This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 730035.

## SIROM

### Publication Report

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**Grant Agreement No.: 730035**

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<td>Gwenole Henry Xiu T Yan</td>
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<td>Javier Vinals</td>
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This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 730035.
1. **INTRODUCTION**

SIROM project aims to disseminate as widely as possible the research outcomes derived from SIROM project. SIROM consortium has collectively worked to:

1. Identify suitable revenues for publication to disseminate the research findings;
2. Create and develop opportunities to promote the publication of academic and technical work;
3. Proactively collaborate among relevant partners to collaboratively write papers for joint publications;
4. Encourage and engage younger and female researchers to publish their research work;
5. The project is very ambitious and so is its publication activities. The project has also built on the impact to space robotics within consortium and expand this potential impacts to other players in robotics beyond the consortium. For this reason, the consortium is very proud of the project and has done its best to disseminate the results to the widest audience.

As a result of SIROM consortium’s collective effort, the consortium is proud to report the SIROM project team has produced a total of two journal papers and nineteen conference papers.

Through these active publications for dissemination, the consortium has strengthened the International and European visibility of the project and share the scientific knowledge and understanding gained from the project research work. It is believed that the European scientific and industrial community and other stake holders, as well as international organisations with an interest in robotic interface have shown an interest in SIROM work.
2. DETAILS OF JOURNAL PAPERS PUBLISHED

2.1 Journal target search and identifications

To achieve the aim of promoting the project to a wider research and end-user communities and disseminate the results of the SIROM project, the SIROM consortium has proactively identified high impact journal for high quality paper publication. A range of high impact robotic, mechatronic and space journals were searched and the first technical review paper has been submitted to two journals.

2.2 Two papers published on international journals

Within the short duration of the project, the SIROM consortium has managed to produce two high quality journal papers, with one paper on the review of the state of the art in multiple functional interfaces for robotic configurations and the other on the technical description of the SIROM system design.

The first SIROM journal paper was submitted to and published in *Frontier in Robotics and AI* journal with the following publication details:

Xiu-Tian Yan, Wiebke Brinkmann, Roberto Palazzetti, Craig Melville, Youhua Li, Sebastian Bartsch and Frank Kirchner, “Integrated Mechanical, Thermal, Data, and Power Transfer Interfaces for Future Space Robotics” 5:64.doi: 10.3389/frobt.2018.0006, Frontier in Robotics and AI.

The second SIROM journal paper was then published with the following details:


2.2 Nomination for the best paper award

SIROM paper on *Multi-functional interface for flexibility and reconfigurability of Future European Space Robotic Systems* has received an international recognition by being nominated for the consideration of the best paper award in Category D Infrastructure. This nomination nevertheless represents a very good achievement of the SIROM team and received an appreciation from the organizing Committee and the Prize and Award Committee. This is a result of selection process in which 341 entries were received and 69 interactive presentations have been shortlisted, and finally SIROM paper was shortlisted. The paper then achieved being one of the three finalists shortlisted for the best paper award – see nomination certificate in Figure 1. Mr. Gonzalo Guerra Franco delivered the interactive presentation on the above paper.
The International Astronautical Federation and the Programme Committee of the 69th International Astronautical Congress 
in recognition of the research quality, originality and upon the recommendation of the IP Competition Committee proudly presents this

FINALIST CERTIFICATE FOR CATEGORY D INFRASTRUCTURE

TO
Javier Vinals, Eduardo Urgoiti, Gonzalo Guerra, Ignacio Valiente, Judit Esnoz-Larraya, Michel Ilzkovitz, Dogu Cetin, Mario Franceski, Pierre Letier, Xiu-Tian Yan, Gwenole Henry, Albino Quaranta, Wiebke Brinkmann, Marko Jankovic, Sebastian Bartsch, Alessandro Fumagalli and Manfred Doermer

