

Work Package 6

Dissemination and Exploitation

Deliverable D6.3

**Final Report on
Dissemination and Exploitation**

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1. Introduction

Deliverable 6.3 is the final output of WP6 “Dissemination and Exploitation”, whose overall objectives are

- to disseminate the results obtained from the project to the scientific and industrial communities,
- to coordinate the exploitation of the technologies and the solutions coming out of the project,
- to pursue standardization of the GRACE technology.

This document describes the main dissemination activities that have been performed during the last 18 months of the project, from January 2012 to June 2013, and plans for dissemination activities after the end of the project will be presented. The three-year duration of the dissemination activities and the involvement in these activities of all the partners are due to the importance of communicating all the activities performed throughout the entire project

The exploitation plans will be described in a separate Annex entitled Final Exploitation Plan that is Confidential.

The main activities performed for the dissemination can be summarized as following:

- Organization and update of the public website in order to disseminate technical results, publications, technical brochures about the results of the project, deliverables and to publicize workshops and other activities;
- Preparation of a video about the main objective of the GRACE project;
- To link the GRACE project with other European research project;
- Preparation of publications in scientific, industrial-oriented and International journals and conferences, tradeshows, company organized events and trade magazines;



- Preparation of an Engineering Handbook dedicated to industrial engineers who want to apply the GRACE MAS platform in their manufacturing facilities (it will describe prerequisites, engineering methodology and best practices).

The dissemination activities have been divided in Internal and External Dissemination.

Internal dissemination has been devoted to the preparation of instruments and activities addressed to share knowledge and information between the consortium partners, such as:

- document templates
- reserved area
- internal technical meetings
- deliverables

External dissemination has been devoted to the development of instruments and activities able to widespread awareness on the project among scientific, industrial and public community, such as:

- website
- brochure & poster & video
- seminars, fairs & events
- workshops
- publications
- scientific journals
- press
- in-house partners' communication
- student internships and thesis
- link with other EU research projects
- handbook



All these activities have been carried out during the 36 months period of the project and in the following paragraphs, a synthesis of the main outcomes will be presented.

Section 2 focuses on some of the external dissemination activities like the GRACE website, video and brochures related to the technical results of the project. The website maintenance activity has been constantly pursued with the aim of keeping the website updated with the last project outcomes, the publication of news and events, communication of results and so on.

Sections 3 reports the workshops, fairs and events organized in order to present the GRACE project and possible applications of the Multi-Agent technology, while section 4 describes the international conferences selected to disseminate the project results and the produced scientific contributions.

Section 5 will present the list of student internships and thesis that have been carried out mainly within the University partners.

Sections 6 and 7 concern the internal dissemination, respectively reporting the list of project technical meetings and coordination meetings, and all the deliverables submitted in the three year period of the project.

In Section 8, the parameters able to monitoring the dissemination activity effectiveness are presented, following the definition given in the Deliverable 6.2.

In Section 9 a brief introduction of the Exploitation results is provided, due to the fact that the specific results are presented in the Annex of this deliverable.

In the conclusion section, dissemination plans to be taken after the end of the project in order to spread out the results that have been reached by the project and to increase the impact of the project are presented.



2. GRACE Website, Video and Brochures

2.1. GRACE Website

In a world where only what is online does really exist, one of the first activities was the website creation. Clearly characterized by the GRACE graphical elements, it contains information about the project, its objectives, the consortium partners, but most of all it is the place where to download all the dissemination documents, as brochures, publications and deliverables and finally, it is the access point to the reserved area, the main instrument used to upload, download and share information among the consortium partners. Since its birth the website has been updated, in particular the sections regarding news, events, download and publications.

Each section has been enriched with the latest information and documents.

In the news and events section 39 posts, more than one per month, have been published over the three years of the project, following its development step by step, communicating each activity carried out about meetings, fairs and workshop participations, publications and deliverables. Posts are listed hereafter.

