SOMMACT Self Optimising Measuring MAChine Tools
Grant Agreement no.: **CP-FP 229112-2**
Start Date: 2009-09-01
Duration: 36 month

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Deliverable D1.1

Report on the current State of the Art of relevant technology

Document title:	**D1 1_SoA_Draft.doc**
Reference WP/Task:	**WP1 / T1.1**
Lead Task beneficiary:	**THE UNIVERSITY OF HUDDERSFIELD**
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Date:	**2010-03-25**
Revision:	**00**
Status:	**Draft** Final
Nature [1]:	**R**
Dissemination level [2]:	**RE**

[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 includes a review of research and product literature relevant to the various SOMMACT technological objectives. The scope of the project has been split into five main areas:

1. Metrological design
2. Calibration and benchmarking
3. Error modelling and compensation
4. Supervision and self optimisation
5. Communications

The content includes general discussions of the state-of-the-art and discussions on the suitability for contributing to the SOMMACT solutions.

The layout of the document and the headings is based on, but not identical to, an overview map (Mindjet Mindmanager software map) which provides a relatively easy interface to browse particular areas of interest and then find the relevant section in the report. In order to provide compatibility of the map for the project partners, a series of web pages has been exported form the software which provides sufficient functionality to navigate the topics.

All the papers reviewed for the project are listed in an Excel spreadsheet in which all the details about the publisher and Digital Object Identifier (DOI) number are provided along with a short description of the paper content and relevance to the SOMMACT project.

Some additional Excel spreadsheets have also been produced to compare specifications of various sensors. Additional sensor information can be added for comparison as is obtained.

The primary conclusion from the review is that the TiLOR and SEM solutions are innovative and novel. Multi degree-of-freedom (DoF) sensor systems required to supporting the SEM solution have been researched but are either limited in the number of DoF measured or their measuring range. This therefore represents a high challenge area for the project.

The SOMMACT project requires efficient artefact based self-calibration and virtual metrology to support the TiLOR approach and OMM respectively. This has not been applied to machine tools but extensive work done on CMMs by various members in the consortium should help to mitigate any risk and facilitate this transition.

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