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 Project title: Ultrafast High-Average Power Ti:Sapphire Thin-Disk Oscillator and Amplifiers

Collaborative Project (STREP)

FP7-ICT-2013-11  
 Information and Communication Technologies

## D7.1 – Website developed and brand established for Ti:Sa TD

Revision 1.0

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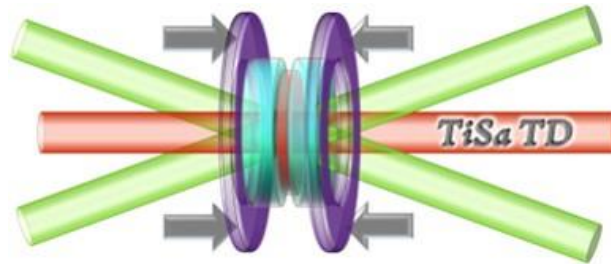
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Organisation name of lead contractor for this deliverable: Universität Stuttgart (USTUTT)  
 Coordinator: Dr Andreas Voß (USTUTT)

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Dissemination Level		
<b>PU</b>	Public	<b>X</b>
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	



# D7.1: Website developed and brand established for Ti:Sa TD

**Nature:** Other

**Dissemination Level:** Public (PU)

## **Owner**

**Name:** USTUTT  
**Lead Beneficiary:** USTUTT

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## Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
<b>2</b>	<b>The Website .....</b>	<b>5</b>
2.1	The Home page .....	5
2.2	The Project page .....	6
2.3	The Partners page .....	7
2.4	The Publications and News page .....	8
2.5	The Contact Us page .....	8

# 1 Introduction

The main objective of this website is to create an initial awareness of the TiSa TD project within the general public as well as within the scientific community.

The public facing website held at [www.tisa-td.eu](http://www.tisa-td.eu) has been designed to inform people who are external to the consortium of:

-  What the project is about
-  The main aims of the project
-  The organisational partners involved
-  The latest news and achievements
-  Links to other related information

There is also online contact details to allow further information request by visitors.

The website will be regularly updated as and when new information is generated.

# 2 The Website

## 2.1 The Home page

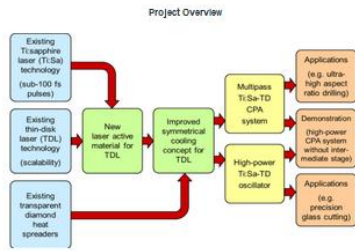
The TiSa TD brand is established with a unique distinctive logo



The website menu is located on every page to facilitate navigation around the different sections of the website

Introducing the project with a brief summary

**Project summary**  
The main objective of TiSa TD is to demonstrate industrial high-average power ultrashort Ti:Sapphire (Ti:Sa) lasers and their application to high-productivity precision micromachining of transparent materials like glass and ceramics. Thin Ti:Sa disks coated on both faces using transparent diamond heat spreaders will be employed to achieve the targeted high output powers.  
The Ti:Sa TD consortium comprises two laser technology research and development centres (Universitt Stuttgart, Institut fr Strahlwerkzeuge and Centre National de la Recherche Scientifique FEMTO-Group), and four industrial partners represented by two SMEs (Oxford Lasers Ltd and M Squared Lasers Ltd) and two large enterprises (Thales Optronique S.A, Element Six Ltd). The consortium is well balanced and provides expertise covering the entire supply chain, from the laser development (Universitt Stuttgart, Institut fr Strahlwerkzeuge), the laser manufacturing process (Thales Optronique S.A. for the high-energy CPA systems and M Squared Lasers Ltd for the high-repetition rate systems), provider of laser components (Element Six Ltd), to the application development covering both fundamental laser material processing research (Centre National de la Recherche Scientifique) to the actual industrial applications and material processing (Oxford Lasers Ltd).



The Team



Photo Kickoff meeting: 12&13 December 2013 at the IFSW in Stuttgart

The TiSa TD partners at the Kick-off meeting in Stuttgart

## 2.2 The Project page

The project page includes an overview of the project, its aims and reference to the FP7 Grant Agreement details.



The screenshot shows a web page with a header image of a laser resonator and the title "Ultrafast High-Average Power Ti:Sapphire Thin-Disk Oscillators and Amplifiers". Below the title is a navigation menu with "The Project", "The Partners", "Publications", and "News". The main content area is divided into two columns: "About" and "Proposal".

