TVARIT GmbH

FAST AND PERSISTENT

- 97.2% PREDICTION ACCURACY
- 22 AI ALGORITHMS
- 13% INCREASE IN OEE
- 2.7x INCREASED DELIVERY TIME
- 1-2 HOURS OF FAST PRODUCT DEPLOYMENT

CHALLENGES

Faced By Manufacturing Industry

FREQUENT OUTRAGES

Companies want to have 24x7 manufacturing of their products. Very high load on machine.

ADVANCED TECHNOLOGY

Technology has advanced at very rapid pace; Cloud, robotics, artificial intelligence to name a few.

CYBER SECURITY

Cyber security solutions utilizing AI and ML can greatly reduce the amount of time needed for threat detection and incident response.

GLOBAL COMPETITION

Manufacturing are facing fierce competition in terms of product quality as well as the delivery time.

SKILLED LABOR SHORTAGE

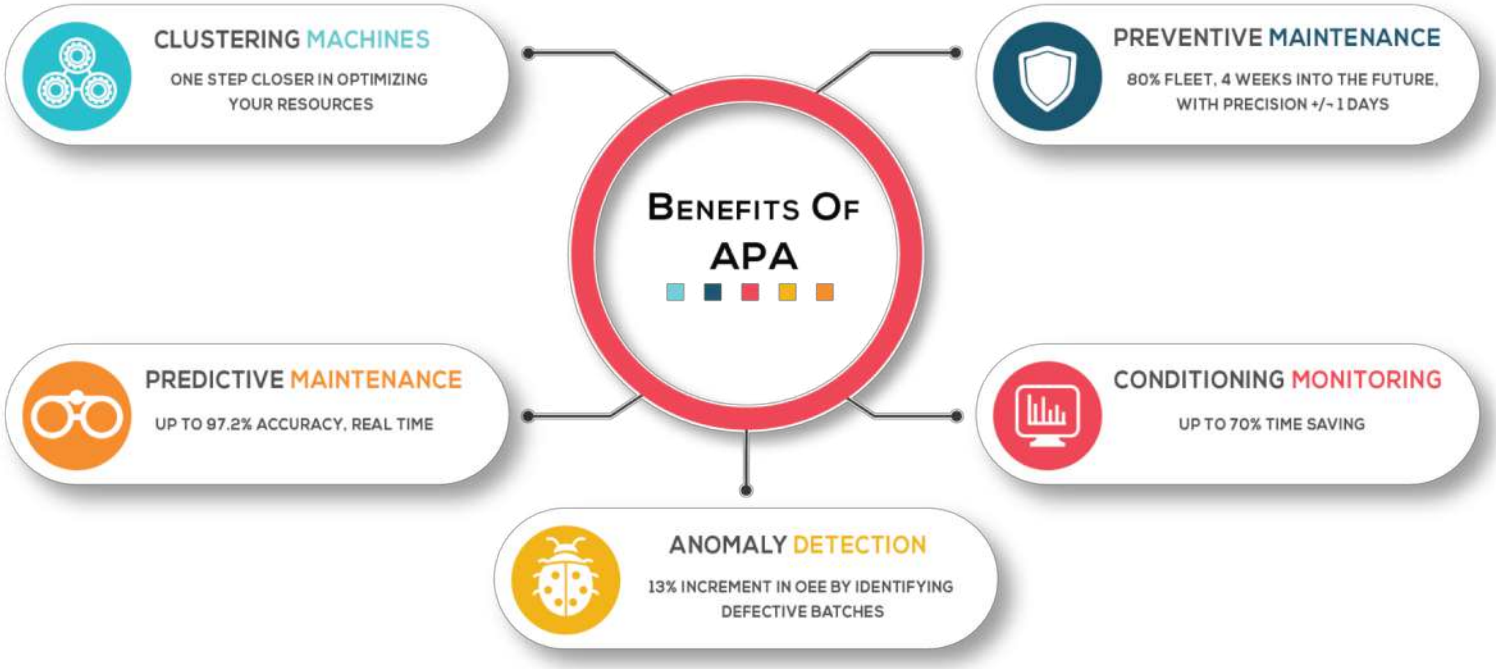
Every Major company wants to setup AI division but they are not able to get right set of talent.

LACK OF ROBUST PRODUCT IN MARKET

As per the MCKINSEY REPORT Efficiency can be improved by up to 9% if Artificial intelligence is used for smart manufacturing and supply chain optimization.

