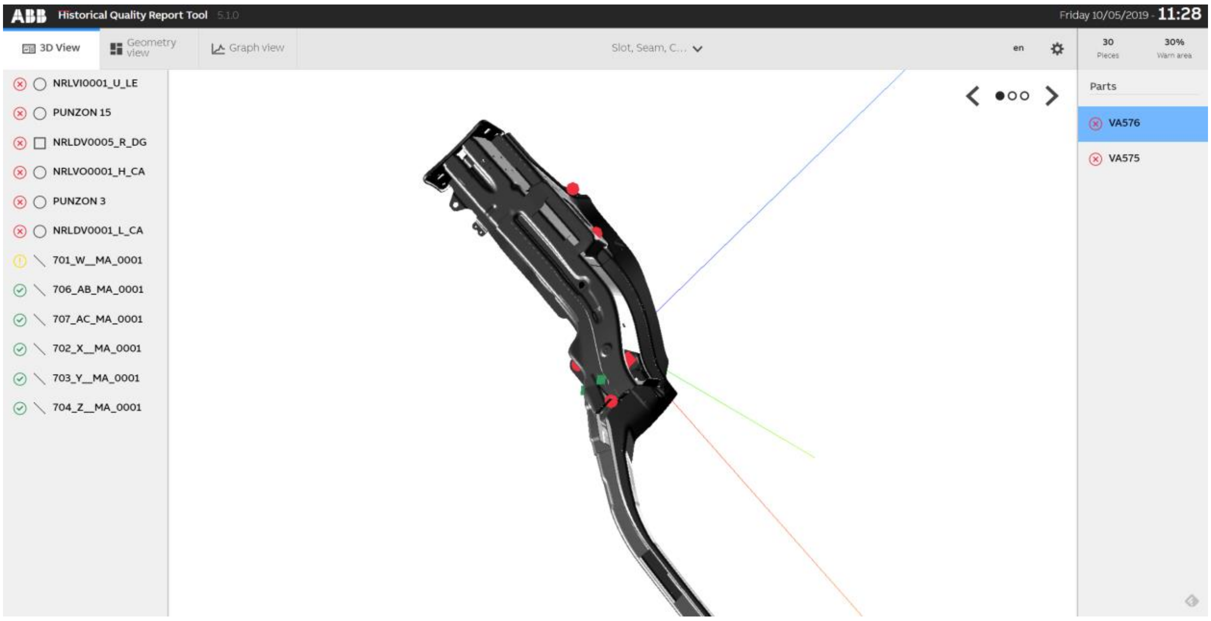
QRT is a visualization tool for showing the results of the measurements done by ABB 3DVM metrology system.

It shows the deviation between expected model versus the produced pieces for a different set of features.

It has 3 main views:

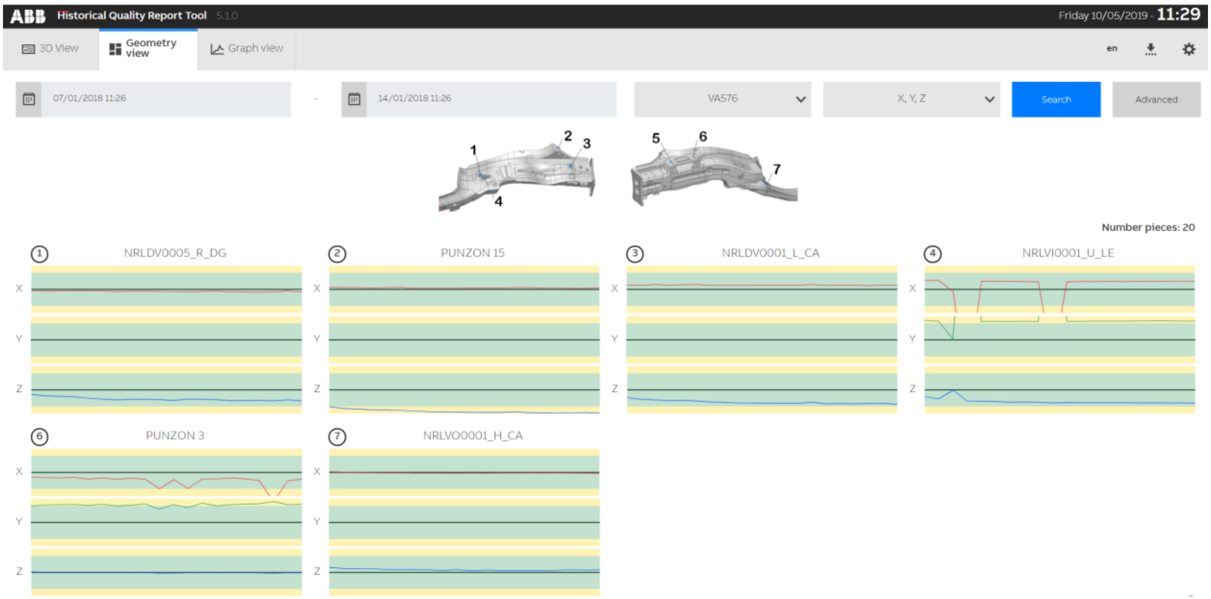
- **3D View**

  Shows a 3d model of the produced pieces with all the measured points, the points will be shown with color schema (Red, Yellow, Green) based if their measurements are correct.



