SOMMACT Self Optimising Measuring MAChine Tools
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SOMMACT

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Deliverable D2.4

Specification of the validation plan of the adopted technical solution

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1) **R** = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other

2) **PU** = Public, **PP** = Restricted to other programme participants, **RE** = Restricted to a group specified by the consortium, **CO** = Confidential, only for members of the consortium

Executive summary

This report provides the preliminary metrological specification of the SOMMACT project demonstrator.

Such specification derives from the conclusions of performed research tasks and from the results of on-going research activities. It is mainly based on the following:

1. T1.2 – *Identification of preferred application scope*. As documented in Deliverable D1.2 – *Report on preferred machine tool configurations and application fields*, selection criteria are broadly defined with respect to: (i) Machine tool type, (ii) Axes configuration, (iii) Axes size and (iv) On-board measuring system. Deliverable D1.2 also points out that even partial solutions deriving from SOMMACT project outcome could be very effective and that the selection of sensors and reference artefacts should also take into account the possibility of retrofitting them to existing machine tools, thus significantly increasing the effective exploitation of the project outcomes.
2. T2.1 – *Envisagement and analysis of error sources*. The corresponding Deliverable D2.1 – *Report on error sources analysis*, highlights the type of error the SOMMACT project shall concentrate on and also proposes a preliminary sensitivity analysis chart.
3. T1.3 – *System functional specification*. Deliverable D1.3 – *Specification of the system required functions*, discusses requirements and specifications of the various methodologies, systems and technology associated to the main SOMMACT features of (i) machine errors measurement, (ii) compensation, (iii) on-line measurement systems for continuous improvement, (iv) traceable on-machine inspection and (v) software for supervisor control and self-learning. It shall be noted that this Deliverable also contains the risk analysis associated to every specific topic.
4. The combination of the research work carried out inT2.2 *Investigation of the SEM (Separate Embedded Metrology) solution* and T2.3 *Investigation of the TiLOR (Timely Low-Order Recovery) solution*, documented in corresponding Deliverables D2.2 and D2.3, yields to conclude that the SOMMACT project "tool kit" will be a composition of the two solutions.

The SOMMACT demonstrator will be a real machine tool, based on the ALESAMONTI MAF45 boring/milling machine that, from the preliminary tests performed in T1.2, shows good sensitivity to both load variations and ambient temperature variations.

The technical specification of the machine, its mechanical interfaces to possible sensor systems and reference structures, as well as the specification of its foundation will be the object of Task T3.5 *Technical specification of the demonstrator*.

This report discusses economic and feasibility issues and points out which issues are most critical and require particular testing and validation.

The sequence of activities described in the Dow WP5 – *Demonstration* is considered and it drives (i) the sequential presentation of topics and (ii) the corresponding high level metrological specifications.

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