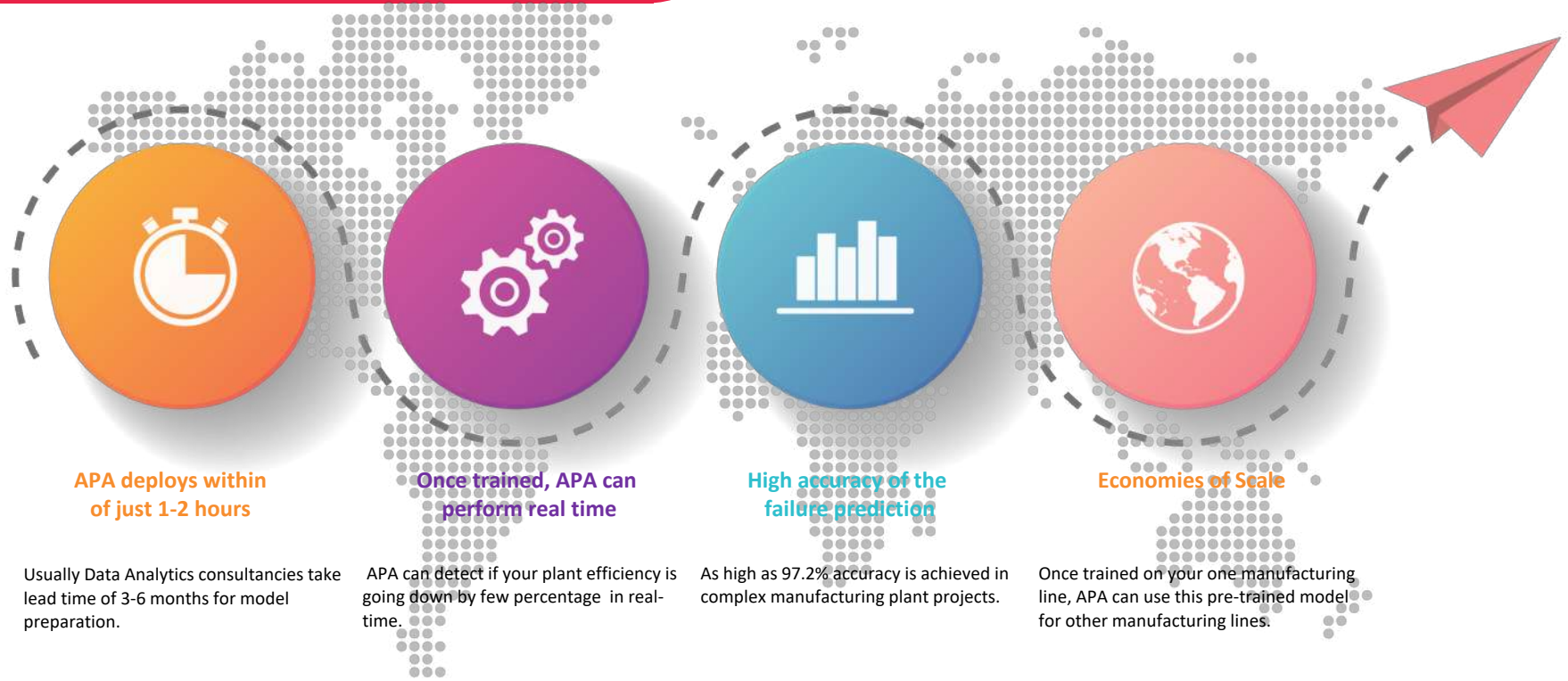
Our AI Software: APA

Features & Benefits



APA IS Different

From Its Competitors



APA deploys within of just 1-2 hours

Usually Data Analytics consultancies take lead time of 3-6 months for model preparation.

Once trained, APA can perform real time

APA can detect if your plant efficiency is going down by few percentage in real-time.

High accuracy of the failure prediction

As high as 97.2% accuracy is achieved in complex manufacturing plant projects.

Economies of Scale

Once trained on your one manufacturing line, APA can use this pre-trained model for other manufacturing lines.

