# The Challenge

The company has 350 machines. Worktime monitoring should be introduced where possible. In this way, it would be possible to see at which workstation the work is stopped for longer or at which workstation it should be expanded so as not to create the so-called bottlenecks. Workstations without the ability to monitor machine worktime should be reported when parts arrive at them and when they leave the workstation.

Currently, many workstations that do not have machines, for example, locksmith workstations, do not report receiving of parts or work on it. The system should be thought of in such a way that the delivery of parts to such workstations is recorded in the system and that the start of work on them is registered. Employees should report the moment they start and finish work on a given part of the system. Also, a control system for older machines should be designed in order to have data on the machine’s operating time.

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## Main Requirements

* Optimization of production planning and scheduling,
* Improved machine utilization,
* Reduction of machine downtime,
* Optimization of material flow.

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## Other Requirements

N/A

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## Key Performance Indicators

N/A

**Industry Sector:**
Aviation industry

**Challenge classification:**

Monitoring and optimization of processes in real time;

Intelligent planning and scheduling of processes.

**Time for Project Completion:**

18 months

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## Other informations

Configuration of each machine and the operation of each:

Each workstation is integrated with the network, so 100% of workstations have the ability to report work quickly. The computer allows you to record the working time to monitor the performance of the employees and record the progress of the product processing. Each employee must conscientiously record the working time and, after completing a given activity on an element, uncheck it in the system. This enables a real-time preview. The biggest advantage of this system is its virtually complete digitisation. However, the collected data is not translated into changes that improve the speed of production.

Machines are equipped with PLC/PAC or CNC controllers and can provide data?

An estimated 40% of machines connected to the network are capable of transmitting data in real time. Each workstation has a computer with a reader.

Machines are not equipped with any digital controller (Legacy Machines)?

About 20% of the machines are not equipped with any digital controller (older machines).

# Research Phase

*Taking into account the challenge description, its requirements and its information, elaborate at least 5 questions that can lead your research for a solution.*

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## Research questions:

*Given the questions and the main requirements of the challenge previously listed:*

* *identify possible technologies using the Planet4 Taxonomy Explorer;*
* *identify and analyze the sources (papers, articles, etc.) of those technologies that best suit the challenge;*

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## Technologies identified in the taxonomy:

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## Sources of those technologies that best suit the challenge:

*In light of the discoveries made:*

* *report the answers for the questions above;*
* *compare 2-3 of the more common solutions identified in the sources (how would they change the approach to the solution? What are the possible benefits/issues in such a use of these technologies?);*
* *draw initial conclusions on which path you want to take in proposing a solution.*

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## Answers:

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## Comparison:

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## Conclusions:

# Proposed Solution

*Making use of the technologies identified after the analysis of the sources, describe a possible solution to the challenge. Also, do not forget the constraints (time, number of devices to produce/connect, etc.): the solution must be applicable to the real context of the company that commissioned the challenge.*

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## Solution Summary

*Brief description of the solution (1-2 paragraph + 1 image)*

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## Solution Description

*Describe the solution and its details*

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## Implementation Plan

*Describe the solution implementation plan considering among other things: gantt chart with milestones, high-level cost analysis, possible difficulties (at least 3 major issues or difficulties) and additional opportunities (at least 2 extra benefits).*