2013

- Final review meeting the story
- One week to the final meeting!
- ISIE2013
- SPS IPC Drives
- Demonstration running...
- Deliverable 5.1

2012

- Work in progress...
- IECON 2012: Special Session on GRACE project
- IECON 2012
- Second internship on the GRACE project
- GRACE project video is online

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- It's integration time
- Enjoying Industrial Technologies
- AIVELA 2012
- GRACE success at Automatica 2012!
- Industrial Technologies 2012
- Automatica 2012
- ISIE 2012
- ACCOUNT from OPTIMESS 2012
- GRACE contribution at OPTIMESS 2012!
- Two new deliverables are published
- First student's internship on the GRACE project
- Deliverable 6.2

2011

- Deliverable 3.2
- GRACE mid-term meeting in Munich
- Deliverable 1.2
- GRACE lands in Australia!
- GRACE at HoloMAS 2011
- INDIN'11: first GRACE simulation
- Seminar on Agent Technologies
- Deliverable 8.1
- Second Technical Coordination Meeting in Trondheim
- Deliverable 4.1
- Three new deliverables!
- First Milestone accomplished!

2010

- First Deliverable
- Second Technical Meeting
- The GRACE logo
- GRACE Kick-off Meeting



2.2. GRACE VIDEO

A video of the GRACE project has been realized. The first part shows the project partners and their main competences, and then the concept and achievements of the GRACE project are illustrated.

The video is an excellent dissemination tool, it has been distributed to all partners and it has been shown at many important fairs like Automatica and Industrial Technologies. The GRACE video is also available on the Youtube channel:

<http://www.youtube.com/watch?v=6ZBeBySQYXE>

2.3. GRACE Technical Brochures

The main results of the GRACE project have been summarized in ten technical brochures distributed during fairs and meetings to people belonging to the public, scientific and industrial communities.



Figure 1 - Brochures of the GRACE results



3. Workshops, Fairs and Events

During the last 18 months, the GRACE project has been presented with a dedicated stand in three important fairs and one conference. The use of stand is fundamental to show the results developed, to attract people and to distribute communication material.

- **AUTOMATICA, Munich (Germany), 22-25 May 2012**

GRACE project attended AUTOMATICA, the International Trade Fair for Automation and Mechatronics, with its own stand: Hall B3, stand 529. In the same hall the major research centres were hosted. In the GRACE stand a demo representing an individual agent in the overall Multi Agent System (MAS) architecture has been presented: the self-adaptive robotized vision system for online quality control. The project and the solution presented raised a lot of interests and, as a matter of fact, we received the visit of two media representatives: the official radio of the fair and the Italian journalist of 'Automazione Industriale' (Industrial Automation), to take interviews on the Grace project contents. During the fair, representatives of almost all the project partners have been at the booth, alternating in welcoming visitors and explaining the project contents. Automatica brought a lot of interesting contacts from industry and research.



- **Industrial Technologies, Aarhus (Denmark), 19-21 June 2012**

This exhibition highlights opportunities in the fields of nano, advanced materials and new production technologies and focuses on raw materials, factories of the future, sustainable solutions for energy and resource efficient process industries.



In the 2012 edition GRACE project had a stand in the Technology Area and raised a lot of interest. The participation to the exhibition was fundamental to enrich the project research network: the coordinator of Self Learning EU project and the dissemination responsible of IDEAS EU project were met and common activities were discussed.



▪ **AIVELA, Ancona (Italy), 27-29 June 2012**

AIVELA is a Conference on Vibration Measurements by Laser and Noncontact Techniques, organized by the Italian Association of Laser Velocimetry and non invasive diagnostics. AIVELA represents a forum for delegates from Industry, Academia and Research Institutes worldwide and for the GRACE project has been the occasion to present some of the results of WP3 concerning the development of self-adapting quality control agents. A stand has been prepared where two demos representing individual agents in the overall Multi Agent System (MAS) architecture has been presented: a self-adaptive robotized vision system for online quality control and a self-adaptive laser vibrometry station for on-line diagnostics.



Being the exhibition located at the premises of University Politecnica delle Marche, a large number of students of the faculty of engineering had the occasion to visit the

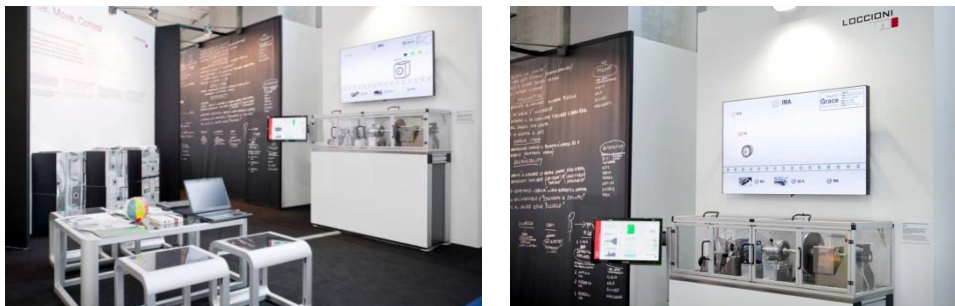


GRACE stand, attracted by the interdisciplinary content of the exhibit at the stand. Also companies and academic institutions visited the stand and expressed their interest in the project developments: Polytec, Bosch, Denso, ST microelectronics and LMS on the industrial side, and English, Polish, Belgian, Italian and Malaysian Universities on the academic side.

