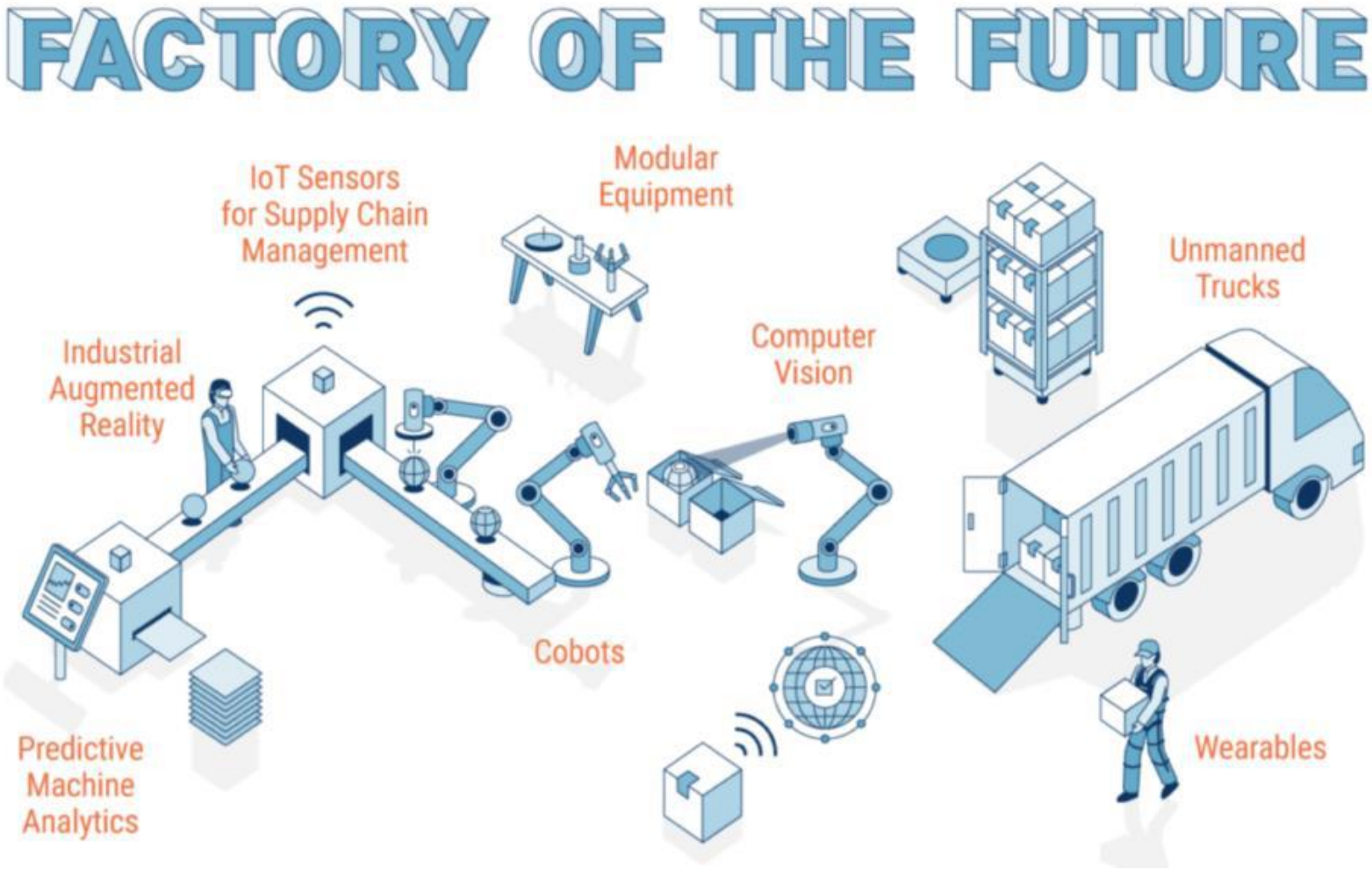
AIOTEAM

SMART FACTORY

Future Ready for Industry 4.0

ARTIFICIAL INTELLIGENCE | IIOT | COMPUTER VISION | MACHINE LEARNING



Smart Factory

Industry 4.0

A BRIEF PRESENTATION

The IIoT is widely considered to be one of the primary trends affecting industrial businesses today and in the future. Industries are pushing to modernize systems and equipment to meet new regulations, to keep up with increasing market speed and volatility, and to deal with disruptive technologies.

