COST Action
Final Achievement Report

IC1207: Parsing and multi-word expressions. Towards linguistic precision and computational efficiency in natural language processing (PARSEME)

(08/03/2013 to 30/04/2017)

The Action was approved by the Committee of Senior Officials (CSO) on 21-11-2012 and has the MoU reference COST IC1207-MoU.

This report shows the data entered into e-COST to enable the Action Chair to verify the completeness and accuracy of the report with the MC prior to submitting the report via e-COST in fulfilment of the rules for COST Action Management, Monitoring and Final Assessment.

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Action leadership and participants

Leadership Positions

Position	Name	Contact details	Country of work affiliation
Chair	Dr Agata Savary	agata.savary@gmail.com +332545521	FR

Position	Name	Contact details	Country of Nomination
Vice Chair	Prof Adam Przepiorkowski	adamp@ipipan.waw.pl +48 22 3800549	PL

Working Groups

#	WG Title	# of participants	WG Leader	Country of nomination
1	LEXICON/GRAMMAR INTERFACE	125	Prof Manfred Sailer sailer@em.uni-frankfurt.de	DE
2	PARSING TECHNIQUES FOR MWEs	65	Dr Yannick Parmentier yannick.parmentier@gmail.com	FR
3	HYBRID PARSING OF MWEs	85	Mr Michael Rosner mike.rosner@um.edu.mt	MT
4	ANNOTATING MWEs IN TREEBANKS	59	Dr Victoria Rosén Victoria.Rosen@lle.uib.no	NO

Participants

COST Member Countries and Cooperating State having accepted the MoU

BG	08/08/2013	HR	22/03/2013	CZ	30/01/2013	DK	16/01/2013	EE	04/12/2012
FI	09/02/2016	FR	17/01/2013	DE	17/01/2013	EL	23/04/2013	HU	27/12/2012
IS	08/01/2013	IE	31/05/2013	IL	17/02/2013	IT	19/12/2012	LV	31/10/2013
LT	15/11/2013	MT	19/12/2012	NL	14/02/2013	NO	29/11/2012	PL	17/12/2012
PT	27/02/2013	RO	10/03/2014	RS	13/12/2012	SK	23/06/2013	SI	25/08/2013
ES	08/02/2013	SE	07/02/2013	CH	01/03/2013	TR	15/03/2013	UK	11/12/2012
MK	31/01/2013								

Other Participants

Institution Name	Country
Stanford University	United States
Federal University of Rio Grande do Sul	Brazil

Summary

Main aim/ objective

The main objective of the Action is to increase and enhance the ICT support of the European multilingual heritage by bringing about a substantial progress in the understanding and modelling of Multi-Word Expressions (MWEs) within advanced multilingual Natural Language Processing (NLP) techniques, notably deep parsing.

The Action addressed this as described below.

The IC1207 COST action PARSEME concerns Natural Language Processing (NLP), which deals with providing ICT support for human language understanding. Since modeling and processing language proves difficult, most efforts in the international NLP community had focused on ICT tools dedicated to English. Accounting for variety of languages had often been considered an obstacle. This Action was conceived and implemented with an opposite point of view in mind. It saw Europe's multilingualism as the source of a better comprehension of linguistic phenomena crucial to multilingual language technologies. One of the most challenging phenomena of this kind are multiword expressions (MWEs), chosen as the central topic for over 30 languages participating in the Action. Thus, Europe's multilingual heritage was not only supported by the Action, but became an advantage over other major NLP communities, e.g. in the Americas or China.

Numerous outcomes of the Action, sometimes unprecedented in nature and scope, attest having met this objective. The PARSEME community with 230 individuals from 33 countries, produced 4 contrastive surveys on MWE lexicons, MWE annotations in treebanks and MWE classification templates. Hundreds of publications address MWEs in national languages. Two book volumes are dedicated to modeling and processing MWEs in a multilingual perspective. Courses and tutorials use examples in at least 10 languages. The INESS platform gives access to treebanks in 63 languages. Finally, the PARSEME shared task on automatic identification of verbal MWEs covered an (unprecedented in NLP) number of languages. It yielded annotation guidelines for 21 languages, a corpus of 5 million words annotated with MWEs in 18 languages and 7 systems covering these 18 languages. All these outcomes were achieved in a coordinated manner and led to terminologies and methods which are as unified as possible but leave room for language specificities. This approach of promoting universalism while maintaining diversity brings about a substantial progress in understanding and modeling MWEs.

Within the MWE-related challenges, PARSEME specifically addressed increasing MWE-awareness of models and tools for advanced NLP techniques, notably deep parsing. Most outcomes contribute to meeting this challenge. The survey and guidelines for MWE annotation in treebanks pave the way towards optimal joint representation of MWEs and syntactic structures. MWE classification templates can be used to determine the MWEs types that should best be processed before, during or after parsing. New parsing models were developed which inherently account for MWEs. Rules for MWEs were integrated into several symbolic large-coverage grammars and meta-grammars. Foundations were laid for semantic parsing of MWEs within meta-grammatical frameworks (allowing to optimize the production cost of symbolic grammars). Mechanisms for non-compositional translation of MWEs was integrated into a grammar-based translation framework. The shared task data in many languages are aligned with syntactic annotations so as to support two tasks simultaneously: MWE identification and parsing. Several shared task systems use syntactic parsers and exploit mutual influence of these two tasks. MWE lexicons and valence dictionaries provide descriptions of syntactic properties of MWEs which can be exploited by parsers.

Action website

www.parseme.eu

Achievement of MoU objectives, deliverables and additional outputs/ achievements

MoU objectives

Please mark and comment on the level of achievement of each MoU objective.For any MoU objectives that were less than 76% achieved please provide justification.

Please provide proof to enable the Action Rapporteur to confirm the level of achievement.