▪ **SPS IPC Drives Italia, Parma (Italy), 21-23 May 2013**

This fair originates from the German homonymous one which is an important event of the industrial automation in Germany and Europe. It brings together suppliers and producers of the automation sector organizing also conferences for researchers and students.

GRACE video and brochures were displayed inside the Loccioni stand and it has been a very good opportunity because most part of visitors came from production industries.



In the second half of the project **3 workshops** have been organized: two sessions during IECON 2012 in Canada and the third one during ISIE 2013 in Taiwan. An important aspect of these workshops is that in two occasions, they have been a moment of close collaboration and knowledge exchange with other two European research funded projects, as IDEAS and SELF LEARNING.

▪ **Special session at IECON'12 (Montreal, 2012)**

“SS25: Research and Development Projects on Industrial Agents”

- Cooperation between GRACE and IDEAS projects
- 6 papers accepted (3 from GRACE and 3 from IDEAS)

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- **Workshop at IECON'12 (Montreal, 2012)**

“Towards Industrial Implementation of Cyber-Physical Systems Merging Service-oriented and Multi-agent System Infra-structures”

- **Workshop at ISIE13 (Taiwan, 2013)**

“Concept and technologies for Factory of the Future”

- 6 papers accepted (2 from GRACE, 1 from IDEAS, 1 from SELF LEARNING and 2 from others)



4. Scientific Publications

The scientific production has been rich of results and contents: 31 publications have been published during the three years period of the project in conference proceedings, covering all the project topics. Following the list of publications of the last 18 months containing most of the publications.

Vision system based on a conic mirror for dimensional measurements inside near-cylindrical cavities

L. Stroppa, A. Bastari and N. Paone

OPTIMESS 2012, 5th International Conference on Optical Measurement Techniques for Structures and Systems, 4-5 April 2012, Antwerp (Belgium)

Modelling and Validating the Multi-agent System Behaviour for a Washing Machine Production Line

P. Leitão and N. Rodrigues

ISIE 2012, 21st International Symposium on Industrial Electronics, 28-31 May 2012, Hangzhou (China)

MAS for manufacturing control: a layered case study

S. Pedersen, B. Foss, I. Schjøllberg, J. Tjønnås

AAMAS 2012, 12th International Conference on Autonomous Agents and Multiagent Systems, Valencia (Spain), 4-8 June 2012

Quality control agent: self-adaptive laser vibrometry for on-line diagnostics

S. Serafini, P. Castellini and N. Paone

AIVELA 2012, 10th International Conference on Vibration Measurements by Laser and Noncontact Techniques, 26-29 June 2012, Ancona (Italy)

Integrating Mechatronic Thinking and Multi-agent Approaches

M. Foehr, P. Leitão, T. Wagner, T. Jäger, A. Lüder

ETFA 2012, 17th IEEE International Conference on Emerging Technologies and Factory Automation, 17-21 September 2012, Kraków (Poland)

Application of engineering process analysis to evaluate benefits of mechatronical engineering

M. Foehr, A. Lüder, B. Böhm and A. Köhlein

ETFA 2012, 17th IEEE International Conference on Emerging Technologies and Factory Automation, 17-21 September 2012, Kraków (Poland)

Quality Control Agents for Adaptive Visual Inspection in Production Lines

L. Stroppa, N. Rodriguez, P. Leitão and N. Paone



IECON 2012, 38th Annual Conference of the IEEE Industrial Electronics Society, pp. 4354-4359, 25-28 October 2012, Montreal (Canada)

GRACE Ontology Integrating Process and Quality Control

P. Leitão, N. Rodrigues, C. Turrin, A. Pagani, P. Petrali

IECON 2012, 37th Annual Conference of the IEEE Industrial Electronics Society, 25-28 October 2012, Montreal (Canada)