Businesses that have embraced the IIoT have seen significant improvements to safety, efficiency, and profitability, and it is expected that this trend will continue as IIoT technologies are more widely adopted.

current scenario

Currently the data is being collected using PICs

Sensors and Machines Sending Data

Volt/Amp

PLC collecting Data

Analogue Data

PLC Sending Data via Serial or Ethernet

Analogue Data

PLC software collecting Data

Actual Values

Customized connecting to PLC softwares and collecting data

Actual Values

Custom Software saving in database every 2 hours

Proposed Solution

The growth in vehicles will lead to increased traffic problem in the coming future!

Sensors and Machines Sending Data

Sensors and Machines Sending Data

Sensors and Machines Sending Data

Volt/Amp

Volt/Amp

Volt/Amp

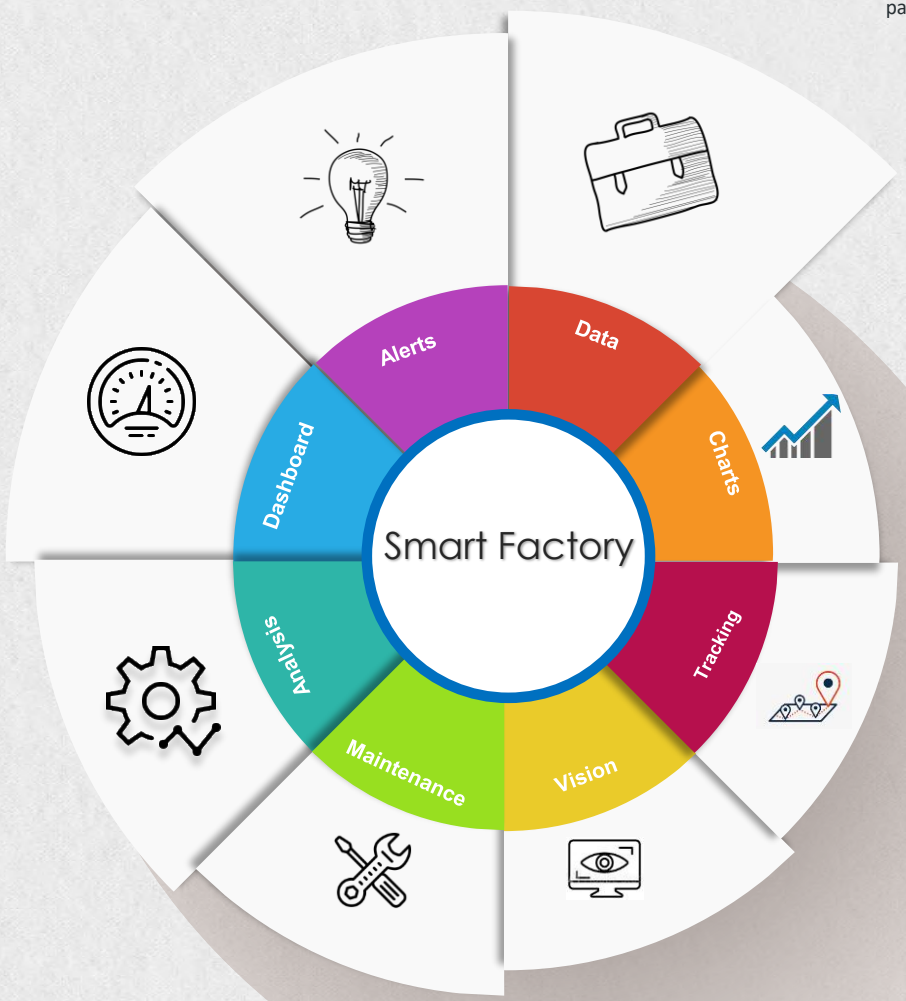
I/O Gateway and Server

Realtime Alerts 02

Generate alerts based on LSL and USL

Data Logging 01

Save actual values of each parameter in every second



Realtime Dashboard 03

Show data of each parameter in realtime dashboard

X bar R, CPCK and other Reports 08

Generate different charts, reports and download data in excel based on requirements

Predictive Analysis 04

Analyze and predict the future based on previous data using Machine Learning

Equipment Tracking 07

Using RTLS Beacons track exact movement and current location of equipments and tools

