

# Curriculum Vitae

## Personal Data



First: Elena;

Last: Cardillo

Place of birth:

Date of birth:

Position: Researcher at Institute of Informatics and Telematics, Italian National Research Council (IIT-CNR)

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## Education and Training

- November 2007 – April 2011: Ph.D in Information and Communication Technologies – Computer Science area (Data and Knowledge Management), University of Trento, affiliation DKM and eHealth research unit of Fondazione Bruno Kessler (FBK), Povo, Trento (Italy).  
Ph.D Thesis focused on the creation of: “*A Lexical-ontological Resource for Consumer-oriented Healthcare*”.  
Main exams taken during the Ph.D: Knowledge Representation and Formal Ontologies; Language Resources and Ontologies; Text Processing II; Advanced Data Mining; Foundations of Conceptual Modelling and Ontological Analysis; Technical English.  
Ph.D thesis’ defense given on April 19, 2011.
- February 2005 - February 2007: Master Degree in “Informatica per le Discipline Umanistiche” (Digital Humanities), focusing area “Knowledge Management”, University of Calabria (Italy).  
Thesis title: “*A semantic IntraWeb for Knowledge Management in complex public organizations: The Italian National Council case study*”.  
Main exams: Documentation and Library Science, Digital Archives, Hypermedia Systems and Information Retrieval, Web and Text Mining, Formal Languages Theory, Markup Languages and Text Encodings; Semantics and Linguistics, Classification and Indexing Systems; Knowledge Management and Representation.  
Final mark 110/110 Magna cum laude, February 23, 2007.
- November 2011 – July 2004: Bachelor’s degree in “Mediazione Linguistica” (Linguistic Mediation), focusing area: “tourism and culture”, University of Calabria (Italy).  
Main Exams: Archives and Digital Libraries; Documentation; Linguistics; Phonetics; English language and Translation; German literature and language; Arabic culture and language.  
Final Mark: 110/110 Magna cum laude, July 22, 2004.

## Training Courses and Summer Schools:

- 20 - 24 January 2014: LOT Winter School 2014: courses on Semantics and “Intro/State of the art Computational Linguistics”, at VU University Amsterdam, the Netherlands;
- 08 July – 16 September 2013: course on “Project Management”, at Fondazione Bruno Kessler, Povo, Trento, Italy;
- 20 - 31 July 2009: 21<sup>st</sup> European Summer School in Logic, Language and Information, (ESSLLI09), Bordeaux – France. Main courses: Logic and Language, Computational Linguistics, Knowledge representation languages; Ontology Modelling.

- November 2008: Training course of the software “PCPACK5 - *Knowledge tools designed to support the acquisition and use of knowledge*”, organized by the English company *Epistemics*, at the University of Calabria.
- 6 - 12 July 2008: 6<sup>th</sup> Summer School on “Ontological Engineering and Semantic Web” (SSSW08), Cercedilla – Spain. Main courses: Semantic Web technologies overview; OWL – the Web Ontology Language; Knowledge Base design and conceptualization; Ontology Engineering; Ontology Matching and Alignment; Human Language Technology and Machine Learning for Semantic Web; Semantic Web Services.
- 8 - 30 August 2007: Intensive course of French, at CLA - Centre de Linguistique Appliquée, Université de Franche-Comté de Besançon - France. Acquired level B1.

## Research Interests

Knowledge acquisition, management and representation; Ontology Engineering and Semantic Web applied to Healthcare; Medical Terminology Integration, Classification Systems, Consumer Healthcare, Information Extraction; Analysis of medical terminology: technical medical lexicon vs consumer-oriented lexicon, creation of dictionaries and thesauri for Healthcare.