Mou objective	to put multilingualism in focus of linguistic and technological studies		
Type of objective	1.a Development of a common understanding/definition of the subject matter 1.e Development of knowledge needing international coordination, pertaining to a new or improved theory, model, methodology, technology or technique 2.e Building capacity in the demographic inclusiveness of networks in science and technology, including representation of newly established research groups, Early-Career Investigators, the under-represented gender and teams from countries/regions with less capacity in the field of the Action		
Level of achievement of MoU objective	76 - 100%	**Dependence of achievement on the action networking**	High
Proof of achievement of MoU objective	As a general rule, please, consider the action's website (www.parseme.eu) and in particular its "Results" menu as proof of achievement for all the following items. The action gathers members representing **31 languages** and **6 dialects** from **10 language families**. Unlike in other communities of the natural language processing domain, English is not a dominating language. All common surveys, choices of posters and publications, tutorials etc. take multilingual issues into account. Examples: All surveys (see https://typo.uni-konstanz.de/parseme/index.php/2-general/159-survey) concern at least 16 languages. The WG1 book " Multiword Expressions: Insights from a Multi-lingual Perspective" (to appear: https://typo.uni-konstanz.de/parseme/index.php/2-general/117-book-project-multiword-expressions-insights-from-a-multi-lingual-perspective) explicitly focuses on multilingualism. The invited talk "Exploiting multilingual lexical resources to predict the compositionality of MWEs" at the MWE 2017 workshop focuses on leveraging multilingualism for MWE compositionality prediction (http://multiword.sourceforge.net/PHITE.php?sitesig=CONF&page=CONF_05_MWE_2017___lb__EACL__rb__&subpage=CONF_20_Keynote_Speaker). The courses and tutorials at PARSEME training schools and meetings use examples in at least Czech, English, French, German, Hebrew, Norwegian, and Polish. The INESS tutorial introduces the methodology of querying treebanks in 63 languages, many of them containing MWE annotations (https://typo.uni-konstanz.de/parseme/index.php/2-general/163-tutorials; http://clarino.uib.no/iness/page). The PARSEME shared task led to a publication of a MWE-annotated corpus in 18 languages; 7 systems participated in the competition and covered all these languages (https://typo.uni-konstanz.de/parseme/index.php/2-general/165-shared-task). The publications of the action cover most of the 31 languages under study (https://typo.uni-konstanz.de/parseme/index.php/2-general/49-publications).		

	25 countries were concerned by STSMs; in most cases either the language of the outgoing or of the incoming country (sometimes both) was under study (https://typo.uni-konstanz.de/parseme/index.php/stsm-grants/finished-stsms).

Mou objective	to establish a long-lasting collaboration of NLP experts within a cross-lingual, cross-theoretical and cross-methodological research network		
Type of objective	2.a Building a community around a topic of scientific and/or socio-economic relevance, allowing for knowledge exchange and the development of a joint research agenda 2.e Building capacity in the demographic inclusiveness of networks in science and technology, including representation of newly established research groups, Early-Career Investigators, the under-represented gender and teams from countries/regions with less capacity in the field of the Action		
Level of achievement of MoU objective	76 - 100%	**Dependence of achievement on the action networking**	High
Proof of achievement of MoU objective	The network now gathers about 230 members from 33 countries. All 4 Working Groups are defined so as to cross the existing barriers: Among different languages: over 30 languages are represented (in all WGs) Among different traditional levels of language processing: lexicon, grammar, meaning, etc. (in WG1) Among different linguistic theories: DG, GG, HPSG, LFG, TAG, etc. (in WG2 and WG4; the training schools and tutorials of the action included courses on dependency grammar, HPSG, LFG and TAG) Among different methodologies: symbolic, probabilistic and hybrid parsing (in WG3) Among different treebank annotation methodologies and formalisms: dependency, constituency, HPSG, LFG (WG4) The network has strong links with related initiatives and experts (see http://typo.uni-konstanz.de/parseme/index.php/related-links). It yielded several spin-off or related projects in 6 countries (https://typo.uni-konstanz.de/parseme/index.php/related-links/spin-off-and-related-national-projects). The community is now integrated into a framework of a larger international scope: the SIGLEX-MWE section (http://multiword.sourceforge.net/). This will enable the strong networking effect achieved in the Action to continue beyond its duration. The PARSEME shared task will be reiterated. The organisation of edition 1.1 and 2.0 in 2018 and 2019 has already started - see the panel at the MWE 2017 workshop (http://multiword.sourceforge.net/mwe2017/slides/MWE-2017-panel-slides.pdf).		

Mou objective	to bridge the gap between linguistic precision and computational efficiency in NLP applications
Type of objective	1.c Coordination of experimentation or testing 1.e Development of knowledge needing international coordination, pertaining to a new or improved theory, model, methodology, technology or technique 1.f Achievement of a specific tangible output that cannot be achieved without international coordination (e.g. due to practical issues such as database availability, language barriers, availability of infrastructure or know-how, etc.)

Level of achievement of MoU objective	76 - 100%	**Dependence of achievement on the action networking**	High
Proof of achievement of MoU objective	Various publications, tutorials, resources and software show progress in this respect. Examples: Probabilistic parsing technologies accounting for MWEs (http://ufal.ms.mff.cuni.cz/~bejcek/parseme/prague/Nivre3.pdf) New dependency parsing system modelling MWEs in parallel with syntactic dependencies (http://www.aclweb.org/anthology/P16-1016) MWE identification systems using linguistically informed features (http://multiword.sourceforge.net/mwe2017/proceedings/MWE201727.pdf) XMG and FRMG - meta-grammatical frameworks for efficient development of lexicalized grammars (https://typo.uni-konstanz.de/parseme/images/Petitjean-talk.pdf; https://typo.uni-konstanz.de/parseme/index.php/2-general/188-7th-wg2-meeting-dubrovnik-croatia) Steps towards the formal representation of the semantics of MWEs as rhetorical figures ((http://typo.uni-konstanz.de/parseme/images/Ontology%20of%20Rhetorical%20Figures%20for%20Serbian_Parseme-1.pdf) or ambiguity modeling (employing the the XMG metagrammatical framework: http://www.cssp.cnrs.fr/eiss11/eiss11_lichte-and-kallmeyer.pdf) Identification of MWEs with deep learning (http://typo.uni-konstanz.de/parseme/images/WG2/Valletta.pdf) Development of MWE language resources – bottlenecks of most MWE-aware NLP applications (MWE lexicon survey: https://typo.uni-konstanz.de/parseme/index.php/2-general/159-survey; dozens of posters and papers: https://typo.uni-konstanz.de/parseme/index.php/2-general/49-publications) PARSEME shared task outcomes: (i) unified terminology and annotation methodology for 18 languages, (ii) converters and evaluation tools, (iii) corpus of 5 million tokens annotated with verbal MWEs in 18 languages, (iv) 7 MWE identification systems covering 18 languages (https://typo.uni-konstanz.de/parseme/index.php/2-general/165-shared-task) A novel MWE-based strategy enhancing the efficiency of a high-quality TAG parsing (http://aclweb.org/anthology/C/C16/C16-1042.pdf)		

Deliverables

Please select and comment on the level of achievement of each deliverable as well as the extent to which the deliverable's achievement was dependant on the Action networking.