Self-Adapting Test-Plans in Production Line: an Application to Vision Control Stations

A. Bastari, M. Piersantelli, C. Cristalli, N. Paone

IECON 2012, 37th Annual Conference of the IEEE Industrial Electronics Society, 25-28 October 2012, Montreal (Canada)

An Adaptive Image Pre-processing System for Quality Control in Production Lines

E. Arroyo, J. Lima, P. Leitão

ICIT 2013, IEEE International Conference on Industrial Technology, 25-27 February 2013, Cape Town (South Africa)

Data Collection for Global Monitoring and Trend Analysis in the GRACE Multi-agent System

A. Pereira, N. Rodrigues, P. Leitão

ICIT 2013, IEEE International Conference on Industrial Technology, 25-27 February 2013, Cape Town (South Africa)

Methodology for consideration of product quality within factory automation engineering

M. Foehr, T. Jäger, C. Turrin, P. Petrali, A. Pagani

ICIT 2013, IEEE International Conference on Industrial Technology, 25-27 February 2013, Cape Town (South Africa)

Integration of process and quality control using Multi-Agent Technology

C. Cristalli, M. Foehr, P. Leitão, N. Paone, P. Castellini, C. Turrin, I. Schjolberg

ISIE 2013, 22nd International Symposium on Industrial Electronics, 28-30 May 2013, Taiwan

Adaptation of the Functional Inspection Test Plan in a Production Line using a Multi-Agent System

N. Rodrigues, P. Leitão, M. Foehr, C. Turrin, A. Pagani, R. Decesari

ISIE 2013, 22nd International Symposium on Industrial Electronics, 28-30 May 2013, Taiwan

Engineering Process Evaluation

T. Schäffler, M. Foehr, A. Lüder, K. Supke

ISIE 2013, 22nd International Symposium on Industrial Electronics, 28-30 May 2013, Taiwan

Identifikation und Umsetzung von Agenten zur Fabrikautomation unter Nutzung von mechatronischen Strukturierungskonzepten

A. Lüder and M. Foehr



Göhner, Peter (Hg.) (2013): Agentensysteme in der Automatisierungstechnik; Springer-Verlag New York Inc.

Adaptive Multi-agent System for a Washing Machine Production Line

N. Rodrigues, A. Pereira, P. Leitão

HoloMAS 2013, 6th International Conference on Industrial Applications of Holonic and Multi-Agent Systems, 26-28 August 2013, Prague (Czech Rep.)

Mechatronische Konzepte beim Entwurf von Produktionssystemen

A. Lüder, L. Hundt, M. Foehr, A. Köhlein, B. Böhm, J. Elger, N. Gewalt

A&D Kompendium 2013

Methodik zur integrierten Betrachtung von Produktqualität in der Steuerung von Produktionssystemen

M. Foehr, T. Jäger, C. Turrin, P. Petrali, A. Pagani, P. Leitao

Automation 2013

Roadmap zur Integration mechatronischer Konzepte in Werkzeugketten

A. Lüder, M. Foehr, N. Schmidt, T. Schäffler, J. Elger

Automation 2013

Omnidirectional vision system with conic mirror for on-line quality measurements on quasi-cylindrical cavities

L. Stroppa, A. Bastari, G. Angione and N. Paone

Recent Advances in Topography, Nova Science Publisher, Inc 2013

Integration von Produkt- und Anlagenengineering sichert die Qualität zukünftiger Produkte

M. Foehr, T. Jäger

CT News 2013

Implementation of a methodology for consideration of product quality within discrete manufacturing

Foehr, T. Jäger, C. Turrin, P. Petrali, A. Pagani, P. Leitao

MIM 2013, IFAC Conference on Manufacturing, Modelling, Management and Control, 19-21 June 2013, Saint Petersburg

Optimization of the information chain within the engineering process of production systems

Matthias Foehr, Adrian Köhlein, Jürgen Elger, Thomas Schäffler, Arndt Lüder

SysCon 2013, IEEE Conference on Systems Engineering, 15-18 April 2013, Orlando (USA)

Methodology for consideration of system quality within manufacturing, Foehr, T. Jäger, C.

