Curriculum vitae et studiorum - Ernesto Damiani

Biographical data and contact info:
- Name: Ernesto Damiani
- Date of birth: September 18, 1960
- Citizenship: Italian
- Current affiliation: Information Security Research Center and Etisalat British Telecom Innovation Center, KUSTAR, Abu Dhabi (on leave from Department of Computer Science, Università degli Studi di Milano)
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Academic Training and Education
- 1990 - 1994 Ph.D. in Computer Science, Università degli Studi di Milano , Italy
- 1979 - 1984 Bachelor and Master in Computer Engineering, Università di Pavia, Italy
- 1976 Certificate of Proficiency in English, University of Cambridge, UK

Professional Career
- 2014 – present: Full Professor, KUSTAR
- 2002 – present: Full Professor, Department of Computer Science, Università degli Studi di Milano, Italy
- 2008 – 2015: Head, Ph.D. Program in Computer Science, Università degli Studi di Milano, Italy
- 2006 – 2009: Chairman of the Board, MiPiace.com, a company in charge of setting up a fiber-optics network of services for the public administration in the Emilia Region of Italy.
- 2000 – 2002: Associate Professor of Computer Networks and Distributed Systems, Department of Computer Science, Università degli Studi di Milano, Italy
- 1996 – 2000: Assistant Professor of Computer Networks and Distributed Systems, Department of Computer Science, Università degli Studi di Milano, Italy

Visiting Positions (partial)
- 2011 – 2013 Visiting Professor, Tokyo Denki University, Japan
- 2012 – 2013 Visiting Professor, EBTIC, Abu Dhabi
- 2010 – 2011 Visiting Professor, INSA-Lyon, France
- 2010 – 2011 Visiting Professor, Université de Bourgogne, France
- 2008, Visiting Professor, University of Technology, Sydney, Australia
- 2006, Fellow, Center for Secure Information Systems, George Mason University, US
- 1999 – 2000 Visiting Professor, Dept. of Computer Science, George Mason University, US
- 1998 – 1999 Visiting Professor, LaTrobe University, Melbourne, Australia

Scientific Profile
Ernesto Damiani is a leading researcher in the fields of process and service security. His pioneering work on XML and Web services security provided an entirely new vision of the representation of services' non-functional properties via policies acting on XML data items being exchanged during process execution.
Ernesto's innovative vision, based on the idea of modeling policies as tree transformations on XML data, is complementary to encryption, and was documented in a number of pioneering

papers dating back to the late Nineties. It triggered a large discussion in the web service community to which Ernesto greatly contributed; also, it was at the basis of a number of influential papers and workshops, including the XML Security workshop (later Secure Web Services workshop) held for ten years at ACM CCS.

Ernesto's outstanding achievements in Web service and business process security had a long lasting impact on the development of many basic security protocols for Web Services, such as XML Security, the WS-* series of proposals, SAML, and particularly on the XACML standard, to the first version of which the nominee personally contributed. All these Web Services protocols and standards are today the basic set of building blocks enabling Service-oriented architectures and the nodes of GRID architectures to interoperate securely; in particular, XACML is a well-recognized reference for international academic work.

Today, the strong influx of the Ernesto's published work is clearly visible not only in the ideas underlying current Web service security solutions, but also in the details of their practical implementations, e.g. on the techniques used to efficiently implement tree transformations on the XML data model.

Ernesto also performed some seminal research work toward taking into account certified representations of Web services' non-functional properties like confidentiality, authenticity, integrity and reliability when performing service selection and composition into processes. This idea has revived the time-honored notion of assurance certification, providing a suitably dynamic notion of certified process and service assurance, which was successfully applied in a number of large-scale research project and promptly found its way in the Horizon 2020 European research agenda.

Ernesto Damiani's related idea of extending this model to represent the economic value of information items exchanged between services in process choreography has also fostered a further evolution of current process design practices, leading to a quantitative notion of risk linked to potentially dysfunctional behavior of untrusted services in processes' execution. This notion has been used in the framework of industrial projects to design collaborative systems (e.g. for intrusion detection and for security assessment) where only partial (i.e., low-risk) information disclosure is required.

Publication Record

Ernesto Damiani ranks among the top researchers in his discipline in terms of all indicators. His DBLP entry is available at (http://www.informatik.uni-trier.de). According to Google Scholar, Ernesto's Damiani's work has been cited more than 8500 times and his Hirsch Index is 39. More than 114 papers of his have at least 10 citations (Google i10 index). With more than 300 publications listed on DBLP and more than 80 publications on IEEExplorer, Ernesto is considered among the most prolific European computer scientists.

