Many thanks for your feedback, I have pasted my thoughts inline in blue:

1. To begin with, we installed the TWX analytics on a remote server and imported the analytics extension.
2. Analytics Builder allows creation of trained models and comes with a few inbuilt algorithms. We understand that **data cleaning is not available** to create a training dataset. It is **also not possible to tweak many hyper-parameters** which can be found in R/Python packages. Data cleaning can be done in a number of ways:
   1. Thingworx Foundation script, maybe also using the statistical calculation services, please see the Help Center page [here](https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fsupport.ptc.com%2Fhelp%2Fthingworx%2Fanalytics%2Fr9%2Fen%2F%23page%2Fanalytics%252Fda-overview.html%2523&data=02%7C01%7CBikashNarayan.P%40itcinfotech.com%7C5a5a10af34844162cc2608d819163751%7C622f8cde07b54d16ab2a6dc0c3a66e35%7C0%7C0%7C637286930646645765&sdata=mdr6OaGlJQ31k%2BQ22lwr2K85wKp8rPdt%2Fla%2FpXVBcJ0%3D&reserved=0)

The provided SPC entities are meant for TWX v8.5 and the current env is 8.3 so will be tested in future.

* 1. External system e.g. Python

Ya, has been discussed already.

* 1. Data Preprocessing Utility, version 1 due to be released in 2 -3 weeks depending on the schedule and other priorities. Please note that this extension is not officially supported by PTC, but is being developed by a field team at PTC

Certainly looking forward to it.

Tweaking of hyper-parameters: it’s true that Thingworx Analytics learners do not have a high number of input parameters to influence their behaviour. The aim with this software is that, based on the learnset and selected goal, the system automatically makes appropriate settings to arrive at a well performing prediction model. Please note that if you did want to tweak the prediction model you could export it as PMML, tweak it using external tools and then re-import the PMML to Thingworx Analytics

Will check to import PMML file format to ThingWorx.

1. Analytics Manager provides a few analysis models which are event-triggered and can interact with Thingworx Properties. Correct, please note that an alternative method for triggering predictions is to use the Thingworx API as explained in[this blog post](https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcommunity.ptc.com%2Ft5%2FIoT-Tech-Tips%2FAnalytics-Prediction-Methods-Mashup%2Fm-p%2F656572%23M1580&data=02%7C01%7CBikashNarayan.P%40itcinfotech.com%7C5a5a10af34844162cc2608d819163751%7C622f8cde07b54d16ab2a6dc0c3a66e35%7C0%7C0%7C637286930646655759&sdata=jN9xWwdYqMmWmRD1WDpcnIccMsB%2FsnLc0J6HMP1ARoc%3D&reserved=0)

Will check the method to trigger the model using APIs.

1. **Only MathCAD files are supported** for importing analysis models. Are you referring here to Analytics Manager Analysis Provider Connectors? The available connectors are: AnalyticsServerConnector, DockerDeployerConnector, ExcelConnector, JarDeployerConnector, MathcadConnector, ThingPredictorConnector. Also please note that using the Thingworx API it is possible to import PMML models as explained in [this blog post](https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcommunity.ptc.com%2Ft5%2FIoT-Tech-Tips%2FUpload-PMML-to-Thingworx-Analytics%2Fm-p%2F593214%23M1238&data=02%7C01%7CBikashNarayan.P%40itcinfotech.com%7C5a5a10af34844162cc2608d819163751%7C622f8cde07b54d16ab2a6dc0c3a66e35%7C0%7C0%7C637286930646655759&sdata=9C6oulo6RrSdcI0d05up2sr90V85nUpfw7BLHL1KfqU%3D&reserved=0)

Will check to import PMML file format to ThingWorx.

1. There are options for different Analysis providers like MathCAD and Excel but **nothing for R or Python.**There are project solutions available for sending Thingworx data to Python, running pre-processing there and then re-importing the transformed dataset for scoring in Thingworx Analytics. Also Python could be used as a Prediction Model source or Edge runtime as part of our Rockwell FactoryTalk Analytics integration. We also have the following roadmap item: “Generate analytic insight using scripts and models created in python”

Yes already discussed but yes no native support and there are number of ways the communication can be achieved.