**About**

**Project Title**  
*Ultrafast High-Average Power Ti:Sapphire Thin-Disk Oscillators and Amplifiers*

**Project Start Date**  
*01/12/13*

**Project Duration**  
*36 months (end date 01/12/16)*

**Proposal**

The main objective of the project is to demonstrate the feasibility of industrial high-average power ultrafast Ti:sapphire (Ti:Sa) lasers and their excellent qualification for demanding high-productivity precision laser material processing applications. To achieve the targeted high output powers, the thin-disk (TD) geometry shall be employed, which already enabled the efficient generation of up to 740 W of cw fundamental mode power from one Yb:YAG crystal. Symmetrical double-sided cooling with two transparent diamond heat spreaders shall be used to optimize the cooling of the thin Ti:Sa crystal. Within the project, two ultrafast Ti:Sa TD laser systems, one with chirped pulse amplification (CPA) to obtain high-energy pulses and the other without CPA for high repetition rates, both with a maximum average output power of at least 200 W at a pulse duration of well below 100 fs shall be demonstrated. The CPA system, comprising a multipass TD amplifier, shall achieve a pulse energy of 10 mJ at 20 kHz repetition rate. The multipass amplifier will be pumped by two nanosecond pulsed frequency-doubled solid-state lasers developed within the project which are operating at 532 nm with an average output power of 300 W each. The high-repetition rate system shall be a high-power TD oscillator with a pulse energy of 20  $\mu$ J at about 10 MHz. A commercial cw Yb:YAG TD laser with intracavity frequency doubling emitting about 500 W at 515 nm shall be used as pump source. To demonstrate the excellent qualification of the ultrafast oscillator for fast, ultra-precise micromachining of transparent materials, high-speed cutting of glass will be investigated as high-volume reference application. With the CPA system, which is especially well suited for ultra-precise drilling, the ultra-high aspect ratio percussion and single-shot drilling of transparent substrates shall be investigated. This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 619177

last change: Feb 25, 2014 | Questions about this page to: BR | © TiSa TD | Legal Notice |

## 2.3 The Partners page

Here, a section is dedicated to each partner which contains the organisation's logo and background information, including a hyperlink to the organisation's own website. The partners list on the top left hand side provides quick navigation to the section relevant to each partner.



The screenshot shows a web browser displaying the project website. The header features a diagram of a laser resonator and the project title. Below the header is a navigation menu with links for 'The Project', 'The Partners', 'Publications', and 'News'. The 'The Partners' section is active, showing a list of partners on the left and detailed information for 'Institut für Strahlwerkzeuge / Universität Stuttgart' on the right. The partner information includes a logo, a brief description of the institute's activities, and a biography of the project coordinator, Dr. Marwan Abdou Ahmed.

**The Partners**

**Partners**

**Introduction**

[Institut für Strahlwerkzeuge Universität Stuttgart](#)

[Thales optronique S.A.](#)

[Element six Ltd](#)

[Centre National de la Recherche Scientifique](#)

[Oxford Lasers Ltd](#)

[M Squared Lasers Ltd](#)

**Institut für Strahlwerkzeuge / Universität Stuttgart**

**Project coordinator**

The main activities at the Institut fuer Strahlwerkzeuge (IFSW) are currently concerned with selected topics in the fields of laser beam sources (especially the thin-disk laser), optical elements and components for beam delivery and beam shaping as well as fundamental investigations on the light-matter interaction with the subsequent process development of macro and micro applications for industrial manufacturing. A significant core research area at the IFSW is devoted to fundamental investigations on diode-pumped solid-state lasers (mainly thin-disk lasers and fibre lasers) and semi-conductor lasers. Current efforts concentrate on the reliable generation of radiation with high beam quality and the power scalability of lasers in all modes of operation (cw, q-switched, mode locked). Within the core research area on laser-based Process Development the knowledge on fundamentals gained in the continuous research on the interaction between laser beams and matter is exploited for the development of novel laserbased manufacturing. Dr. Andreas Voß will coordinate the project and will lead the IFSW input to "TiSa TD".

Dr. Marwan Abdou Ahmed received his "Diplôme d'Etudes Approfondies" in 1999 and his PhD degree in 2003 at the University of Saint-Etienne, France. In 2004, he joined the USTUTT, working mainly on the development of polarization and wavelength selective grating-waveguide optics for high-power solidstate lasers and on specialty fibres for high-power beam delivery. Since June 2011, he is responsible for the "laser development and laser optics" department at the USTUTT. M. Abdou Ahmed received his Habilitation degree for the University Paris-Sud XI in May 2012.