For deliverables that are:

- Delivered, please provide proof to enable the Action Rapporteur to confirm the delivery
- Not delivered but delivery is foreseen within 2 years please explain how the delivery will be achieved
- Not foreseen to be delivered please explain why not

Deliverable	Contrastive analysis of the linguistic properties of MWEs in different European languages.		
Level of achievement of deliverable	Not delivered, but foreseen within 2 years	**Dependence of achievement on the action networking**	High
Explanation	MWE templates - a WG1 survey on multilingually applicable classification of MWEs - mostly completed for 16 langauges, on-going for others; so far available under restricted access, to be publicly open soon (https://typo.uni-konstanz.de/parseme/index.php/2-general/159-survey). Manfred Sailer and Stella Markantonatou (eds.) Mutliword Expressions: Insights from a Multi-lingual Perspective - WG1 book; under final revision and editorial correction; to appear at Language Science Press in 2017		

Deliverable	Proposal of a common design for lexicons including both valence data and MWE data.		
Level of achievement of deliverable	Delivered	**Dependence of achievement on the action networking**	Medium
Proof of achievement of deliverable	https://typo.uni-konstanz.de/parseme/index.php/2-general/201-mou-deliverables (see item 2)		

Deliverable	Lexical databases: possibly interoperable parsing-oriented MWE lexicons and valence dictionaries in several European languages.		
Level of achievement of deliverable	Delivered	**Dependence of achievement on the action networking**	Medium
Proof of achievement of deliverable	https://typo.uni-konstanz.de/parseme/index.php/2-general/201-mou-deliverables (item 3)		

Deliverable	Extensions of existing corpora and treebanks in several languages with MWE annotation levels.		
Level of achievement of deliverable	Delivered	**Dependence of achievement on the action networking**	High
Proof of achievement of deliverable	https://typo.uni-konstanz.de/parseme/index.php/2-general/201-mou-deliverables (item 4)		

Deliverable	Extensions of existing grammars for several European languages with rules dedicated to MWEs.		
Level of achievement of deliverable	Delivered	**Dependence of achievement on the action networking**	Low

Proof of achievement of deliverable	https://typo.uni-konstanz.de/parseme/index.php/2-general/201-mou-deliverables (item 5)

Deliverable	Definitions of abstract models (e.g. meta-grammars) of MWEs properties that would: (i) capture linguistic richness of MWEs independently of particular grammatical frameworks, (ii) help reduce the cost of resource development, (iii) adapt to different languages studied.		
Level of achievement of deliverable	Delivered	**Dependence of achievement on the action networking**	Medium
Proof of achievement of deliverable	https://typo.uni-konstanz.de/parseme/index.php/2-general/201-mou-deliverables (item 6)		

Deliverable	Recommendations of best practices for MWE representation and treatment in parsing within different theoretical frameworks. The resulting designs should be maximally interoperable.		
Level of achievement of deliverable	Delivered	**Dependence of achievement on the action networking**	Medium
Proof of achievement of deliverable	https://typo.uni-konstanz.de/parseme/index.php/2-general/201-mou-deliverables (item 7)		

Deliverable	Extension of hybrid (knowledge-based and data-driven) methods for parsing MWEs.		
Level of achievement of deliverable	Not delivered, but foreseen within 2 years	**Dependence of achievement on the action networking**	High
Explanation	See https://typo.uni-konstanz.de/parseme/index.php/2-general/201-mou-deliverables (item 8). The WG3 survey in the 2nd round of revision at the Computational Linguistics journal.		

Deliverable	Annotation guidelines for the representation of MWEs in treebanks.		
Level of achievement of deliverable	Delivered	**Dependence of achievement on the action networking**	High
Proof of achievement of deliverable	https://typo.uni-konstanz.de/parseme/index.php/2-general/201-mou-deliverables (item 9)		

Deliverable	A common publishing platform gathering initiatives in the field of MWEs and parsing.		
Level of achievement of deliverable	Delivered	**Dependence of achievement on the action networking**	High
Proof of achievement of deliverable	https://typo.uni-konstanz.de/parseme/index.php/2-general/201-mou-deliverables (item 10)		

Deliverable	Scientific publications in established conferences and journals in various domains.		
Level of achievement of deliverable	Delivered	**Dependence of achievement on the action networking**	High
Proof of achievement of	https://typo.uni-konstanz.de/parseme/index.php/2-general/49-publications		

deliverable	

Additional outputs / achievements

Co-authored Action publications

Please enter below ONLY publications (including publications that are submitted, but not yet accepted):

- that are on the topic of the Action, and
- that are co-authored by at least two Action participants from two countries participating in the Action, and
- for which the Action networking was necessary.

	Bibliographic data	Countries participating in the Action among authors	Open Access	COST cited?	COST funds?	Relevance to H2020 Soc challenge	Peer Reviewed?
1	Agata Savary, Carlos Ramisch, Silvio Cordeiro, Federico Sangati, Veronika Vincze, Behrang QasemiZadeh, Marie Candito, Fabienne Cap, Voula Giouli, Ivelina Stoyanova and Antoine Doucet (2017) The PARSEME Shared Task on Automatic Identification of Verbal Multiword Expression, in the proceedings from the 13th Workshop on Multiword Expressions (MWE 2017), Valencia, Spain, April 4, 2017	BG, FR, DE, EL, HU, IT, SE	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
2	Stella Markantonatou, Carlos Ramisch, Agata Savary and Veronika Vincze (2017) "Proceedings of the 13th Workshop on Multiword Expressions (MWE 2017)", 4 April, Valencia, Spain, Association for Computational Linguistics.	FR, EL, HU	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
3	Jelena Mitrović, Stella Markantonatou, Miljana Mladenović, Cvetana Krstev. (2017). "A Cross-linguistic Study on Greek and Serbian MWEs and Enrichment of Lexical Resources via Crowdsourcing". Bulletin of Scientific Terminology and Neologisms, special issue on MWEs in Greek and other languages: from theory to implementation, 2017, Academy of Athens.	EL, RS	N	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
4	Natalia Klyueva, Antoine Doucet and Milan Straka (2017) "Neural Networks for Multi-Word Expression Detection", in the Proceedings of the 13th Workshop on Multiword Expressions (MWE 2017), pages 60–65, Valencia, Spain, April 4.	CZ, FR	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
5	Matthieu Constant and Joakim Nivre. (2016). "A Transition-Based System for Joint Lexical and Syntactic Analysis". In Proceedings of the 54th Annual Meeting of the	FR, SE	Y	Y	Y	Europe in a changing world, inclusive	Y

