# The Challenge

The company operates in the aviation industry. On one of the production lines, it has 12 machines, i.e. milling machines, lathes, grinders.

The challenge is to improve and perfect technology and production processes using innovative machines from industry 4.0 in the production of a given part. In addition, it is necessary to monitor and supervise the time between individual operations, e.g. measurements after heat treatment or after turning. The last element of the challenge concerns the creation and modernization of technological documentation into e-documents.

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## Main Requirements

* Continuous process monitoring (energy use, temperature, time of some operations after quenching),
* Improved machine utilization,
* Creating an appropriate method of transition from paper documentation to electronic documentation,
* Optimization of material flow.

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## Other Requirements

* Control of production processes.

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## Key Performance Indicators

N/A

**Industry Sector:**
Aviation industry

**Challenge classification:**

Real-time process monitoring and optimization; Warehouse management based on real-time tracking of product location, transport conditions, packaging integrity; Transition from paper documentation to digital versions.

**Time for Project Completion:**

24 months

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## Other informations

Use manufacturing execution systems (MES) or enterprise resource planning (ERP) systems?

Yes.

Type and operation of the MES or ERP system used?

The company uses an ERP system, SAP. It allows control of production orders.

# 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).*