Title: Multi-functional interface for payload interconnection of robotic systems in space
Category D: INFRASTRUCTURE
D3 – 16th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT
Date: 1 – 5 October 2018
Location: Bremen, Germany

Dr. Jean-Yves Le Gall
IAF President

Figure 1 Best paper nomination Certificate at IAC 2018

Figure 2 Interactive Presentation for paper entitled future space missions with reconfigurable modular payload modules and standard interface – an overview of the SIROM project

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3. DETAILS OF CONFERENCE PAPERS PUBLISHED

To spread widely the knowledge among scientific and technical communities in Europe and worldwide, relevant innovative research outcomes and findings through planned activities have been presented at targeted international conferences. Seven papers have been presented and published at these international forums to reach out widely. It is worth mentioning that at IAC 2018, there have been over 6000 delegates attended the conference and the SIROM team presented three papers at this world larges space conference.

3.1 Core Conference target search and identifications

The consortium has identified the following main stream well established International Conferences:

a. Symposium on Advanced Space Technologies in Robotics and Automation (ASTRA)

b. International Symposium on Artificial Intelligence, Robotics and Automation in Space (i-SAIRAS)

c. International Astronautical Congress (IAC) 2017 in Australia

d. 2018 IEEE Aerospace Conference, Big Sky, Montana, USA.

e. IAC 2018 in Bremen.

3.2 Conference papers published in core SIROM research activities

Having identified the above core conferences, the SIROM team has collaborated in publishing the following papers in the following 4 conferences.

3.2.1 Symposium on Advanced Space Technologies in Robotics and Automation (ASTRA)

Wiebke Wenzel, Roberto Palazzetti, Xiu T. Yan, and Sebastian Bartsch, “Mechanical, thermal, data and power transfer types for robotic space interfaces for orbital and planetary missions – A technical review”

3.2.2 International Astronautical Congress (IAC) 2017:


3.2.3 2018 IEEE Aerospace Conference, Big Sky, Montana, USA:


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3.2.4 International Astronautical Congress (IAC) 2018:

Wiebke Brinkmann, Marko Jankovic, Christoph Stoeffler, Gonzalo Guerra, Eduardo Urgoiti, Javier Vinals, Sebastian Bartsch, “Modular Active Payload Modules for Robotic Handlings in Future Orbital Missions”, IAC-18-D1.6.5, 69th International Astronautical Congress (IAC), Bremen, Germany, 1-5 October 2018.


3.4 Conference publications for research work associated with SIROM activities

The consortium has also promoted and expanded the interest to SIROM work to younger generation, in particular to current PhD students in Germany and the UK. Working with these younger PhD students, one journal paper has been published and ten conference papers have been published in these conferences on research work associated with SIROM project activities.


It is worth mention that some of the work associated with board robotics by a PhD student at Strathclyde University has also received recognition of the professional community by winning the best paper award as shown below:
The UKRAS19 Conference on Embedded Intelligence
Loughborough University, 24th January 2019
Best Paper Award
Presented to:

Figure 3 The Best Paper Award Certificate at UKRAS '19 conference

In addition, One e-book entitled REINVENTING MECHATRONICS Proceedings of MECHATRONICS 2018 with an ISBN number: 978-1-909522-37-4 (e-Book) was published. A new book is to be published in 2019 by Springer based on selected papers with extended and new materials from selected paper of REINVENTING MECHATRONICS. The conference was organised by the SIROM project Dissemination and Exploitation Manager of the University of Strathclyde, with the support of Institution of Mechanical Engineers (IMechE) and Intuition of Engineering and Technology (IET) Robotics & Mechatronics TPN. This conference was also endorsed by the PSA and the SIROM consortium to advance mechatronics in space robotics.
4. ACRONYMS LIST

<table>
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<td>SENER</td>
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<td>SMeSTech</td>
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<td>Technology and Innovation Centre</td>
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<td>ASTRA</td>
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<td>i-SAIRAS</td>
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Table 1-1 Acronyms list