	Association for Computational Linguistics (Volume 1: Long Papers), pp. 161–171, Berlin, Germany: Association for Computational Linguistics.					innovative and reflective societies	
6	Kaja Dobrovojc and Joakim Nivre. (2016). "The Universal Dependencies Treebank of Spoken Slovenian". In the Proceedings of the 10th International Conference on Language Resources and Evaluation (LREC 2016), pp. 1566-1573, Portorož, Slovenia, May 2016.	SI, SE	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
7	Gloria Corpas Pastor, Johanna Monti, Violeta Seretan and Ruslan Mitkov (eds.). (2016). Workshop Proceedings Multi-word units in Machine Translation and Translation Technologies - MUMTTT2015, 1-2 July 2015, Malaga Spain, Geneva, Editions Tradulex.	IT, CH	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
8	Johanna Monti and Amalia Todirascu. (2016). "Multiword Units Translation Evaluation in Machine Translation: Another Pain in the Neck? Patterns". In Gloria Corpas Pastor, Johanna Monti, Violeta Seretan, Ruslan Mitkov (eds.) Workshop Proceedings Multi-word units in Machine Translation and Translation Technologies - MUMTTT2015, 1-2 July 2015, Malaga Spain, Geneva, Editions Tradulex. ISBN 978-2-9700736-9-7	FR, IT	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
9	Natalia Klyueva and Jeevanthi Liyanapathira. (2016). "Analysis of Multiword Expression Translation Errors in Statistical Machine Translation Patterns". In Gloria Corpas Pastor, Johanna Monti, Violeta Seretan, Ruslan Mitkov (eds.) Workshop Proceedings Multi-word units in Machine Translation and Translation Technologies - MUMTTT2015, 1-2 July 2015, Malaga Spain, Geneva, Editions Tradulex, 2016. ISBN 978-2-9700736-9-7	CZ, DK	Y	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
10	Rosén, V., De Smedt, K., Losnegaard, G., Bejček, E., Savary, A. and P. Osenova. (2016): "MWEs in Treebanks: From Survey to Guidelines". In the Proceedings of the 10th International Conference on Language Resources and Evaluation (LREC'16), 23-28 May 2016, Portorož, Slovenia 978-2-9517408-9-1	BG, CZ, FR, NO	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
11	Losnegaard, G., Sangati, F., Parra, C., Savary, A., Bargmann, S. and J. Monti. (2016): "PARSEME Survey on MWE Resources". In the Proceedings of the 10th International Conference on Language Resources and Evaluation (LREC'16), 23-28 May 2016, Portorož, Slovenia 978-2-9517408-9-1	FR, DE, IT, NO, ES	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y

12	Adam Przepiórkowski, Jan Hajič, Elżbieta Hajnicz and Zdeňka Urešová. (2016). Phraseology in two Slavic valency dictionaries: limitations and perspectives. In International Journal of Lexicography https://doi.org/10.1093/ijl/ec	CZ, PL	N	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
13	Agata Savary, Manfred Sailer, Yannick Parmentier, Michael Rosner, Victoria Rosén, Adam Przepiórkowski, Cvetana Krstev, Veronika Vincze, Beata Wójtowicz, Gyri Smørdal Losnegaard, Carla Parra Escartín, Jakub Waszczuk, Matthieu Constant, Petya Osenova, Federico Sangati. (2015) "PARSEME – PARSing and Multiword Expressions within a European multilingual network". In the Proceeding of the 7th Language & Technology Conference (LTC 2015), 27-29 November 2015, Poznań, Poland	BG, FR, DE, HU, IT, MT, NO, PL, RS, ES	N	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
14	Victoria Rosén, Gyri Smørdal Losnegaard, Koenraad De Smedt, Eduard Bejček, Agata Savary, Adam Przepiórkowski, Petya Osenova, Verginica Mititelu. (2015). "A survey of multiword expressions in treebanks". In the Proceedings of the 14th International Workshop on Treebanks and Linguistic Theories (TLT14), 11–12 December 2015, Warsaw, Poland.	BG, CZ, FR, NO, PL, RO	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
15	Matthieu Constant, Cvetana Krstev and Dusko Vitas. (2015). "Hybrid lexical tagging in Serbian". In Proceedings of the 7th Language & Technology Conference, November 27-29, 2015, Poznań, Poland.	FR, RS	N	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
16	Monika Czerepowicka and Agata Savary. (2015). "SEJF - a Grammatical Lexicon of Polish Multi-Word Expressions". In Proceedings of the 7th Language & Technology Conference, November 27-29, 2015, Poznań, Poland	FR, PL	N	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
17	Timm Lichte and Simon Petitjean. (2015). "Implementing semantic frames as typed feature structures with XMG". In Journal of Language Modelling 3(1) http://dx.doi.org/10.15398/jlm	FR, DE	Y	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
18	Meghdad Farahmand, Aaron Smith, and Joakim Nivre. (2015). "A Multiword Expression Data Set: Annotating Non-Compositionality and Conventionalization for English Noun Compounds". In Proceedings of the 11th Workshop on Multiword Expressions, North American Chapter of ACL (MWE-NAACL 2015). Denver, USA, June 2015.	SE, CH	Y	N	Y	Europe in a changing world, inclusive innovative and reflective societies	Y