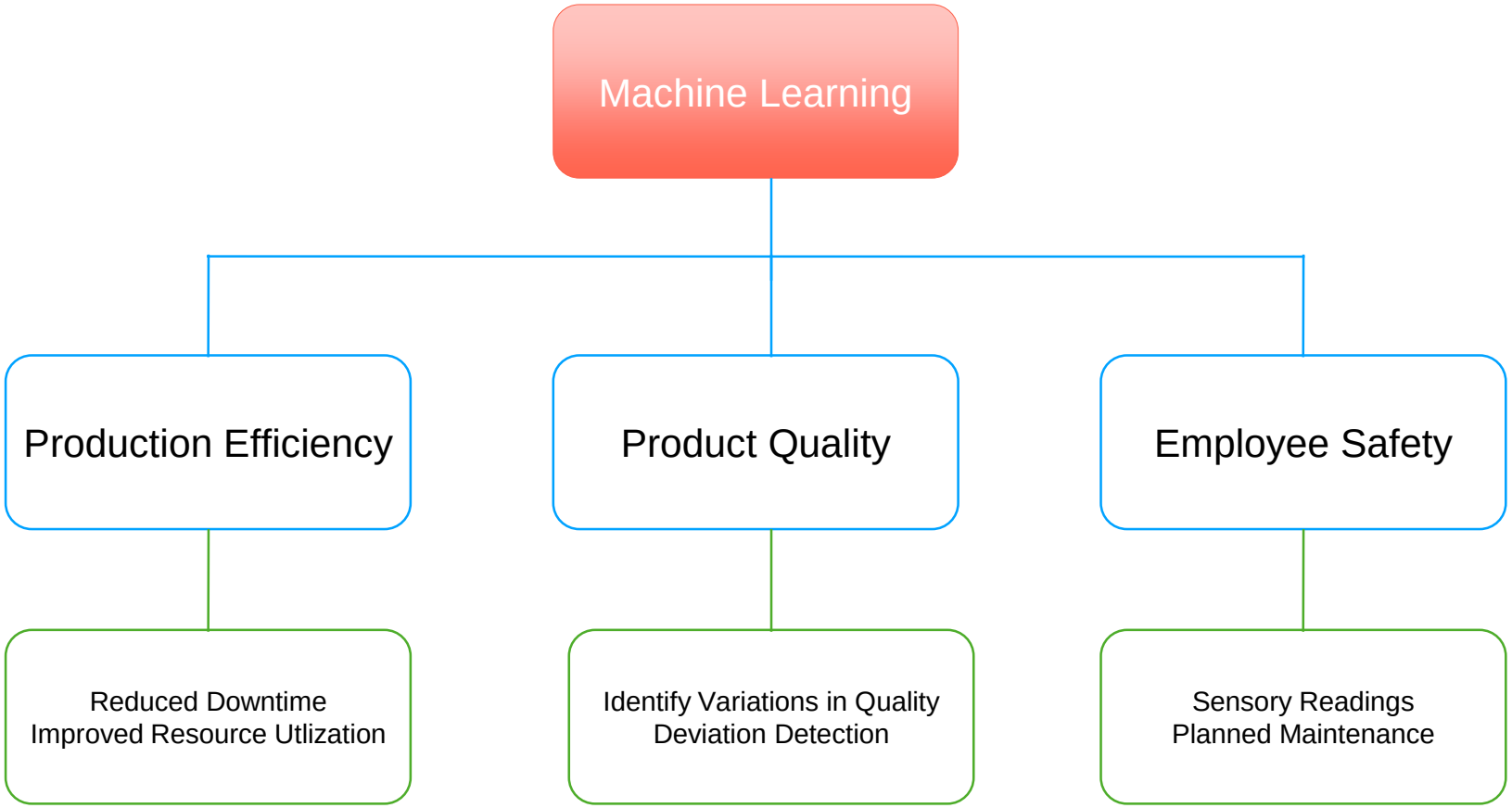
Predictive Maintenance 05

Using AI and ML, detect possible defects, breakdowns and fix them before they result in failure.

Computer Vision 06

computer vision is being used to optimize production lines, and digitize processes and workers.

ML in Manufacturing



The Big Six Losses & Prevention Mechanism

Overall Equipment Effectiveness	Six Big Losses	
Availability Loss	Unplanned Stops	Anomaly & Pattern Detection
	Planned Stops	
Performance Loss	Small Stops	Automated Root Cause Analysis
	Reduced Speed	
Quality Loss	Production Rejects	Neural Networks & Clustering
	Startup Rejects	
OEE	Fully Productive Time	Better Overall Equipment Efficiency

Advantages of Applying ML & AI

Advantage	Description
Cost reduction through Predictive Maintenance	Predictive Maintenance leads to less maintenance activity, which means losses due to unplanned shutsowns
Predicting Remaining Useful Life (RUL)	Knowing more about the behaviour of machines and equipment leads to creating conditions that improve performance while maintaining machine health. Predicting RUL does away with “unpleasant surprises” that cause unplanned downtime.
Improved supply chain management	through efficient inventory management and a well monitored and synchronized production flow. This leads to improved cash flows
Improved Quality Control	Providing continuous actionable insights to constantly raise product quality & Track rejections by monitoring the process and parameters.
Improved Human Safety	collaboration improving employee safety conditions and boosting overall efficiency

ROI

- Reduce Downtime by instantly and automatically alerting engineers and analyzing trends of reasons of downtime collected automatically.