## Professional and Academic Experience

### Positions held

- November 2013 – Present: Researcher at the Institute for Informatics and Telematics (IIT), Italian National Council of Research (CNR), Rende (CS), Italy. Research activity focused on the creation of metadata models, authority lists and ontologies for the description and indexing of federated digital library entities (i.e. information objects, agents, events) .
- May 2011 – November 2013: Researcher at e-Health Unit, Fondazione Bruno Kessler, Povo (TN), Italy. Research activity focused on methodologies for the creation, formalization and integration of medical terminologies, ontologies and classification systems, used in healthcare applications or Information Systems devoted to healthcare consumers as well as to healthcare professionals, using Semantic Web Technologies and tools.

September 2011 – June 2012: Collaboration activity to the Project OpenInFSE (Evoluzione e interoperabilità tecnologica del Fascicolo Sanitario Elettronico), with the UOS-IIT CNR “Sistemi di Indicizzazione e Classificazione”, Rende, Cosenza. Research activity focused on the analysis of the use of medical coding systems for the primary care domain, in the Italian regions that participated at the experimentation of the FSE (Fascicolo Sanitario Elettronico) and in the Autonomous Province of Trento, with the aim of integrating the used coding systems and proposing a new reference terminology for the access to FSE by consumers and general practitioners.

- January 2010 – March 2011: Collaboration activity to the Italian National Project “Fascicolo Sanitario Elettronico” (FSE) for the creation of a national unified Electronic Health Record for patient’s process of care, coordinated by URT - CNR “Classification and Indexing Systems”, in Rende (CS). Research activity devoted to the development of a standardized methodology for Patient healthcare data pseudonymization (segmentation) in the context of the unified Electronic Health Record (FSE).
- November 2007 – April 2011: Research consultant at the eHealth research unit of FBK (Trento), for the creation of the Italian Consumer-oriented Medical Vocabulary (ICMV), activity integrated in the Regional Project “TreC” (Cartella Clinica del Cittadino), aimed at the creation of a Personal Health Record for the Province of Trento. The creation of ICMV was also one of the tasks of the Ph.D activity.
- July 2007 - July 2008: Research consultant at LABDOC research group, Department of Linguistics, University of Calabria (Italy). Research activity was focused on the creation of a Multilingual Thesaurus for the Handicraft domain, aiming at the resolution of specific problems related to Knowledge Management for the specific field.

- May - July 2007: Research consultant at the Human Languages and Technologies (HLT) Unit of FBK (Trento), joint with the Italian National Council of Research (CNR). Research activity here was focused on the development of a Geographic Ontology for the Province of Trento.

### Stages and Scientific visits

- 07 – 14 July 2012: Visiting at the Heymans Institute of Pharmacology, University of Ghent, Belgium. Visiting focused on the study of ISO 16642:2006 Terminology Markup Framework (TMF), ISO-24613:2008 Lexical Markup Framework, e ISO 12620 plus ISOCat data category registry, and on the formalization of their meta-models in OWL (Ontology Web Language).
- 10-18 July 2011: Visiting at the Heymans Institute of Pharmacology, University of Ghent, Belgium. Visiting focused on the study of new methodologies for the creation of multilingual terminologies for the primary care domain and for the Belgian context, devoted both to healthcare consumers and to physicians and available as Linked Data.
- April – July 2010: Fellowship at the National Library of Medicine (NLM –NIH) – Lister Hill Center for Biomedical Communication, Bethesda (MD), USA. Research activity was focused on the creation of an integration framework for consumer-oriented healthcare terminologies and UMLS vocabularies by using Semantic Web technologies (RDF/OWL and SPARQL queries) to extract semantic mappings between the terminologies taken into account.
- November 2006 - April 2007, Italian National Research Council (CNR), Rome – SeGiD group and ISTC Institute, where I carried out my Master Thesis. Research activity was focused on a project proposed by the ISTC-CNR, in the field of Ontologies and Semantic Web, with the specific aim of the development of a Semantic IntraWeb for CNR Knowledge representation, and the general aim of the creation of a Collaborative Semantic Web Layer to enhance Legacy Systems.