19	Federico Sangati and Andreas van Cranenburgh. (2015). "Multiword Expression Identification with Recurring Tree Fragments and Association Measures". In Proceedings of the 11th Workshop on Multiword Expressions (NAACL-MWE-2015), June 2015, Denver, Colorado, USA	IT, NL	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
20	Zdravkova, K., Petrovski, A., and T. Erjavec. (2014). Consistency and completeness of multiword expressions during translation. In Proceedings of 17th International Multiconference Information Society IS 2014, Volume E, pp. 42–46.	SI, MK	Y	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
21	Nikola Ljubešić, Kaja Dobrovoljc, Simon Krek, Marina Peršurić Antonić, and Darja Fišer. (2014). hrMWELex – A MWE lexicon of Croatian extracted from a parsed gigacorpus. In Proceedings of the Ninth Language Technologies Conference IS 2014, Ljubljana, Slovenia	HR, SI	Y	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
22	Željko Agić, Jörg Tiedemann, Kaja Dobrovoljc, Simon Krek, Danijela Merkler, and Sara Može. (2014). Cross-Lingual Dependency Parsing of Related Languages with Rich Morphosyntactic Tagsets. In Language Technology for Closely Related Languages and Language Variants (LT4CloseLang), EMNLP 2014. Doha, Qatar.	HR, DE, SI, SE	Y	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
23	Nikola Ljubešić, Tomaž Erjavec, and Darja Fišer. (2014). Standardizing Tweets with Character-level Machine Translation. In Proceedings of CICLing 2014 (15th International Conference on Intelligent Text Processing and Computational Linguistics), April 6–12, 2014, Kathmandu.	HR, SI	N	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
24	Nikola Ljubešić, Darja Fišer, and Tomaž Erjavec (2014). TweetCaT: a tool for building Twitter corpora of smaller languages. In Proceedings of LREC 2014 (9th Language Resources and Evaluation Conference), May 26-31, 2014, Reykjavik. 978-2-9517408-8-4	HR, SI	Y	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
25	Bohnet, B., Nivre, J., Boguslavsky, I., Farkas, R., and Hajic, J. (2013) Joint Morphological and Syntactic Analysis for Richly Inflected Languages. In Transactions of the Association for Computational Linguistics, 1(Oct), pp. 429–440.	CZ, SE	Y	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
26	Valia Kordoni, Markus Egg, Agata Savary, Eric Wehrli and Stefan Evert (eds.) Proceedings of the 10th Workshop on Multiword Expressions (MWE 2014), colocated with EACL 2014 (Gothenburg, Sweden), 26-27 April 2014, endorsed by the Special Interest Group on the Lexicon (SIGLEX) of the Association for Computational Linguistics and PARSEME.	FR, DE, CH	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y

27	Manfred Sailer and Stella Markantonatou (eds.) Multiword Expressions: Insights from a Multi-lingual Perspective, submitted to the Phraseology and Multiword Expressions series of Language Science Press.	DE, EL	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
28	Cvetana Krstev, Svetla Koeva, DuskoVitas, Tita Kyriacopoulou, Claude Martineau, Tsvetana Dimitrova (submitted) "Semantic and Syntactic Patterns of Multiword Names (a Cross-language Study)", submitted to Manfred Sailer and Stella Markantonatou (eds.) Multiword Expressions: Insights from a Multi-lingual Perspective, Phraseology and Multiword Expressions series of Language Science Press.	BG, RS	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
29	Timm Lichte, Simon Petitjean, Agata Savary, Jakub Waszczuk (submitted) "Lexical encoding formats for multi-word expressions: The challenge of “irregular” regularities", submitted to Yannick Parmentier and Jakub Waszczuk (eds.) Representation and Parsing of Multiword Expressions, Phraseology and Multiword Expressions series of Language Science Press.	FR, DE	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
30	Miryam de Lhoneux, Omri Abend, Mark Steedman (submitted) "Investigating the Effect of Automatic MWE Recognition on CCG Parsing", submitted to Yannick Parmentier and Jakub Waszczuk (eds.) Representation and Parsing of Multiword Expressions, Phraseology and Multiword Expressions series of Language Science Press.	SE, UK	Y	N	N	Europe in a changing world, inclusive innovative and reflective societies	Y
31	Matthieu Constant, Gülşen Eryiğit, Carlos Ramisch, Mike Rosner, Gerold Schneider (submitted) "Statistical MWE-aware parsing", submitted to Yannick Parmentier and Jakub Waszczuk (eds.) Representation and Parsing of Multiword Expressions, Phraseology and Multiword Expressions series of Language Science Press.	FR, MT, CH, TR	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y
32	Mathieu Constant, Gülşen Eryiğit, Johanna Monti, Lonneke van der Plas, Carlos Ramisch, Michael Rosner, Amalia Todirascu (to appear) "Multiword Expression Processing: A Survey", in Computational Linguistics.	FR, IT, MT, TR	Y	Y	Y	Europe in a changing world, inclusive innovative and reflective societies	Y

Projects resulting from Action activities

Please enter below all the projects on the topic of the Action resulting from Action activities, involving at least one Action participant, and for which the Action networking was necessary.

The Action reported 7 project(s) and 11 proposal(s) resulting from the Action networking.

Key details of the projects are shown below.

#	Title	Countries participating in the Action among proposers	Main proposer name	Funder	Amount	Call identifier	Relevance to H2020 Soc challenge
1	LD-Parseme: Parsing a víceslovné výrazy – k jazykovědné přesnosti a výpočetní efektivitě ve zpracování přirozeného jazyka (Parsing and MWEs - towards linguistic precision and computational efficiency in natural language processing)	CZ	Jan Hajič	National	80000 €	LD14117	Europe in a changing world, inclusive innovative and reflective societies
2	VERBEL: Opis paradygmatyczny polskich frazeologizmów czasownikowych. Słownik elektroniczny (Paradigmatic description of Polish verbal phraseological units. Digital inflectional dictionary.)	PL	Monika Czerepowicka	National	33000 €	2013/09/B/HS2/01222	Europe in a changing world, inclusive innovative and reflective societies
3	JANES: Jezikoslovna analiza nestandardne slovenščine (Resources, Tools and Methods for the Research of Nonstandard Internet Slovene)	SI	Darja Fišer	National	100000 €	Humanities/Linguistics (6.05), project No. J6-6842	Europe in a changing world, inclusive innovative and reflective societies
4	PARSEME-FR: Syntactic Parsing and Multiword Expressions in French	FR	Mathieu Constant	National	732000 €	ANR generic call 2014, project No. ANR-14-CERA-0001	Europe in a changing world, inclusive innovative and reflective societies
5	PASTOVU: Lietuvių kalbos pastoviųjų žodžių junginių automatinis atpažinimas (Automatic Identification of Lithuanian Multi-word Expressions)	LT	Erika Rimkutė	National	120000 €	project No. LIP-027/2016	Europe in a changing world, inclusive innovative and reflective