Turrin, P. Petrali, A. Pagani, P. Leitao

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SysCon 2013, IEEE Conference on Systems Engineering, 15-18 April 2013, Orlando (USA)

Adaptive illumination through spatial modulation of light intensity and image inversion, P

Castellini, S Cecchini, L Stroppa and N Paone

Mesurement Science and Technology, vol.24, n.5, pp., doi:10.1088/0957-0233/24/5/055401, 2013



5. Students Internships and Thesis

Internships are important instruments to improve both dissemination and research activities, and during the project 7 students have been involved in different areas of interest.

Sindre Pedersen, from Norway, moved from NTNU to SINTEF for 3 months in 2010, working on the **MAS Architecture**

Samar El-Baharawi, from Egypt, moved from German University at Cairo to UNIVPM for 3 months in 2011, developing her research in **VISION SYSTEMS**

Signe Moe, from Norway, moved from NTNU to SINTEF for 3 months in 2011, focusing on the activities about the **SCREWING STATION**

Lorenzo Stroppa, from Italy, moved from UNIVPM to IPB for 3 months in 2012 combining the study on **MAS** with the **VISION** research

Alexej Steblau, from Germany, moved from OvGU to Siemens for 5 months in 2012, implementing the **FT model**

Franziska Fichtner, from Germany, moved from Siemens to WHI for 5 months in 2012/13, studying the **MPFQ model**

But the word student does not mean only internships, it means also thesis: 7 bachelors, 7 masters and 3 PhD thesis have been discussed focusing on different topics and covering most part of the project issues.

7 Bachelor Thesis

- 2010 | UNIVPM | Luca Asteriti | Self-Adapting Robot Vision System
- 2010 | UNIVPM | Luca Bucciarelli | Self-Adapting Vibration System
- 2012 | UNIVPM | Matteo Bezziccheri | Self-Adapting Vibration System
- 2012 | UNIVPM | Eugenio Marchese | Self-Adapting Robot Vision System
- 2012 | UNIVPM | Lorenzo Chiarucci | Self-Adapting Vibration System
- 2012 | UNIVPM | Luca Bernabucci | Self-Adapting Vibration System
- 2012 | IPB | Alexandra Fernandes | Production Line Simulation



7 Master Thesis

2010 | UNIVPM | Giacomo Lanni | Self-Adapting Robot Vision System

2011 | UNIVPM | Andrea Guerra | Self-Adapting Robot Vision System

2011 | UNIVPM | Luca Guiducci | Correlation between bearing insertion and WM performances

2011 | NTNU | Sindre Pedersen | MAS

2012 | IPB | Nelson Rodrigues | MAS, Ontologies

2012 | IPB | Esteban Arroyo | Image Pre-processing

2012 | UNIVPM | Maria Alessandra Montironi | Self-Adapting Robot Vision System

3 PhD Thesis

2012 | UNIVPM | Lorenzo Stroppa | Self-Adapting Robot Vision System

2012 | UNIVPM | Stefano Serafini | Self-Adapting Vibration System

2013 | Siemens | Matthias Foehr | Engineering in Factory Automation



6. Project Technical Meetings

An important role of the scientific and technical coordination is the organization of Coordination and Technical Meetings, in order to solve and facilitate the communication among the partners.

During the first year, we can count twelve meetings, one visit to the Whirlpool factory and one workshop on engineering methodology.

In the second year, along with the ten meetings, partners met in Siemens for a seminar on exploitation and installed the first two testing systems in the Whirlpool production line.

The last year of the project has seen an increase in the number of meetings and the third installation in production line has been done.

The list of technical meetings organized in the second half of the GRACE project is reported below.

January 2012- June 2013

Date	Meeting Type	Location	Participants
30/01/2012 31/01/2012	Technical meeting	WHI - Naples	WHI, SIEMENS
22/02/2012 24/02/2012	Technical meeting	WHI - Cassinetta	WHI, SINTEF
26/02/2012 02/03/2012	Technical meeting	Sintef- Trondheim	AEA, SINTEF
25/03/2012 30/03/2012	Technical meeting	IPB - Braganca	AEA, IPB, UNIVPM, WHI
26/04/2012	Technical meeting	AEA - Angeli di Rosora	AEA, UNIVPM, SIEMENS
02/05/2012 04/05/2012	Technical meeting + installation	WHI - Naples	AEA, WHI, UNIVPM
15/05/2012	Technical meeting	WHI - Cassinetta	WHI, SIEMENS
04/06/2012 06/06/2012	Technical meeting + installation	WHI - Naples	AEA, WHI, UNIVPM
01/08/2012 02/08/2012	Technical meeting	WHI - Naples	AEA, WHI, UNIVPM
05/09/2012	Technical Meeting	WHI - Cassinetta	WHI, SIEMENS
25/09/2012	Installation + internal Dissemination	WHI - Naples	WHI