### Language Skills

MOTHER TONGUE

**ITALIAN**

OTHER LANGUAGES

**ENGLISH**

- Reading skills EXCELLENT
- Writing skills EXCELLENT
- Verbal skills EXCELLENT

**FRENCH**

- Reading skills GOOD
- Writing skills GOOD
- Verbal skills GOOD

**SPANISH**

- Reading skills BASIC
- Writing skills BASIC
- Verbal skills GOOD

**GERMAN**

- Reading skills BASIC
- Writing skills BASIC
- Verbal skills BASIC

## **International Language Certification**

November 2007: DELF B1 for French

## **Affiliation to organizations and scientific committee**

- July 2013 – present: Associate member of Wonca International Classification Committee (WICC), international organization that is responsible for the update, revision and dissemination of the International Classification of Primary Care (ICPC).
- January 2011 – present: Member of “ICPC2 Club Italia” – National organization which promotes in Italy the dissemination and use of the International Classification of Primary Care, WONCA-ICPC.
- June 2007 – present: Member of Ass.I.Term. – Italian Association of Terminology.
- November 2007 – present: Member of AIDA – Italian Association for Advanced Documentation.

## **Research Activities & Exploitation**

### **Publications**

#### **Monographs:**

E. Cardillo. A Lexi-ontological Resource for Consumer Healthcare: The Italian Consumer Medical Vocabulary. PhD thesis, University of Trento, Fondazione Bruno Kessler, 2011.  
E-print disponibile al link: <http://eprints-phd.biblio.unitn.it/570/>

#### **Book chapters:**

1. E. Cardillo e E. Pasceri. Terminologie e sistemi di classificazione medica a supporto del Fascicolo Sanitario Elettronico. In M.T. Guaglianone, I. Florio. (Eds.), *Il fascicolo sanitario elettronico: infrastruttura tecnologica e codifica dei dati*, Vol. 2, Chap. 4, CNR – SeGID, Roma, pp. 129-160, 2012.
2. I. Florio e E. Cardillo. Terminologie mediche orientate al paziente per l'accesso al Fascicolo Sanitario Elettronico. In M.T. Guaglianone, I. Florio. (Eds.), *Il fascicolo sanitario elettronico: infrastruttura tecnologica e codifica dei dati*, Vol. 2, Chap. 6, CNR – SeGID, Roma, pp. 187-208, 2012.

#### **Publications in Journals:**

- 1 M. Jamouille, E. Cardillo, J. Roumier, M. Warnier, R. Vander Stichele. Terminological analysis of a Belgian Heart Failure Guideline in French and mapping to international terminologies and classifications: the devil is in the detail. In *Informatics in Primary Care*, 2014 (to appear).
- 2 J. Roumier, M. Jamouille, R. Vander Stichele, L. Romary, E. Cardillo. Towards a terminologies support system in primary care. In *Informatics In Primary Care*, vol. 19, n. 4, July, pp. 257-258, 2011.
- 3 E. Cardillo and A. Folino. Terminologia e documenti per la formalizzazione standardizzata della Conoscenza. In *AIDAinformazioni*, Journal of Information Science, January-June, year 26, n.1-2:215-225, 2008.
- 4 E. Cardillo, A. Cosentino, A. Folino, R. Guarasci, and M. Taverniti. Gestion et formalisation de la connaissance tacite des matres-artisans de la Calabre. In *Archivesic* (Paris), pages 51-65, 2008.