							societies
6	Modélisation et Traitement des Expressions Poly-lexicales (MWE modeling and processing)	FR	Yannick Parmentier	National	3840 €	N/A ("délégation CNRS")	Europe in a changing world, inclusive innovative and reflective societies
7	New grammar of modern standard Slovene: resources and methods	SI	Jozef Stefan Institute	National	300000 €	Slovenian Research Agency	Europe in a changing world, inclusive innovative and reflective societies

Other outputs / achievements

Please enter below any additional outputs/ achievements on the topic of the Action that contribute to the COST mission: “COST enables break-through scientific developments leading to new concepts and products and thereby contributes to strengthen Europe’s research and innovation capacities", and for which the Action networking was necessary (e.g. a patent, standards, white paper).

Output / achievement description	Dependence of achievement on the Action networking
WG members' list, containing profiles and contacts of the members, is one of our **networking instruments** (http://www.info.univ-tours.fr/parseme).	High
Bojana Djordjevic (submitted) "Construction of a Formal Grammar of Serbian Using a Metagrammar", **PhD thesis**, under evaluation, supervised by **Cvetana Krstev**, University of Belgrade, Serbia	High
Jakub Waszczuk (submitted) "Leveraging MWEs in practical TAG parsing: towards the best of the two worlds", **PhD thesis**, under evaluation, supervised by **Agata Savary** and **Yannick Parmentier**, François Rabelais University Tours, France	High
Agata Savary (2014): "Representation and Processing of Composition, Variation and Approximation in Language Resources and Tools", **dissertation** in view of an accreditation to supervise research (Habilitation à Diriger des Recherches), Université François Rabelais Tours, France (http://www.info.univ-tours.fr/%7Esavary/Papers/savary-hdr-2013.pdf).	High
97 peer-reviewed publications additionally to those mentioned in "Action Publications" (https://typo.uni-konstanz.de/parseme/index.php/2-general/49-publications)	Medium

154 peer-reviewed posters presented at the action's general meetings (https://typo.uni-konstanz.de/parseme/index.php/2-general/160-posters)	High
Slides from 7 invited talks at the Action's workshops and meetings (https://typo.uni-konstanz.de/parseme/index.php/2-general/162-invited-talks).	High
7 courses and 6 tutorials from the actions' training schools and meetings (https://typo.uni-konstanz.de/parseme/index.php/2-general/163-tutorials)	High
PARSEME shared task (https://typo.uni-konstanz.de/parseme/index.php/2-general/165-shared-task) • a corpus of 5 million words, 60,000 MWE annotations in 18 languages • universal annotation guidelines for 21 languages • novel evaluation measures • technical infrastructure (annotation platform, conversion and evaluation scripts, corpus repositories, guides, discussion lists, issue tracker) • project management, with a structure based on language groups and roles (organizers, language group leaders, language leaders, annotators, etc.) • 7 systems for verbal MWE recognition in 18 languages	High
Agnieszka Patejuk (2015) "Unlike coordination in Polish: an LFG account", PhD thesis with honors, supervised by **Adam Przepiórkowski**, Institute of Polish Language, Polish Academy of Sciences, Warsaw, Poland. (http://nlp.ipipan.waw.pl/Bib/pat:15.pdf)	Low

Impacts

Please describe the impacts (the short- to long-term scientific, technological, and / or socioeconomic changes produced by a COST Action, directly or indirectly, intended or unintended) that have resulted, or might result, from the Action in the following table (one impact per line).

Description of the impact, i.e. what will change, and for whom, as a result of what the Action achieved	Type of impact	Timing of impact
Better understanding of the nature of MWEs in different European languages.	• Scientific / Technological	Achieved
Break-through in the processing of MWEs (advances in the state of the art).	• Scientific / Technological	Achieved
Establishing a lasting and fruitful collaboration among major scientific actors in the field in Europe and beyond.	• Scientific / Technological	Achieved
Strong implication on nationally-funded research by national spin-off projects and international spin-off events	• Scientific / Technological	Achieved
Higher cohesion of the European Research Area due to new or strengthened links with related initiatives: Special interest group SIGLEX-MWE section (common EACL-MWE workshops in 2014 and 2017; the section takes over the action's activities in 2017): Universal Dependecies (common members and treebank annotation methodologies, common shared task formats and data, perspectives for future synergies); IS 1305 ENeL COST action (common workshop in 2016, co-edited special issue of the International journal of Lexicography); Europhras community (common workshop in 2015); META-SHARE infrastructure (interlinking of MWE documentations); Metaphor community (invited talk by Katia Shutova on "The statistical modelling of metaphor", MWE 2014 workshop in Gothenburg (http://multiword.sourceforge.net/mwe2014/slides/Shutova-MWE-talk.pdf); Sign language community (invited talk by Irit Meir on "Sign languages and compounding", PARSEME 6th general meeting in Struga, Macedonia (https://typo.uni-konstanz.de/parseme/index.php/2-general/171-sign-languages-and-compounding)	• Scientific / Technological	Achieved
Increased multilingualism, coverage and robustness in NLP technologies	• Scientific / Technological	Achieved
Unified terminologies and methods in MWE modeling (cf. the PARSEME shared task guidelines for 21 languages)	• Scientific / Technological	Achieved
Increased participation of inclusiveness countries in the NLP community. Leveraging the languages spoken in these countries to enhance the universalism of multilingual terminologies and methods.	• Scientific / Technological • Societal	Achieved
Increased multilingualism, coverage and robustness in NLP applications and products, increasing their competitiveness and their accessibility to a large public	• Economic • Societal	Foreseen 2-5 years

Higher impact on multilingual language technologies in the European Union policies (action's active participation in the Open Letter to the EC requesting to address the multilingual challenge in the Strategy on the Digital Single Market, March 2015: http://multilingualeurope.eu).	• Scientific / Technological • Economic • Societal	Foreseen 2-5 years

Please describe how the Action has advanced careers, skills and network of researchers, including Early Career Investigators (for example: joint supervision of graduate and PhD students, research exchanges not funded by the action, collaborations, Training Schools with ECTS accreditation, joint projects, internship and job prospects.

