

HORIZON
2020

Symbiotic Human-Robot Solutions for Complex Surface Finishing Operations

Fact Sheet

Project Information

SYMPLEXITY

Grant agreement ID: 637080

[Project website](#) 

DOI

[10.3030/637080](https://doi.org/10.3030/637080) 

Project closed

EC signature date

7 November 2014

Start date

1 January 2015

End date

31 December 2018

Funded under

INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Advanced manufacturing and processing

Total cost

€ 8 022 267,87

EU contribution

€ 6 660 525,00

Coordinated by

FRAUNHOFER GESELLSCHAFT
ZUR FORDERUNG DER
ANGEWANDTEN FORSCHUNG
EV



Germany

Objective

In nearly every sector of industrial manufacturing polishing techniques are used. But often manual polishing is the only option because the tasks are too complex to be automated. Therefore in SYMPLEXITY Symbiotic Human-Robot Solutions for Complex Surface Finishing Operations will be developed. The main SYMPLEXITY Objectives are

SO 1 – Accurate and cognitive industrial robot systems enabling safe human-robot collaboration for surface finishing operations

SO 2 – Easy to use interfaces for planning, control and re-planning of shared

finishing tasks

SO 3 – Collaboration oriented process technology for abrasive finishing, laser and fluid jet polishing

SO 4 – Integrated and autonomous sensing system for objective identification of surface properties

SO 5 – Introduction of developed collaborative finishing solutions into manufacturing industry

In SO5 the results of the first 4 objectives will be combined to 3 demonstrator human-robot collaboration cells, one for each of the investigated process technologies. The 3 demonstrator cells will be tested in operational environment at 3 end-users.

SYMPLEXITY is the consistent continuation of 3 recent EU projects that achieved TRL 4-5:

COMET – Plug-and-produce COmponents and METhods for adaptive control of industrial robots

SAPHARI – Safe and Autonomous Physical Human-Aware Robot Interaction

poliMATIC – Polishing processes and tools development

SYMPLEXITY will bring together the results and key partners of these 3 projects to achieve TRL7 and thereby support the European Industry to win the competition in the global market with higher quality, efficient manufacturing and economic production, based on human robot collaboration for polishing complex shaped metallic surfaces. Relevant branches are tool making, medical engineering, aeronautics and automotive industry. Case studies show, that for many applications today's >90% of manual work can be converted in 80 % of robotic work under human control and 20 % of manual work.

Fields of science (EuroSciVoc)

[engineering and technology](#) > [medical engineering](#)

[engineering and technology](#) > [mechanical engineering](#) > [vehicle engineering](#) > [automotive engineering](#)

[engineering and technology](#) > [electrical engineering](#), [electronic engineering](#), [information engineering](#) > [electronic engineering](#) > [sensors](#)

[engineering and technology](#) > [mechanical engineering](#) > [vehicle engineering](#) > [aerospace engineering](#) > [aeronautical engineering](#)

[natural sciences](#) > [physical sciences](#) > [optics](#) > [laser physics](#)



Programme(s)

[H2020-EU.2.1.5. - INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Advanced manufacturing and processing.](#) MAIN PROGRAMME

[H2020-EU.2.1.5.1. - Technologies for Factories of the Future](#)

Topic(s)

[FoF-06-2014 - Symbiotic human-robot collaboration for safe and dynamic multimodal manufacturing systems](#)

Call for proposal

[H2020-FoF-2014-2015](#) 

[See other projects for this call](#)

Sub call

H2020-FoF-2014

Funding Scheme

[IA - Innovation action](#)

Coordinator



**FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN
FORSCHUNG EV**

Net EU contribution

€ 1 380 625,00

Total cost

€ 1 380 625,00

Address

**HANSASTRASSE 27C
80686 Munchen**

 **Germany** 

Region
Bayern > Oberbayern > München, Kreisfreie Stadt

Activity type
Research Organisations

Links
[Contact the organisation](#) [Website](#)
[Participation in EU R&I programmes](#)
[HORIZON collaboration network](#)

Participants (18)



HOCHSCHULE AALEN - TECHNIK UND WIRTSCHAFT

Germany

Net EU contribution

€ 534 250,00

Address
BEETHOVENSTRASSE 1
73430 Aalen

Region
Baden-Württemberg > Stuttgart > Ostalbkreis

Activity type
Higher or Secondary Education Establishments

Links
[Contact the organisation](#)
[Participation in EU R&I programmes](#)
[HORIZON collaboration network](#)

Total cost
€ 534 250,00



HOGSKOLAN I HALMSTAD

Sweden

Net EU contribution

€ 642 000,00

Address

KRISTIAN IVS VAG 3
301 18 Halmstad 

Region

Södra Sverige > Västsverige > Hallands län

Activity type

Higher or Secondary Education Establishments

Links

- [Contact the organisation](#) 
- [Website](#) 
- [Participation in EU R&I programmes](#) 
- [HORIZON collaboration network](#) 