## Publications in National and International Conference Proceedings:

1. M. Rospocher, E. Cardillo, I. Donadello, L. Serafini. On the collaborative development of application ontologies: a practical case study with a SME. In Proceedings of the 19th International Conference on Knowledge Engineering and Knowledge Management (EKAW 2014), 24 - 28 November 2014, Linköping, Sweden (to appear).
2. S. Cramerotti, M. Buccio, G. Vaschetto, L. Serafini, M. Rospocher, E. Cardillo, I. Donadello. ePlanning: an Ontology-based System for Building Individualized Education Plans for Students with Special Educational Needs, In Proceedings of the 13th International Semantic Web Conference (ISWC 2014), Industry Track, 2014 (to appear).
3. E. Cardillo, M. Warnier, J. Roumier, M. Jamouille, R. Vander Stichele. Using ISO and Semantic Web standards for creating a Multilingual Medical Interface Terminology: A use case for Heart Failure. In G. Aguado de Cea, N. Aussenac-Gilles (eds.), Terminologies and Terminology and Artificial Intelligence, Paris, IRIT, 2013, pp. 27-34, (10th International Conference on Terminology and Artificial Intelligence - TIA2013, Paris, 28 - 30 October).
4. C. Thorne, E. Cardillo, C. Eccher, M. Montali, D. Calvanese. Process Fragment Recognition in Clinical Documents. In M. Baldoni, C. Baroglio, G. Boella, R. Micalizio (eds.), AI\*IA 2013: Advances in Artificial Intelligence, Heidelberg - Berlin, Springer, vol.8249, 2013, pp. 227-238, (thirteenth International Conference on Advances in Artificial Intelligence (AI\*IA 2013), Torino, Italy, December 4-6, 2013).
5. E. Cardillo. Formalizzazione ontologica di terminologie e sistemi di classificazione in ambito biomedico: il caso ICPC2-ICD10. In P. Collesi, A. Serpente, M.T. Zanola (eds.), Terminologie e Ontologie. Definizioni e comunicazione fra norma e uso, Milano, EDUCatt, 2013, pp. 51-64.
6. E. Cardillo, G. Hernandez, O. Bodenreider. Integrating consumer-oriented vocabularies with selected professional ones from the UMLS using Semantic Web Technologies. In M. Szomszor, P. Kostkova, O. Akan, P. Bellavista, J. Cao, D. Jiannong, F. Dressler, D. Ferrari, M. Gerla, H. Kobayashi, S. Palazzo, S. Sahni, X. Shen, M. Stan, J. Xiaohua, A. Zomaya, G. Coulson (Eds.), Electronic Healthcare, Proceedings of e-Health2010, Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol. 69, Part 4, pp. 54-61, Springer Berlin Heidelberg, 2012.
7. R. Vander Stichele, M. Jamouille, E. Cardillo, J. Roumier, L. Romary, E. van Nimwegen, M. Warnier, A combined onomasiological and semasiological approach to the development of a comprehensive interface terminology for information storage and retrieval in primary health care. In proceedings of CISP-Club 2012 Conference, Bruxelles, Belgium, 15/10/2012.
8. M. Jamouille, R. Vander Stichele, J. Roumier, E. Cardillo. Analysing terms of a narrative family medicine guidelines using ICPC, ICD, SNOMED-CT and UMLS. 2012. In proceedings of WONCA Europe Conference, Vienna, Austria, 4-7 July 2012.
9. M. Warnier, J. Roumier, M. Jamouille, R. Vander Stichele, L. Romary, E. Cardillo. Publishing a Multilingual Medical Terminology According to Terminology Standards and Linked Data Principles, 2012. In proceedings of Monnet Challenge - SABRE Conference 2012, Leipzig, 24-25 September, 2012.
10. E. Cardillo, L. Serafini, A. Tamilin. A Methodology for Knowledge Acquisition in Consumer-Oriented Healthcare. In Knowledge Discovery, Knowledge Engineering and Knowledge Management, Proceedings of the International Conference IC3K2009, Communications in Computer and Information Science, Vol. 128, Part 3, pp. 249-261, Springer Berlin Heidelberg, 2011.
11. E. Cardillo, A. Folino, M.T. Guaglianone, F. Iozzi, M. Taverniti. Terminologia specialistica per l'artigianato orafa e tessile calabrese". In Terminologie specialistiche e prodotti terminologici a cura di Maria Teresa. Zanola, Maria Francesca Bonadonna, Milano, EDUCatt, 2011, pp. 31-46.
12. E. Cardillo, L. Serafini, A. Tamilin. A Hybrid Methodology for Consumer-oriented Healthcare Knowledge Acquisition. In Knowledge Representation for Health-care: Data, Processes and Guidelines, LNCS(LNAI), vol. 5943, pp. 38-49, Springer, Heidelberg, 2010.
13. E. Cardillo, A. Folino, R. Guarasci, M. Taverniti. GoldThes: A Faceted Thesaurus for Goldsmith's Art in a Regional Context. Proceedings of the 11<sup>th</sup> ISKO International Conference 2010, Rome - Italy, February 23-26, 2010, Ergon Editor.
14. E. Cardillo, A. Folino, F. Iozzi, M. Taverniti, and E. Oliveri. Towards a Thesaurus for Energy Efficiency in Building Construction: the Italian context. Proceedings of the 8<sup>th</sup> International Conference on Terminology and Artificial Intelligence (TIA 2009), Toulouse - France, November 18-20, 2009.