PARSEME funded 39 Short Term Scientific Missions for 35 researchers and a total of 49 months with the following distribution: (i) early-stage researchers: 30 STSMs (77%); senior researchers: 9 STSMs (23%); (ii) male researchers: 20 STSMs (51%); female researchers: 19 STSMs (49%). Many STSMs initiated new research collaboration in which the young researcher played a central role. The 2nd PARSEME Training School, 27 June - 1 July 2017, in La Rochelle, France featured courses with ECTS accreditation. One early stage researcher from Greece and one from France were employed at research positions in Switzerland and Germany, respectively, as a result of new contacts established during STSMs funded by the action. One French MC member became the coordinator of a national spin-off project, which helped his recruitment as a full professor. One STSM of an ESR from France to Germany resulted in a senior German researcher becoming a PhD reviewer. One early-stage researcher received a post-doctoral fellowship at the University of Hong Kong. Her active participation in the Action was one of the major factors of this success. One Marie Skłodowska Curie mobility action proposal was submitted in 2016 by a senior researcher from France, and awarded a Seal of Excellence, following new research contacts with Germany.

The career benefits were mainly to researchers with the following amount of experience after their PhD: ≤ 8 years

Dissemination and exploitation of Action results (other than co-authored Action publications listed previously)

Please describe the Action's dissemination and exploitation approach as well as all activities undertaken to ensure dissemination and exploitation of the Action results and the effectiveness of these activities.

Dissemination and exploitation approach of the Action

n/a

Dissemination meetings funded by the Action

Title of Dissemination meeting	Meeting date	Meeting country	Action participant	Event name and hyperlink to the website	Title of presentation	Description of added value to the Action
7th Language & Technology Conference	27-11-2015 to 29-11-2015	Poland	Dr Agata Savary	7th Language & Technology Conference, Poznań, Poland	"PARSEME - PARSing and Multiword Expressions within a European multilingual network" Agata Savary, Manfred Sailer, Yannick Parmentier, Michael Rosner, Victoria Rosén, Adam Przepiórkowski, Cvetana Krstev, Veronika Vincze, Beata Wójtowicz, Miriam Butt, Gyri Smørdal Losnegaard, Carla Parra Escartín, Jakub Waszczuk, Matthieu Constant, Petya Osenova and Federico Sangati	This paper is the main dissemination paper of the action, co-authored by all members of the Steering Committee, and presenting the state of the art of the action's domain of interest, its organisation, instruments, policy and results so far.

Other dissemination activities

E.g. participation to non-Action meetings, e.g. EU Parliament, meetings with policy makers, experts in the field, regional authorities.

Item/activity	Target audience	Outcome	Hyperlink
Participation in the Open Letter to the EC requesting to address the multilingual challenge in the Strategy on the Digital Single Market, March 2015	the European Commission	3649 experts from 26 countries signed the petition, several dozens of them are members of the Action	http://multilingualeurope.eu
MWE games	Scientific public. Large non-expert public.	Database of idioms in many languages structured as games for an easy, user-friendly and appealing discovery of mental images, metaphors and stereotypes conveyed by MWEs in various countries.	https://typo.uni-konstanz.de/parseme/index.php/2-general/192-mwe-games-dubrovnik-27-september-2016

Exploitation activities

Please describe below any activities undertaken to ensure exploitation (use, in particular in a commercial context) of the Action's achievements.

Item/activity	Target audience	Outcome
N/A		

Action Success(es)

Taking into account the achievements, impacts and policy implementation of the Action described in the preceding sections, please describe below the two most significant successes of the Action.

Description of the success	PARSEME shared task on automatic identification of verbal multiword expressions (VMWEs): (i) unified annotation guidelines and annotation methodologies for 21 languages, (ii) a corpus of 5 million words and 50,000 VMWE annotations in 18 languages, (iii) a competition with an unprecedented number of languages (18) in the NLP domain, (iv) one of the biggest (if not the biggest) satellite event of the EACL 2017 conference; (iv) a strong community ready to perpetuate and enhance these results beyond the action duration.
Dimensions of the success	• Scientific breakthrough • Building capacity in an existing field of science and technology • Building capacity in the demographic inclusiveness of networks in science and technology, including representation of newly established research groups, Early-Career Investigators, the under-represented gender and teams from countries/regions with less capacity in the field of the Action

Description of the success	Excellent balance and inclusiveness indicators in the Action: (i) 49% of the action's members, 53% of the Steering Committee, and 41% of the Management Committee are women, which is largely above the average rate in ICT actions; (ii) 53% of the action members and 47% of the Steering Committee are early-stage researchers; (iii) 5 out of 7 bi-annual meetings of the action were hosted in ITC countries, close to 46% of the STSMs involved an ITC country either as the source or the target country; close to 50% of the action's budget was spent in ITC countries.
Dimensions of the success	• Building capacity in the demographic inclusiveness of networks in science and technology, including representation of newly established research groups, Early-Career Investigators, the under-represented gender and teams from countries/regions with less capacity in the field of the Action

Other matters

This section is confidential to the Management Committee, the Action Rapporteur and the COST Association, and is not included in the version of the report that is published on the COST website.

Added value of extension

The Action end date was extended beyond the original end date (four years after the first MC meeting of the Action) please describe below why this extension was necessary and the added value of the extension.

The extension request was motivated by a high-impact initiative: the shared task on automatic detection of verbal Multiword Expressions, whose culminating event was the workshop co-located with a high-profile conference - EACL 2017 - in Spain early April 2017 (shortly after the original end of Action). The extended budget allowed to fund 27 participants to the workshop. The workshop was one of the biggest (if not the biggest) satellite event of the conference.