Total cost

€ 642 000,00



UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA

 Italy

Net EU contribution

€ 507 500,00

Address

Piazzale Aldo Moro 5
00185 Roma 

Region

Centro (IT) > Lazio > Roma

Activity type

Higher or Secondary Education Establishments

Links

- [Contact the organisation](#) 
- [Website](#) 
- [Participation in EU R&I programmes](#) 
- [HORIZON collaboration network](#) 

Total cost

€ 507 500,00



UNIVERSITA DEGLI STUDI DI MODENA E REGGIO EMILIA

 Italy

Net EU contribution

€ 418 750,00

Address

VIA UNIVERSITA 4
41121 Modena 

Region

Nord-Est > Emilia-Romagna > Modena

Activity type

Higher or Secondary Education Establishments

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 418 750,00



DELCAM LTD 

 United Kingdom

Net EU contribution

€ 134 368,09

Address

TALBOT WAY, SMALL HEATH BUSINESS PARK
B10 OHJ BIRMINGHAM 

Region

West Midlands (England) > West Midlands > Birmingham

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 191 954,41



QSO INTERFEROMETER SYSTEMS AB

 Sweden

Net EU contribution

€ 308 000,00

Address

MONTORGATAN 7

302 62 HALMSTAD 

SME 

Yes

Region

Södra Sverige > Västsverige > Hallands län

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 440 000,00



SIR SPA

 Italy

Net EU contribution

€ 681 925,00

Address

STRADA CANALETTO CENTRO 450

41100 MODENA 

SME 

Yes

Region

Nord-Est > Emilia-Romagna > Modena

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost
€ 974 178,58



DEBBACHE-LAGIOS EE

Greece

Net EU contribution
€ 292 000,00

Address
A METAXA 19
14564 Athina

SME
Yes

Region
Αττική > Αττική > Βόρειος Τομέας Αθηνών

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links
[Contact the organisation](#)
[Participation in EU R&I programmes](#)
[HORIZON collaboration network](#)

Total cost
€ 417 142,86



BERLIN HEART GMBH

Germany

Net EU contribution
€ 276 500,00

Address
WIESENWEG 10
12247 BERLIN

SME
Yes

Region
Berlin > Berlin > Berlin

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 395 000,00



HEINZ SCHWARZ GMBH & CO KG

 Germany

Net EU contribution

€ 277 950,00

Address

**LERCHENWEG 43 BAD HOLZHAUSEN
32361 PREUSSISCH OLDENDORF** 

Region

Nordrhein-Westfalen > Detmold > Minden-Lübbecke

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 397 071,43



ROMAGNANI STAMPI SRL

 Italy

Net EU contribution

€ 272 650,00

Address

**VIA TRIESTE 2
20096 PIOLTELLO** 

Region

Nord-Ovest > Lombardia > Milano

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

- Contact the organisation
- Participation in EU R&I programmes
- HORIZON collaboration network

Total cost

€ 389 500,00



FORMTECH SP ZOO

Poland

Net EU contribution

€ 78 225,00

Address

Drwinia 207
32-708 DZIEWIN



SME

Yes

Region

Makroregion południowy > Małopolskie > Krakowski

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

- Contact the organisation
- Website
- Participation in EU R&I programmes
- HORIZON collaboration network

Total cost

€ 111 750,00



JOHANSSON SUSAN

Sweden

Net EU contribution

€ 11 818,63

Address

SONHULT 110

314 91 HYLTEBRUK 

SME 

Yes

Region

Södra Sverige > Västsverige > Hallands län

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 16 883,75



GETINGE INFECTION CONTROL AB

 Sweden

Net EU contribution

€ 225 050,00

Address

EKEBERGSVAGEN 26

305 05 GETINGE 

Region

Södra Sverige > Sydsverige > Skåne län

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 321 500,00



AUTODESK LIMITED

 United Kingdom

Net EU contribution

€ 183 176,76

Address

ONE DISCOVERY PLACE, COLUMBUS DRIVE

GU14 0NZ Farnborough 

Region

South East (England) > Hampshire and Isle of Wight > North Hampshire

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 666 295,59



THIRD-PARTY



AUTODESK

 France

Net EU contribution

€ 171 654,64

Address

QUAI PANHARD ET LEVASSOR 89

75013 Paris 

Region

Ile-de-France > Ile-de-France > Paris

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 245 220,91

 **THIRD-PARTY** 

AUTODESK BV

 Netherlands

Net EU contribution

€ 111 575,51

Address

**TAURUSAVENUE 3
2132 LS HOOFDORP** 

Region

West-Nederland > Noord-Holland > Groot-Amsterdam

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

- [Contact the organisation](#) 
- [Participation in EU R&I programmes](#) 
- [HORIZON collaboration network](#) 

Total cost

€ 159 393,59



SONHULT SERVICE AB

 Sweden

Net EU contribution

€ 152 506,37

Address

**SONHULT 110
314 91 HYLTEBRUK** 

Region

Södra Sverige > Västsverige > Hallands län

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

- [Contact the organisation](#) 
- [Participation in EU R&I programmes](#) 

Total cost

€ 217 866,25

Last update: 18 August 2022

Permalink: <https://cordis.europa.eu/project/id/637080>

European Union, 2025