15. E. Cardillo: A Lexical-Ontological Resource for Consumer Healthcare. Proceedings of the 8<sup>th</sup> International Semantic Web Conference, ISWC2009 – Doctoral Consortium, Washington DC - USA, October 24-29, 2009.
16. E. Cardillo, L. Serafini, A. Taminin. Hybrid Methodology for Consumer-oriented Healthcare Knowledge Acquisition. Proceedings of the International Conference on Knowledge Engineering and Ontology Development, KEOD2009, Madeira – Portugal, October 6-8, 2009.
17. E. Cardillo, L. Serafini, A. Taminin. A Lexical-Ontological Resource for Consumer Healthcare. Proceedings of the 2<sup>nd</sup> International ICST Conference on Electronic Healthcare for the 21<sup>st</sup> century, eHealth2009, Istanbul –Turkey, September 22-26, 2009.
18. E. Cardillo, R. Guarasci, M. Taverniti and A. Folino. Multilingual Taxonomic and Terminological Structures of a Domain. Proceedings of the 4th International Conference on Globalization and the Management of Information Resources, SOFIA2008, Sofia - Bulgaria, November 12-14, 2008, University Press.
19. E. Cardillo, C. Eccher, L. Serafini and A. Taminin. Logical Analysis of Mappings between Medical Classification Systems. Proceedings of the 13<sup>th</sup> International Conference on Artificial Intelligence: Methodology, Systems, Applications, AIMS2008, Varna – Bulgaria, pages 311-321, Springer Berlin, 2008.
20. E. Cardillo, A. Cosentino, R. Guarasci, and M. Taverniti. Gestion et formalisation de la connaissance tacite des maîtres-artisans de la Calabre. Proceedings of the 1<sup>st</sup> International Conference on "Systèmes d'information & Intelligence Economique (SIIE2008), Hammamet –Tunisia, Vol. I, pages 564-576, IHE editions, 2008.
21. E. Cardillo, A. Gangemi, A. M. Gliozzo, V. Presutti, E. Daga, A. Salvati and G. Troiani. A Collaborative Semantic Web Layer to Enhance Legacy Systems. Proceedings of the 6<sup>th</sup> International Semantic Web Conference, ISWC2007, pages 764-777, Springer Berlin, 2007.