[Visit Partner website](#)

**Thales optronique S.A.**

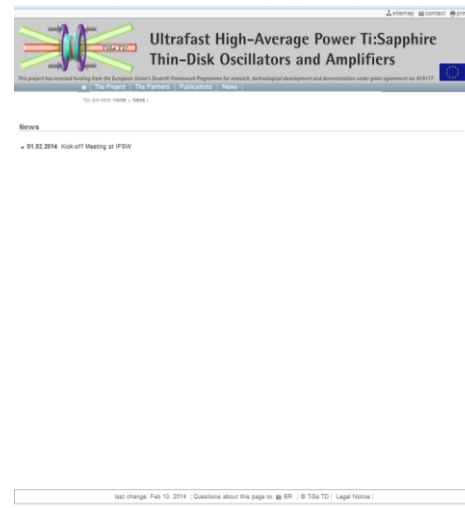
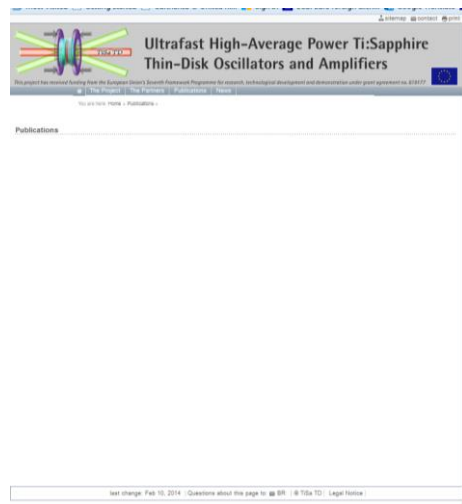
**THALES**

TOSA is the largest optronics facility in Europe, with 30,000 m<sup>2</sup> available for the development, the manufacturing and the test of high-tech equipment which associate optics, mechanics and electronics. The facility includes more than 6,000 m<sup>2</sup> of clean rooms, a sight testing tower and large laser workshops. The four main domains of activity are reconnaissance, targeting, observation and lasers. TOSA employs 1,300 people including 600 engineers. Turnover in 2012 was 330 ME. For more than 20 years, the Laser Solution Department of TOSA (composed by 20 laser engineers) is a world leader in the conception, development and manufacturing of solid-state nanosecond and femtosecond lasers technology by providing standard and customized, turnkey, easy to use and reliable systems. The quality and stability of its products meet the needs of both industrial, scientific, space and defence applications. The large range of standard nanosecond pulsed lasers are based on diode pumped and flashlamp pumped technology. Most of them have been specially developed to offer maximum efficiency in Ti:sapphire amplifier pumping. The Laser Solution Department is also internationally recognized in the field of customized high-energy ultra-short laser pulses for more than 15 years and proposes a complete range of customized femtosecond systems, based on a modular design using standard bricks for easier maintenance and upgradeability.

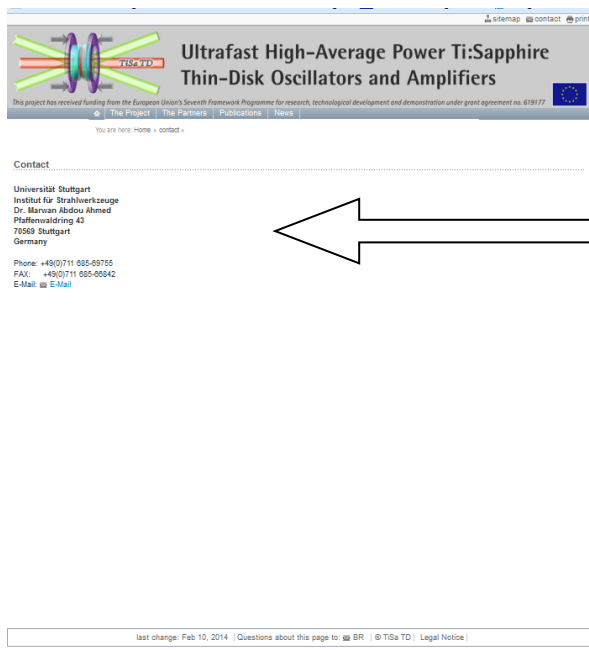
**Christophe Simon-Boisson**: design authority of lasers product line within Thales optronics; received a master degree in optical engineering from Institut d'Optique Graduate School in 1987. After one year in the Institut d'Optique as research assistant (Ultrafast Laser group), he joined B.M. Industries, as R&D engineer from 1988 to 1996. His domains of interests have been 2 µm lasers, Optical Parametric Oscillators (Violet, near infrared and mid-infrared), high average power (kW level) flashlamp-pumped lasers, diode-pumped lasers. From 1996 to 2001, he has been R&D manager of the company for the lasers of civilian area, including the expanding field of ultrafast lasers. 2001 to 2009: several management positions within Thales Laser, industrial director (2001 to 2005), deputy director of operations (2005 to 2007) and then company deputy director and technical director (2008 to 2009). Since early 2010, member of the technical directorate.

## 2.4 The Publications and News page

The publications page currently does not show any papers in which the TiSa TD project is acknowledged. Presentations and material used during meetings and conferences will be uploaded to this area along with other general dissemination documents produced during the course of the project. The News page contains information related to the project's upcoming events and the page will also be updated during the course of the project.



## 2.5 The Contact Us page



The full contact details of the project's Coordinator are displayed on this page.

There is also a hyperlink which enables visitors to send emails directly to the Coordinator's email address.