02/10/2012 05/10/2012	Technical meeting	WHI - Naples	ALL
21/11/2012	Technical Meeting	WHI - Cassinetta	WHI, SIEMENS
22/01/2013	Technical Meeting	WHI - Cassinetta	WHI, SIEMENS
30/01/2013	Technical Meeting	AEA - Angeli di Rosora	AEA, UNIVPM, WHI, SIEMENS (IPB and SINTEF remote attendance)
11/03/2013 15/03/2013	Technical Meeting	WHI - Naples	ALL
19/03/2013	Technical Meeting	WHI - Cassinetta	WHI, SIEMENS
08/04/2013 12/04/2013	Technical Meeting	WHI - Naples	ALL
20/05/2013 24/05/2013	Technical Meeting	WHI - Naples	ALL

In the last 18 months the plenary technical co-ordination meetings have been organized approximately every six months as in the first half of the project (following the workplan).

January 2012- June 2013

Date	Meeting Type	Location	Participants
3-4 July 2012	Co-ordination meeting	AEA - Angeli di Rosora	ALL
5-7 December 2012	Co-ordination meeting	SIEMENS - Erlangen	All + PTA
13-14 June 2013	Final Meeting + review Meeting	WHI - Naples	All + PTA + Project Officer

Meeting presentations and minutes are available to all the partners on the website reserved area.



7. Deliverables

29 deliverables, almost one per month, have been prepared for all the duration of the project to report the project activities. Half of them are public, the other ones are confidential. Four of these deliverables have confidential annexes, created to better explain some arguments of the public deliverables.

D1.1 “Report with the requirements of multi-agent architecture for line production system and production on-demand”, Public, November 2010

D1.2 “Specification of the multi-agent architecture for line-production system, integrating process and quality control”, Public, October 2011

D1.3 “Document defining the ontology for line-production system, integrating process and quality control”, Public, February 2012

D1.4 “Implementation of multi-agent based infrastructure”, Public, September 2012

D2.1 “Specification for self-adaptation and self-optimization mechanisms in WM production”, Confidential, February 2011

D2.2 “Implementation of adaptive control algorithms and self-optimization mechanisms at local level”, Confidential, January 2012

D2.3 “Implementation of adapting and optimizing behaviours at global level”, Public, September 2012

D3.1 “Specification for testing and quality control functions in the WM production”, Confidential, January 2011

D3.2 “Self-optimizing/self-adapting quality control agents”, Public, December 2011

D3.3 “Implementation of modular algorithms for feature extraction and classification”, Public, September 2012

D4.1 “Document defining the engineering process reference model”, Public, March 2011

D4.2 “Definition of the engineering methodology”, Public, July 2012

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D4.3 “Integration of GRACE multi-agent systems with manufacturing CAE systems”,
Public, November 2012

D4.26 Appendix to D4.1

D4.28 Appendix to D4.2

D4.29 Appendixes to D4.3

D5.1 “Working prototype of GRACE system installed in the WM production”, Public,
January 2013

D5.2 “Report on the results obtained in the field tests of GRACE MAS platform”, Public,
July 2013

D6.1 “Project presentation”, Public, December 2010

D6.2 “Rolling Dissemination and Exploitation Report”, Public, January 2012

D6.27 Appendix to D6.2

D6.3 “Final Report on Dissemination and Exploitation”, Public, July 2013

D6.3X Appendix to D6.3

D6.4 “Engineering Handbook for GRACE MAS platform”, Public, July 2013

D7.1 “First periodic Financial Report”, Confidential, February 2012

D7.2 “Second periodic Financial Report”, Confidential, September 2013

D7.3 “Final Financial Report”, Confidential, September 2013

D8.1 “First Technical Report”, Confidential, June 2011

D8.2 “Second Technical Report”, Confidential, June 2012

D8.3 “Final Technical Report”, Confidential, July 2013



8. Measurement of dissemination activities

An initial set of indicators able to demonstrate the success of the dissemination activities has been identified and they have been monitored for the whole duration of the project. Here after the latest values have been reported.

a. Numbers of conferences and feedback received

This parameter is able to show the presence of the project in the research and innovation scenario. In the second half of the project seven among workshops, conferences and fairs has been attended receiving positive interest and feedback after the presentations, as outlined in Section 3.

b. Number of scientific publications

This is another parameter able to demonstrate the presence of the project in the research and innovation scenario. Since July 2010, 31 scientific publications have been published on conference proceedings. The topics covered by the publications cover all the work packages and tasks of the project: multi-agent technology, quality control systems, production process and engineering methodology.

c. Web statistics

The GRACE website, powered by Wordpress, is registered at Google Analytics, so it is possible to check and register information about the visitors' access to the website.