- **Report View**

Gives a view of the measurements by selected dates on all the controls selected :



Historical Quality Report Tool 5.1.0

Friday 10/05/2019 - 11:29

07/01/2018 11:26 - 14/01/2018 11:26

VA576

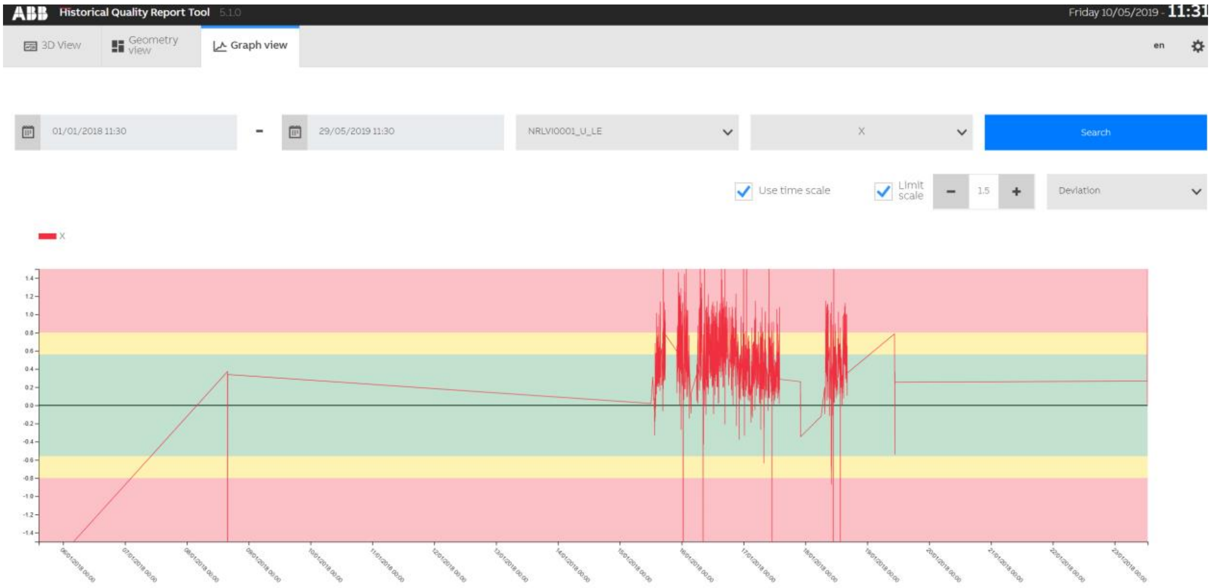
X, Y, Z

Number pieces: 20

It also sends it by mail as report in pdf (not part of assignment)

- **Graph View**

Shows detail for specific measurements and controls for a given dates



Historical Quality Report Tool 5.1.0

Friday 10/05/2019 - 11:31

01/01/2018 11:30 - 29/05/2019 11:30

NRLVI0001_U_LE

X

☑ Use time scale

☑ Limit scale 1.5

Deviation

3 Test Server

Server for the backend , frontend and database is setup in this URL :

http://qrt-assignment.northeurope.cloudapp.azure.com/#/3d

Ubuntu server virtual machine hosted in Azure

Demo data has been loaded for January 2018 only.

Dockers running :

Qrt_server : backend of the application

Qrt_client: frontend

MongoDb: Mongo database used to store the measurements and some config of the application (pieces, features, controls…)

Certificate and password to access the virtual machine is provided in the assignment as attachment email :

Url : abb-digital-demo@qrt-assignment.northeurope.cloudapp.azure.com

Password : WBPH#45Y!aGzQo1R

4 Assignment tasks

An industrial web application and backend microservices need a black box testing in the following areas:

1. **Functional testing:** For the given requirements (attached), write a test suite for QRT web app (VueJS/ThreeJS+NodeJS) using your preferred framework (e.g. Selenium, Mocha, Nightwatch, WebdriverIO). No needed to cover 100% all the features, but as much as you want.
2. **Integration testing**: For the given stack in the virtual machine write an integration test script to check all QRT components (front-end, back-end, db) works well together.
3. **Load/Stress testing**: For the given data collector stack on the virtual machine, write a script you will use for to find the throughput, requests per second and CPU/MEM load on peak. Don't stress the virtual machine, just generate the script that you will use for finding the throughput and document in a Readme what you will change on this script to reach the limit (clients, connections…)

   REST Api to test :
   http://qrt-assignment.northeurope.cloudapp.azure.com:3000/api/measurementsFromFeatures?partName=VA576&controlNames[]=X&controlNames[]=Y&controlNames[]=Z&featureNames[]=NRLVI0001_U_LE&featureNames[]=PUNZON+15&featureNames[]=PUNZON+3&featureNames[]=PUNZON+4&featureNames[]=NRLVO0001_H_CA&featureNames[]=NRLDV0001_L_CA&featureNames[]=NRLDV0005_R_DG&featureNames[]=701_W__MA_0001&featureNames[]=702_X__MA_0001&featureNames[]=703_Y__MA_0001&featureNames[]=704_Z__MA_0001&featureNames[]=705_AA_MA_0001&featureNames[]=705_AA_MA_0002&featureNames[]=706_AB_MA_0001&featureNames[]=707_AC_MA_0001&fromTimestamp=1515322380&toTimestamp=1515927180

   This is generating the report of the metrology view for an entire piece with the limit of 7 days

   Please generate the report of the results obtained.

4. **Automation testing:** For the given MQTT API (attached), write a suite to automate a happy path and negative path.
5. **Future improvements:** Propose any optimization on the existing or new test suits, which you would do in future for the QRT app.

5 Deliverables

Please deliver the code on your favorite repository, but give us access ☺
Send an email to victor.alvarez@es.abb.com when your assignment is completed with the repository URL.