

COGNitive production based on INTELLigent Quality, Energy and Maintenance Management

Application Experiment supported by DIH4CPS Network
Deployment of AI in the Machine Tools Industry & Precision Manufacturing

Project Partners



Technology Provider

ERREDUE

Italian innovative SME and a
supplier of engineering services

www.erredue.net



Digital Innovation Hub (DIH)

CIIRC CTU

University institute focusing on research in AI,
Industry 4.0, and advanced manufacturing

www.ciirc.cvut.cz



End User

Scorta S.r.l.

Leading Italian manufacturer of
thread cutting tools

www.scorta-taps.com

Business Case Description

The manufacturing industry uses tools such as **distributed sensors**, **embedded controls**, **big data analytics** to manage and optimise **quality**, **energy efficiency**, **system availability** & **cost-effectiveness**. Each stage is an "island of efficiency". **Cognitive production** integrates these islands and enables effective performance management by **AI techniques** that extract value from information related to the online status of assets.

COGNINTEL application experiment aims to deploy AI-based decision making and control platform tailored to the machine tools industry to optimise the operations by enabling a holistic and intelligent Quality, Energy and Maintenance Management (QEM) approach.

Methodology

The COGNINTEL machine learning workflow relies on the Cross Industry Standard Process for Data Mining (CRISP-DM) methodology. CRISP-DM is a process model with six phases that describes the data science life cycle.

The modular COGNINTEL implementation architecture includes a **"Learner" module** - to train the model, and a **"Predictor" module** - to deploy the model in production.

Application Scenarios

Pilot 1 – SCORTA use case

QEM management approach within precision manufacturing of thread cutting tools

Pilot 2 – CIIRC CTU / DIH use case

QEM management approach in precision drilling operations