Thanks to the analytics service the website visits from December 2010 to June 2013 have been monitored. Unfortunately, for a server migration on the early March 2011, data from the 1st of December 2010 to the 8th of March 2011 have been lost, so the results listed below are slightly inferior to reality.

The constant updating of information in the website had shown its good effect in the visit analysis:

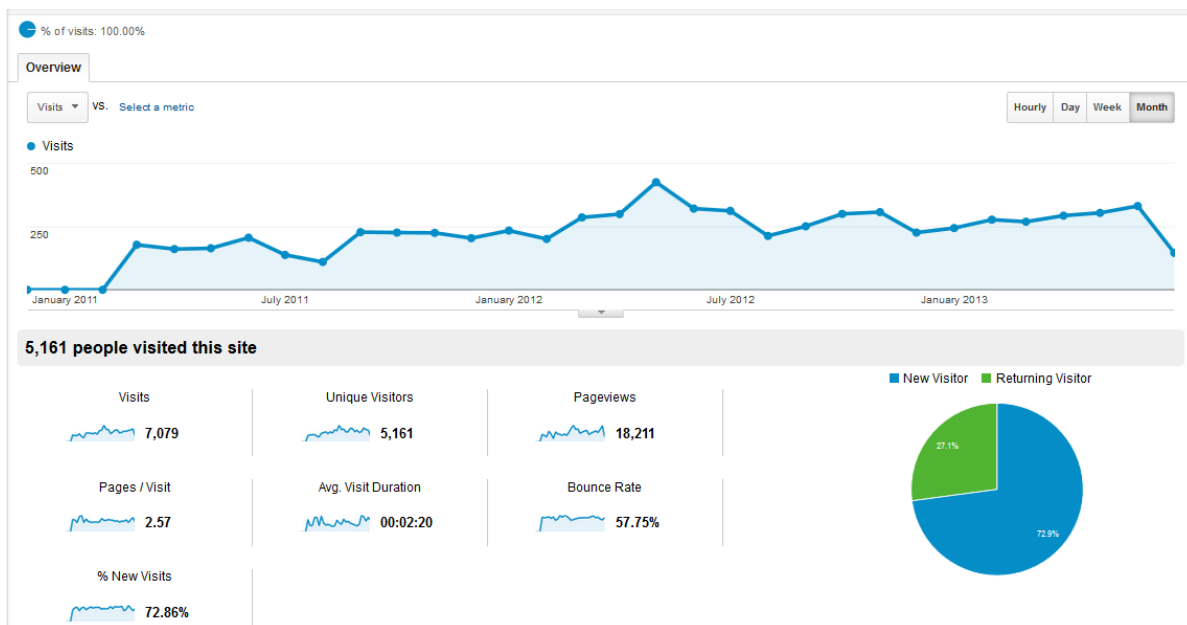
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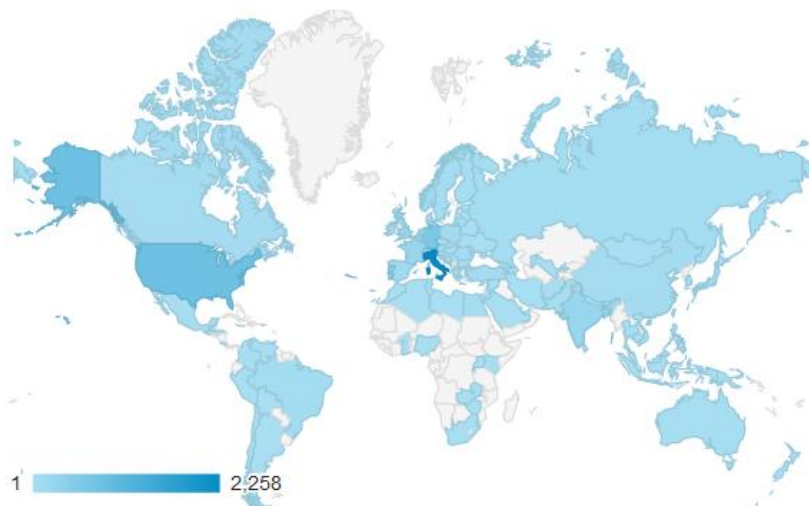