- Realtime monitoring of Actual Vs Target Production on the bases of Production order or Purchase order thus predicting and saving delayed shipments.
- Predict and alert breakdown and downtime by machine learning even before it happen.
- Reduce Manpower needed for manual data entry of periodic time checks, preparing production report, uploading on SAP etc.
- Reduce Maintenance cost by automatic monitoring of usage and wear & tear of all the machines.
- We can predict which parts will require replacement in the future, so that we can order it beforehand and save idle time.
- Reduce Calibration and Servicing cost by automatic monitoring of usage and wear & tear of all tools and equipments.
- Predict machine, parts and equipment failure by machine learning
- Improved Quality Checks thus reducing scrap
- Energy efficiency by monitoring Energy Loads and alerting if it exceeds in case.
- Automatic and realtime Six Sigma analysis, CP CPK Charts of all parameter values

Auto Alert

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Automatic Call on mobile

If any parameter value goes our of specification Limit software will automatically make a call to the engineer on duty

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Vibration in Mobile phone

An application will be installed in the mobile phones of engineers. In case of alert, phone will start vibration alert.

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Wearable Device with Vibration

We have designed a wifi and 3g based Smart wearable device that will vibrate in case of Alert and display details of exact location of problem

3 MINS MANUAL SYSTEM	**1 Minute** AUTOMATED SYSTEM
CURRENT RESPONSE TIME	EXPECTED RESPONSE TIME

THANK YOU

BUSINESS | MARKETING | INFORMATION