Difficulties in implementing the Action

If any difficulties were experienced in the implementation of the Action (e.g. imbalances of participation across the Working Groups, inactive country representatives) please described these below. Please also describe the efforts made by the MC to address these.

- INACTIVE MC MEMBERS. Some MC members were relatively inactive in the network. As many as around 30 MC members were not registered members of working groups. Some (few) never came to meetings and did not take part in votes. Their scientific interests seemed rather distant from those of the action. Some (few) member countries were virtually never represented. Actions were taken in Denmark and in Spain to replace the less active MC members by more active participants, who joined the Action at a later stage.

- POLITICAL ISSUES. The political conflict in Gaza in summer 2014 provoked the relocation of the Action's meeting planned for Haifa, Israel in September 2014. Acting under emergency mode required considerable organizational efforts and was also an emotional challenge for the community. Also, the political crises in Greece in Spring 2015 and in Turkey in summer 2016 hindered the participation of several members in two events of the Action. COST did not agree to cover the non-refundable travel costs of the 2 Greek members from the Action's budget.

- CULTURAL CONSTRAINTS. Some action members were hindered from active participation in the Action's activities because of cultural constraints, e.g. if meetings were organised during national or religious holidays in their countries. We tried to take such constraints into account, especially at later stages of the action (e.g. while choosing the dates of the 2nd training school and of the last general meeting conflicting dates could be avoided).

- AMOUNT OF ADMINISTRATIVE WORK. Some members pointed out that too much time was spent in general meetings on administrative/organizational issues and that the time spent together should be almost entirely dedicated to scientific work. We took this remark into account at later stages of the action. The organisational meetings were shorter or ran in parallel with scientific meetings.

- BUDGET DELAYS. In several cases, the Grant Holder faced large delays in budget transfer. As a consequence, we had no visibility of our reimbursement capacities and we underspent a part of the allocated budget in year 2. Many members were exposed to long reimbursement delays in year 2 and 4, which decreased their confidence in the funding scheme.

Suggestions for improvements to COST framework/ procedures

The mandate of the Scientific Committee includes providing advice to the COST Committee of Senior Officials on possible improvements to the COST framework. Please describe below any improvements that you believe should be made to the COST framework.

Better communicate with the CNCs on the importance of nominating the right MC members. Assist action chairs who play this role for the first time, in promoting the most appropriate MC nominations.

Sustaining the network beyond the Action

Are there any plans to sustain the network beyond the end of the Action?	YES

Please describe how the network will be sustained beyond the end of the Action.

1. SIGLEX-MWE SECTION. The sustainability of the network will be possible due to the Special Interest Group on the Lexicon (SIGLEX) at ACL (the major international scientific and professional society in the NLP domain). SIGLEX has a section dedicated to multiword expressions (chaired since 2016 by the PARSEME action's chair). The PARSEME and SIGLEX-MWE communities now largely overlap. The main activities of the SIGLEX-MWE section will include: (i) perpetuating the annual MWE workshop and extending its scope to related domains (constructions, metaphor), (ii) reiterating the PARSEME shared task on automatic identification of verbal MWEs, with new languages (e.g. Asian languages) and enhanced methodologies, (iii) seeking for synergies with other highly multilingual initiatives such as Universal Dependencies, so as to put forward terminologies and methods which are highly universal but which still take language specificities into account. In this way the action's assets will be perpetuated and extended into a larger international scope.

2. PMWE BOOK SERIES. "Phraseology and Multiword Expressions" (PMWE) - an Open Access book series within Language Science Press was created in 2016 as a PARSEME spin-off initiative. The five editors are the action's chair and Working Group leaders. The editorial board consists of the action's members and some other non-COST experts.

Emerging topics/ developments in the field of the Action

Please describe any emerging topics or potentially important future developments identified during the Action and that could potentially be addressed by future COST activities such as Actions S&T Conferences or Exploratory Workshops.

Annex 1: Types of objectives

1 - Coordination of scientific and technological activities at a European level

1.a - Development of a common understanding/definition of the subject matter

1.b - Coordination of information seeking, identification, collection and/or data curation

1.c - Coordination of experimentation or testing

1.d - Comparison and/or performance assessment of a theory, model, methodology, technology or technique

1.e - Development of knowledge needing international coordination, pertaining to a new or improved theory, model, methodology, technology or technique

1.f - Achievement of a specific tangible output that cannot be achieved without international coordination (e.g. due to practical issues such as database availability, language barriers, availability of infrastructure or know-how, etc.)

1.g - Input to stakeholders (e.g. standardization body, policy-makers, regulators, users), excluding commercial applications

1.h - Input for future market applications (including cooperation with private enterprises)

1.i - Dissemination of research results to the general public

1.j - Dissemination of research results to stakeholders (excluding specific input in view of knowledge application)

2 - Community building

2.a - Building a community around a topic of scientific and/or socio-economic relevance, allowing for knowledge exchange and the development of a joint research agenda

2.b - Building a community around a new or emerging field of research

2.c - Bridging separate fields of science/disciplines to achieve breakthroughs that require an interdisciplinary approach

2.d - Acting as a stakeholder platform or trans-national practice community, pertaining to a certain area of socio-economical or societal application, or to a certain market sector

2.e - Building capacity in the demographic inclusiveness of networks in science and technology, including representation of newly established research groups, Early-Career Investigators, the under-represented gender and teams from countries/regions with less capacity in the field of the Action

Annex 2: Dimensions of successes

1 -Breakthroughs

- 1.a -Scientific breakthrough
- 1.b -Technological breakthrough
- 1.c -Breakthrough in socio-economic or societal applications

2 -Policy contribution

- 2.a -Contribution to regulatory policy
- 2.b -Contribution to environmental, infrastructural or agricultural policy
- 2.c -Contribution to economic or socio-economic policy
- 2.d -Contribution to social, cultural or legal policy

3 -Capacity building

- 3.a -Building capacity in an existing field of science and technology
- 3.b -Building capacity in bridging separate fields of science and technology
- 3.c -Building capacity in a new or emerging field of science and technology
- 3.d -Building capacity in valorising and implementing advances and applications in science and technology
- 3.e -Building capacity in the demographic inclusiveness of networks in science and technology, including representation of newly established research groups, Early-Career Investigators, the under-represented gender and teams from countries/regions with less capacity in the field of the Action