PRODUCT

In Detail

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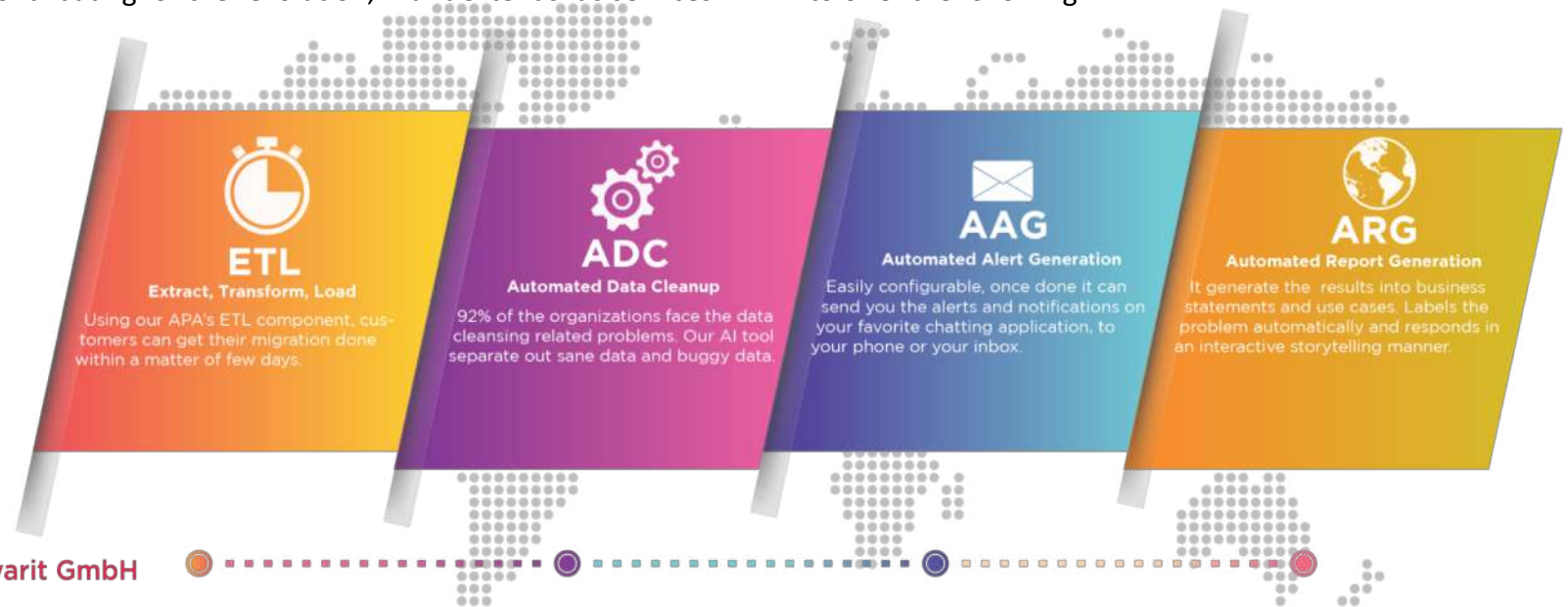
APA Components

With the assimilation of digital and human world, the future beholds a manufacturing metamorphosis. Preparing and contributing for the revolution, Tvarit extends it's services in APA to offer the following:



Projects

We Executed

Nr.	Project	Detail	Nature
1	**Dynamic and on-demand Servicing Date (Preventive Maintenance)**	This project was executed for operations and maintenance team of a Crane Dealer. It was helpful for them to schedule their calendar events for maintenance in advance and organize human resources in better way.	Preventive Maintenance (Univariate time series forecasting)
2.	**Engine failure prediction**	This project was executed for a heavy machinery OEM. Challenge was to find out failure patterns in various SPN IDs and FMI IDs coming in DTCs from CAN bus. Next capture the sustaining time of a particular DTC. Once that is done, it was easy to apply ML / DL algorithms to predict amount of time a DTC persists, and if machine is going to breakdown or not.	Predictive Maintenance (Multivariate Regression)
3.	**Predicting whether OEM needs a back up battery in his truck or not**	This was a truck manufacturing company who gives the trucks on a rental model basis. They wanted to reduce the backup battery cost for their fleet. One back up battery costed them ~7,000 euro and it was not being used in each and every truck. We took distance covered, fuel consumption in eco mode / start mode, battery voltage and current data to predict the need of a back up battery for a given truck.	Supply Chain Optimization & Logistics (Multivariate Regression)
4.	**Predicting the Quality of steel coils**	Steel manufacturing firm having plants across countries, wanted to reduce the number of defective coils coming out of their manufacturing plant. One defective coil means huge revenue loss in this industry.	Quality Prediction (Image Pro, Anomaly detection, Pattern Recognition)

Customer Success Story

Quality Prediction: White Paper

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Problem Statement

This customer has huge steel manufacturing plants across the world. Within one plant, they have number of manufacturing lines. Each manufacturing line consists of few machines such as furnace, casters, mills etc and it produces 4 coils per day where a coil costs about 55,000 euro. They get a coil defective after every 20th coil on an average which translates to 73 defective coils out of 1460 in a year i.e. 5% defective coils. Defective coils go back into furnace for re-work which means waste of 55,000 euro.

Approach

- They have been capturing various process parameters via sensors for temperature, pressure, speed, torque etc at each step. Corresponding to one manufacturing line, there are total 800 such sensors capturing values at every 1 second.
- Once the coil is manufactured, they send the coil samples to laboratory for quality testing. Laboratory takes 2 days and performs 60 different tests to produces the quality results. Coil is classified into a good coil or a defective coil on the basis of whether these results falling into permissible range or not.

Solution

- Applying multivariate regression on this was out of scope here as we don't have label corresponding to each entry of every second. Since the duration of coil manufacturing batch is 6 hours, and there were 800 process parameters i.e. the features for the model, we converted this into a standard image classification problem. We trained our tool on historical coils of more than 1600 GBs of data and integrated it with customer's dashboard via REST API.
- Accuracy we achieved was 76%, means we were able to capture 9 out of 12 defective pieces in a month. It means, we saved 9*55,000 = 495,000 euro per month for the customer.
- Along with the quality prediction, we give them the root cause which is the correlation between process parameters and the quality prediction, so that the plant technicians can control the process parameters in real-time to drive the quality prediction in permissible range.

CONTACT US

For Further information

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