- 7,079 visitors
- 18,211 page-views
- 2'20" average visit duration
- 72,86% new visits

Almost seven thousand people entered the website, visiting more than eighteen thousand pages. The seventy-three per cent of visitors are new, it means that a great number of people has been informed about the project, visiting the website for more than 2 minutes, a good data if we think that internet is an instrument where information are seen very quickly.



Another important data is the worldwide diffusion of the project knowledge, as we can see in the map below. As expected, countries where the website is mostly visited are the partners' ones, because of the local effects of communication, but the project diffusion in almost all over the world is a result we are satisfied of. In particular, several visits came from United States, India and France.



Country/Territory	Visits ?	Pages / Visit ?	Avg. Visit Duration ?	% New Visits ?	Bounce Rate ?
	7,079 <small>% of Total: 100.00% (7,079)</small>	2.57 <small>Site Avg: 2.57 (0.00%)</small>	00:02:20 <small>Site Avg: 00:02:20 (0.00%)</small>	72.88% <small>Site Avg: 72.86% (0.02%)</small>	57.75% <small>Site Avg: 57.75% (0.00%)</small>
1. Italy	2,258	3.48	00:03:48	59.34%	45.26%
2. United States	821	1.94	00:01:27	87.94%	73.08%
3. Germany	626	2.76	00:02:01	74.12%	47.92%
4. Portugal	467	3.27	00:02:27	42.61%	33.62%
5. India	233	1.57	00:03:40	93.99%	72.96%
6. France	221	1.94	00:00:58	54.75%	66.97%
7. United Kingdom	207	1.76	00:00:44	93.24%	73.43%
8. Norway	139	2.67	00:01:54	53.96%	43.17%
9. Spain	126	2.28	00:01:38	89.68%	57.14%
10. Belgium	117	2.36	00:01:04	60.68%	72.65%

d. Number of contacts

Participation in trade fairs, conferences and events has been the major source of direct contacts with industries and research centres interested in the project. Only during Automatica (May 2012, Munich, Germany) the project was presented to six important European Research Centers and eight representatives of large industrial groups such as Denso, Mitsubishi and Canon.



Interesting contacts derived also from the website visits. For example one student from the German University of Cairo has come to the Università Politecnica delle Marche for a three months stage related to the GRACE topics. The student, Samar El-Baharawi, was interested in mechatronics and discovered about the project by browsing on the web; she was then involved in image processing for on-line diagnostics of appliances.

9. Exploitation

The main objectives of the Exploitation task are to identify and coordinate the exploitation of the technologies and of the solutions coming out of the project. At the end of the project the exploitable results have been identified and for each of them suitable exploitation plan has been prepared. Details have been included in the confidential Annex of this deliverable.



10. Conclusion

Dissemination and exploitation have been massively pursued all along the GRACE project. The big dissemination work is evident from the website, the video, the technical brochures, the active participation to workshops, fair and events, the numerous scientific publications, the students internships and thesis, and the public deliverables. Exploitation has been pursued with the same dedication, especially from the industrial partners, and has brought to tangible results that allows them to improve their competitiveness.

Dissemination and exploitation of the GRACE results will continue also after the official end of the project.

A final press release is in preparation, to be spread to all the consortium partner's press contacts. It will be focused on the project results and the innovation that its implementation will bring to factories. It will be sent to local, national and international journals (technical and non-technical one).

Moreover, each partner will carry on internal communication and exploitation activities towards their customers.

A storytelling on the GRACE project success story will be made in order to disseminate best-practices and tips for demonstrating research projects in real industrial applications.

The possibility to create a community related to the Multi-Agent System will be investigated. If there will be a large consensus around the idea, AEA will set up the community. The aim will be to share ideas and possible applications of the MAS architecture, based on the results and know-how obtained from the GRACE project.

Finally, there will be a wide spread of the GRACE Handbook (Deliverable D6.4) that will be one of the instruments to communicate the aim of the project and a guide for engineers who want to implement a Multi Agent system in their production line.