



# **Intelligent & Automatic NDT for Discrete Manufacturing**

**INDIEMAN**



# smart

advanced manufacturing

# ORGANISATION PROFILE

## VTT Technical Research Centre of Finland Ltd

VTT is one of Europe's leading research institutions. We are owned by the Finnish state. We advance the utilisation and commercialisation of research and technology in commerce and society. Through scientific and technological means, we turn large global challenges into sustainable growth for businesses and society. We bring together people, business, science and technology to solve the biggest challenges of our time. This is how we create sustainable growth, jobs and wellbeing and bring exponential hope.

Year of VTT's establishment: 1942

Owned by the Finnish state, steered by the Ministry of Economic Affairs and Employment



	2022
<b>Number of employees</b>	<b>2,213</b>
doctorate or licentiate degree	32%
different nationalities	55
<b>Customers</b>	<b>1,190</b>
of which domestic and international private sector customers	1,005
<b>Total revenue, of which</b>	<b>261 M€</b>
Net turnover	165 M€
Government grant	85 M€

# PROPOSAL INTRODUCTION (I)

**Vision:** main project goal

- AI enhanced automated digital inspection data (pre-)processing and analysis
- Physical inspection process automation for integration in automatic robot-based manufacturing, e.g. welding
- Parallel to technical development work, standardisation issues need to be addressed
  - Current standards and practices are based on manual inspection only

**Motivation:** why the project is necessary

- There is an ever increasing demand for improved quality & increased productivity
  - ⇒ Call for automation in discrete manufacturing, eg. welding or AM
- Welding automation rate is increasing but NDT is still manual
  - Often outsourced to a third party → coordination with production!
  - Worst case: production flow interruption downstream from welding cell → Delays in production throughput
- Increasing lack of skilled & qualified inspection personnel
- Automatic NDT data integration in production data is deficient

**Content:** which are the developments to be made in the project

- Digitalisation of established NDT methods calls for
  - Effective procedures to analyse the inspection data (near) real time
  - AI based processes to exploit the possibilities of continuous data flow
- Edge computing enables AI real time evaluation
- Cloud services allow offline statistical analysis
  - ⇒ ***New possibilities and emerging opportunities for statistical assessment of service behaviour based on NDT***

## PROPOSAL INTRODUCTION (II)

**Expected outcome:** descriptions of the results to be obtained in the project

- AI enhanced automated digital inspection data (pre-)processing and analysis
- Physical inspection process automation for integration in automatic robot-based manufacturing, eg. Welding
- Automatic NDT data integration in production data for quality management and traceability
- Edge computing enabling real time AI enhanced evaluation of inspection result
- Cloud services allowing offline statistical analysis for process quality management and development

**Impacts:** what will be the expected market impact of the project

- ⇒ ***New possibilities and emerging opportunities for statistical assessment of service behaviour based on NDT***
- ⇒ ***More efficient inspection processes through automating selected manual inspection tasks***

**Schedule:** Estimated start date 1.1.2025, duration 36 months

## PARTNERS

**Current consortium:** list of partners already involved in the project

Finland:

VTT Technical Research Centre of Finland, RTO, coordinator

Wärtsilä, OEM, LE

Trueflaw, technology provider, SME

Kiwa Inspecta, service provider, LE

Cavitar, technology provider, SME

Turula Engineering, end user, SME

METSTA, standardization body, steering group external expert

International:

University + company from Korea

RTO + SME company from Germany

(University + SME company from UK)

**Partner search:** type of partner searched and countries of origin (if necessary).

NDT equipment/sensor manufacturer, LE/SME

Robot/automation integrator for NDT applications, SME

End user, SME

## CONTACT INFO

**Contact info:** of the person coordinating the project proposal

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