#### **Publications in International Workshop Proceedings:**

1. E. Cardillo, A. Folino, R. Trunfio, R. Guarasci. Towards the reuse of standardized thesauri into ontologies. In Proceedings of the 5th Workshop on Ontology and Semantic Web Patterns (WOP2014) co-located with ISWC2014 (to appear).
2. D. Mirylenka, M. Rospocher, I. Donadello, E. Cardillo, L. Serafini. Exploring an ontology via text similarity: an experimental study. In Proceedings of the Workshop on Intelligent Exploration of Semantic Data (IESD2014), co-located with ISWC2014 (to appear).
3. C. Thorne, E. Cardillo, C. Eccher, M. Montali, D. Calvanese. The VeriCliG Project: Extraction of Computer Interpretable Guidelines via Syntactic and Semantic Annotation. Proceedings of the first Computational Semantics in Clinical Text Workshop (CSCT 2013), Potsdam – Germania, 19 Marzo 2013.
4. J. Roumier, R. Vander Stichele, L. Romary, E. Cardillo. Approach to the Creation of a Multilingual, Medical Interface Terminology. In M. Slodzian, M. Valette, N. Aussenac-Gilles, A. Condamines, N. Hernandez, and B. Rothenburger (eds.), Workshop Proceedings of the 9th International Conference on Terminology and Artificial Intelligence (TIA2011), Paris (France), pp. 13-15, INALCO, 2011.
5. E. Cardillo, L. Serafini, A. Taminin. A Hybrid Methodology for Consumer-oriented Healthcare Knowledge Acquisition. Proceedings of the International Workshop on Knowledge Representation for Health Care, KR4HC2009, Verona - Italy, July 19<sup>th</sup>, 2009.

#### **Posters at International Workshops and Conferences:**

1. C. Thorne, E. Cardillo, C. Eccher, M. Montali, D. Calvanese. Automated Activity Recognition in Clinical Documents. Proceedings of International Joint Conference on Natural Language Processing (IJCNLP 2013), Nagoya – Japan, 14-18 October 2013.

#### **Invited Talks/Seminars:**

1. Invited talk: "Integrating consumer-oriented vocabularies with selected UMLS ones through ICPC2 and Semantic Web Technologies", 40th WICC Annual Meeting, Ravello, Italy, 30 Ottobre 2012.

2. Invited talk: "Utilizzo dei sistemi di codifica ICPC2 e ICD9-CM per le cure primarie: il caso di studio trentino", 3rd Italian Congress on the International Classification of Primary Care, Valmadrera – Lecco, Italy, 15-16 September, 2012.
3. Seminar: "Data and Knowledge Engineering for Healthcare", at Faculty of Computer Science and Technologies - Free University of Bozen, Bolzano, 15 February, 2012.
4. Invited Talk: "A Lexi-ontological Resource for Consumer-oriented Healthcare", at the LT3 - Language and Translation Technology Team", University of Ghent; Ghent (Belgium), 12 July, 2011.
5. Invited talk: "ICPC attraverso l'Europa: similitudini e differenze in Italia, Malta e Olanda", 2<sup>nd</sup> Italian Congress on the International Classification of Primary Care; Ferrara (FE), Italy, 22-23 October, 2011.
6. Invited talk: "ICPC2 per l'integrazione semantica tra vocabolari medici comuni e sistemi di codifica medica in UMLS", 1<sup>st</sup> Italian Congress on the International Classification of Primary Care; Pontecchio Polesine (RO), Italy, 2-3 July, 2011.
7. Seminar: "Integrating consumer-oriented vocabulary with selected ones in UMLS using Semantic Web Technologies", at National Library of Medicine (NLM NIH), Bethesda (MD), USA, 28 June, 2010.
8. Seminar: "From thesaurus to ontology: the TERMINAE methodology", at Fondazione Bruno Kessler, Povo (TN), 26 January, 2010.

#### **Awards:**

1. M. Warnier, J. Roumier, E. Cardillo, R. Vander Stichele, M. Jamouille, Meriterm Heart Failure Multilingual Terminology. Runner- up award at the Monnet Challenge Programme for Linked Data publication on the web, 2012.
2. National Library of Medicine Award for contributions given during my appointment to the NLM Research Participation Program, Lister Hill Center NLM – NIH, Bethesda (MD).