Ernesto Damiani is also co-author of several industrial patents together with researchers from private companies like British Telecom, EBTIC and Siemens Networks (now Nokia Siemens). He is also the author of several books both in English and Italian; most notable are "Open Source Systems Security Certifications" (with C. Ardagna, N. El Ioini, Springer, 2008), "Intelligent Multimedia Multi-Agent Systems: A Human-Centered Approach (with R. Khosla, I. K. Sethi, Springer, 2010)", and "Human-Centered e-Business" (with R. Khosla and W. Grosky, 2003). His most cited papers (see also his list of publications below) deal with

(a) modeling and analysis of process and service security (his papers on this topics total more than 2000 citations; also, he played an important role in the development of the XACML standard)

(b) trust and reputation in distributed and peer-to-peer systems (his papers on this topics total more than 1300 citations)

(c) semi-structured data models (he contributed to the seminal XML-GL query language and to its formal semantics, as well as to the notion of fuzzy matching of metadata).

Impact on industrial practices
Ernesto's ideas had a very significant impact on secure software development. For instance, the modeling of process measurement and metrics behind the SPAGO4Q tool (http://www.spagoworld.org/xwiki/bin/view/Spago4Q/) was done under Ernesto Damiani's supervision. The access control language XACML, to which Ernesto greatly contributed, is the subject of more than 200 papers in IEEEXplore, more than 500 papers in the ACM digital library and is mentioned by about 8000 papers in Google Scholar. Furthermore, XACML has different major implementations among which the SunXACML implementation by Oracle, in the Oracle Entitlements Server (OES). Today, Ernesto Damiani plays advisory role to the European Commission in the definition of the European Research Agenda in a number of areas in security, including Cloud Computing and Business Process Security.

Awards
Ernesto Damiani is an ACM Distinguished Scientist (2008), and a Senior Member of the IEEE. He was awarded with the IFIP Outstanding Service Award (2011) and an ACM SIGAPP Outstanding Service Award (2000). Ernesto served as the Vice-chair of ACM SIGAPP; he served for ten years as the Chair of IFIP WG 2.6 on Data Semantics. He is also Vice-chair of the IEEE Technical Committee on Industrial Informatics, the secretary of the IEEE Technical Committee on Services and a Fellow of the Japanese Society for the Progress of Science.

Conference organization
Ernesto Damiani served as a General and Program Chair for some major conferences in the field of secure service-oriented computing (ICWS, CLOUD, IEEE BigData Congress, MWEB, DbSec, DOA, SITIS etc.). In the last five years he co-organized more than 10 conferences and workshops and was a program committee member of about 150 workshops and international conferences. He started, together with T. Dillon and E. Chang, the International Conference Series on Digital Ecosystems (IEEE-DEST https://en.wikipedia.org/wiki/Digital_ecosystem). Besides serving as a member of several other steering committees, he is also editor/member of the editorial board of several journals and book series, including the IEEE Transactions on Service-oriented Computing, the IEEE Transactions of Fuzzy Systems, the Journal of System Architecture (Elsevier) the International Journal of Knowledge and Learning (Inderscience) and the International Journal of IT and Web Engineering (IGI Global).

Teaching and curriculum design
Ernesto Damiani has taught a number of courses at undergraduate (including Computer Networks 101) and graduate level at a number of Universities worldwide. At the M.Sc. level, he started at Università degli Studi di Milano a popular triad of courses on secure service-oriented systems (Service Oriented Architectures, SOA Security and Business Process Engineering).
At Ph.D. level, his recent courses include Cloud Security (with Lionel Brunie) and Secure Service Composition (with George Spanoudakis).
Ernesto has taught a number of subjects in many institutions worldwide, organizing learning programs in large companies such as Nokia Siemens and Hitachi. He is in charge of the internal educational program on Cloud Computing at Università degli Studi di Milano.
Ernesto is also an expert of online teaching and lifelong learning in the field of secure systems, as well as on competence assessment and certification. He was the proposer of the first Italian

online B.Sc. course in Systems and Network security. This highly successful course features teaching material specifically designed and delivered for an online audience.