1. It is not possible to create user-defined metrics to observe performance, only pre-defined metrics can be used. It is possible to run your own scoring jobs in Thingworx Analytics for the purposes of validating model performance. You would then make your own measurements of model performance based on comparing predicted and actual results

Yes as per PTC, what they have mentioned is already checked. DS team to verify which parameters we are actually talking about.

Following the above analysis, we have a few questions for which we seek your help:

1. Is there a way to upload models created in other languages? Yes it is possible to import PMML models as explained in [this blog post](https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcommunity.ptc.com%2Ft5%2FIoT-Tech-Tips%2FUpload-PMML-to-Thingworx-Analytics%2Fm-p%2F593214%23M1238&data=02%7C01%7CBikashNarayan.P%40itcinfotech.com%7C5a5a10af34844162cc2608d819163751%7C622f8cde07b54d16ab2a6dc0c3a66e35%7C0%7C0%7C637286930646665752&sdata=EWwZAiaJJjSZgNL8reHEsVaHTVV0W8CrLo8dcJE1RKk%3D&reserved=0)

Will check to import PMML file format to ThingWorx.

1. Is there a way to connect to R application from TWX analytics, any native support? Currently we don’t have native support for an R connector, although project implementations could be possible, for example something like the [plumber R package](https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Frviews.rstudio.com%2F2018%2F07%2F23%2Frest-apis-and-plumber%2F&data=02%7C01%7CBikashNarayan.P%40itcinfotech.com%7C5a5a10af34844162cc2608d819163751%7C622f8cde07b54d16ab2a6dc0c3a66e35%7C0%7C0%7C637286930646665752&sdata=S%2BSuhBQqCfn06D%2FW0Kpug6GOfj7ParqagImH573jSeE%3D&reserved=0)

Yes, already discussed.

1. Can we add ML algorithms other than the defaults? It is possible to import PMML models as explained in [this blog post](https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcommunity.ptc.com%2Ft5%2FIoT-Tech-Tips%2FUpload-PMML-to-Thingworx-Analytics%2Fm-p%2F593214%23M1238&data=02%7C01%7CBikashNarayan.P%40itcinfotech.com%7C5a5a10af34844162cc2608d819163751%7C622f8cde07b54d16ab2a6dc0c3a66e35%7C0%7C0%7C637286930646675744&sdata=7EG6Y6A35pvthqE%2B0jADwk%2B9CPw%2FUDJtgAVyZ9thuJE%3D&reserved=0)

Will check to import PMML file format to ThingWorx.

1. If any algorithms are available for Statistical analysis? We have statistical calculation services available for use in Thingworx as part of our Analytical capabilities, please see the Help Center page [here](https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fsupport.ptc.com%2Fhelp%2Fthingworx%2Fanalytics%2Fr9%2Fen%2F%23page%2Fanalytics%252Fda-overview.html%2523&data=02%7C01%7CBikashNarayan.P%40itcinfotech.com%7C5a5a10af34844162cc2608d819163751%7C622f8cde07b54d16ab2a6dc0c3a66e35%7C0%7C0%7C637286930646675744&sdata=x9Ah%2FFMtYdQ3ydYMcIFSaM8E4YcRNBMui%2Fht7CET%2FUI%3D&reserved=0). We also have a Statistical Process Control app built by a PTC field team, please see the attached documentation

The provided SPC entities are meant for TWX v8.5 and the current env is 8.3 so will be tested in future.

1. Can we have shell access from TWX or TWX Analytics (by default or using any extension) to execute R or any other scripts? This would need some thought as Thingworx runs in a webapp container in Apache Tomcat (in a Java Virtual Machine). Maybe an alternative approach would be to use something like the [plumber R package](https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Frviews.rstudio.com%2F2018%2F07%2F23%2Frest-apis-and-plumber%2F&data=02%7C01%7CBikashNarayan.P%40itcinfotech.com%7C5a5a10af34844162cc2608d819163751%7C622f8cde07b54d16ab2a6dc0c3a66e35%7C0%7C0%7C637286930646685739&sdata=czZEO3gbOYOlUu302yS%2FKGNwSSYFOmv612aDnec%2FybY%3D&reserved=0)

Yes, already discussed.

1. Any setup/tools for data cleaning? Data Preprocessing Utility, version 1 due to be released in 2 -3 weeks depending on the schedule and other priorities. Please note that this extension is not officially supported by PTC, but is being developed by a field team at PTC

Certainly looking forward to it.