TITOLO DEL PROGETTO**: Remote Laser Welding System Navigator for Eco & Resilient Automotive Factories**

ACRONIMO: **RLW NAVIGATOR**

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PROGRAMMA: **Seventh Framework Programme**

PROJECT REFERENCE: **285051**

CONTRIBUTO UNIONE EUROPEA**: 3.979.984,00 €**

CONTRIBUTO ASSEGNATO UNIMOL: **159.600, 00 €**

DURATA PROGETTO: **2 anni dal 01/01/2012 al 31/12/2014**

CORDINATORE**: University of Warwick - United Kingdom**

ALTRI PARTNER: **Ulsan National Institute of Science and Technology - Republic of Korea Magyar Tudomanyos Akademia Zamitastechnikai es Automatizalasi Kutato Intezet – Hungary Jaguar Cars Limited - United Kingdom Quotec Limited - United Kingdom Ecole Polytechnique Federale de Lausanne – Switzerland Land Rover - United Kingdom Enginsoft S.p.A. – Italy, University of Patras – Greece Politecnico di Milano – Italy, Precitec kg – Germany, Stadco Limited - United Kingdom, Università degli Studi del Molise – Italy, Comau spa – Italy**

AREA SCIENTIFICA – KEY WORDS: **RLW Navigator aims to develop an innovative Process Navigator to configure, integrate, test and validate applications of Remote Laser Welding (RLW) in automotive assembly addressing todays critical needs for frequently changing operating conditions and product-mix provisions. Thus, RLW Navigator will crucially serve as an enabler for future energy efficient smart factories. RLW is emerging as a promising joining technology for sheet metal assembly due to benefits on several fronts including reduced processing time, (50-75%) and decreased factory floor footprint (50%), reduced environmental impact through energy use reduction (60%), and providing a flexible process base for future model introduction or product change. Currently, RLW systems are limited in their applicability due to an acute lack of systematic ICT-based simulation methodologies to navigate**

their efficient application in automotive manufacturing processes. The project aims to address this by developing a Process Navigator simulation system that will deal with three key challenges thereby allowing manufacturers to utilize the advantages of the RLW system. Firstly, the most critical obstacle that currently prevents the successful implementation of RLW is the need for tight dimensional control of part-to-part gap during joining operations, essential to ensure the quality of the stitch. Secondly, the existing assembly system architecture must be reconfigured to provide the opportunity to evaluate the RLW system in terms of its feasibility to perform all required assembly tasks. This will provide crucial information about the most advantageous workstation/cell reconfiguration, which will serve as the basis for optimal robot path planning to reduce joining process time and workstation level efficiency assessment. Finally the project will develop systematic evaluation and learning methods to assess and improve the overall performance, cost-effectiveness and eco-efficiency of the RLW system