Contributions to early careers of excellent researchers
Ernesto Damiani inspired many young researchers and helped them to be successful. Over the last decade he successfully co-supervised more than ten Ph.D. students. Some of them (Paolo Ceravolo, Meiko Jensen, Marcello Leida) now have senior research positions respectively in Italy, Germany and the United Arab Emirates (UAE). Others (Marco Viviani, Pelagie Hongue) got post-doc and then faculty positions in France. Joe Tekli, who did his post-doc with Ernesto at SESAR Lab, went on to a professorship in his home country, Lebanon. Among Ernesto's Australian Master students, Eric Pardede went on to become a Senior Lecturer at LaTrobe University. Ernesto wrote the preface of Eric's first book on XML processing.
Several other students of Ernesto's received prizes (best paper awards, thesis awards, and postdoc grants: for a full list see http://sesar.dti.unimi.it). In 2010 one of Ernesto's Ph.D. students (Marco Anisetti) won the GIPR prize for the best Italian Ph.D. Thesis. In 2011, Eugenio Tacchini won the Working Capital competition for the best research project funded by Telecom Italy.

Current Professional Duties (small selection)

- Director of the Information Security Center, KUSTAR, UAE
- Founder and Leader of the SEcure Service-oriented Architectures Research (SESAR) Lab at Università degli Studi di Milano, Italy (http://sesar.dti.unimi.it)
- Editor-in-Chief of the International Journal of Knowledge and Learning (Inderscience)
- Editor-in-Chief of the International Journal of IT and Web Engineering (IGI Global).
- Associate Editor of the IEEE Transactions on Services Computing.
- Associate Editor of the IEEE Transactions on Fuzzy Systems
- Member of the Steering Committee of the SITIS and IEEE-DEST conference series.
- Elected Member of the Steering Committee of the Italian Consortium of Informatics (CINI) putting together all Italian Universities active in Computer Science and Engineering research
- Co-Chair (with Lionel Brunie and Harald Kosch) of the Franco-German-Italian Doctoral College on Distributed Pervasive Secure Systems.

Top Publications (*according to citation number, data from Google Scholar in June 2015*)

- E. Damiani, S.D.C. di Vimercati, S. Paraboschi, P. Samarati, and F. Violante. "A reputation-based approach for choosing reliable resources in peer-to-peer networks," Proc. of the 9th ACM conference on Computer and Communications Security, 2002, >750 citations,.
- E. Damiani, S.D.C. di Vimercati, S. Paraboschi, P. Samarati. "A fine-grained access control system for XML documents," ACM Transactions on Information and System Security (TISSEC) 5(2):169-202, 2002, >650 citations,.
- F. Cornelli, E. Damiani, S.D.C. di Vimercati, S. Paraboschi, and P. Samarati. "Choosing reputable servents in a P2P network," Proc. of the 11th Int. conference on World Wide Web, pp. 376-386, 2002 >580 citations.
- S. Ceri, S. Comai, E. Damiani, P. Fraternali, S. Paraboschi, L. Tanca XML-GL: a graphical language for querying and restructuring XML documents, Computer networks 31 (11), 1171-1187, 1999 >380 citations.

- E. Damiani, S.D.C. di Vimercati, S. Jajodia, S. Paraboschi, and P. Samarati. "Balancing confidentiality and efficiency in untrusted relational DBMSs," Proc. of the 10th ACM conference on Computer and Communications Security, 2003 >320 citations.
- E. Damiani, S.D.C. di Vimercati, S. Paraboschi, and P. Samarati. "Securing XML documents" EDBT 1777, 121-135, 2000 >290 citations
- E. Damiani, S.D.C. di Vimercati, S. Paraboschi, and P. Samarati. "Managing and sharing servants' reputations in P2P systems," IEEE Transactions on Knowledge and Data Engineering 15(4):840-854, 2003, >210 citations
- E. Damiani, S.D.C. di Vimercati, S. Paraboschi, and P. Samarati. "Design and implementation of an access control processor for XML documents", Computer Networks 33 (1), 59-75, 2000 >210 citations
- J. Carmigniani, B. Furht, M. Anisetti, P. Ceravolo, E. Damiani, M. Ivkovic. "Augmented reality technologies, systems and applications", Multimedia Tools and Applications 51 (1), 341-377, 2011 >190 citations
- CA Ardagna, M Cremonini, E Damiani, SDC Di Vimercati, P Samarati. "Location privacy protection through obfuscation-based techniques" Data and Applications Security XXI, 47-60C, 2007, >190 citations.
- A. Ardagna, M. Cremonini, E. Damiani, S.D.C. di Vimercati, and P. Samarati. "Supporting location-based conditions in access control policies," Proc. of the 2006 ACM Symposium on Information, computer and communications security, pp. 212-222, 2006 >130 citations
- E. Damiani, S.D.C. di Vimercati, S. Paraboschi, and P. Samarati. "P2P-based collaborative spam detection and filtering," Proc. of the Fourth International Conference on Peer-to-Peer Computing, pp. 176-183, 2004. > 120 citations

Books authorships and editorships (small selection)

- Intelligent Multimedia Multi-Agent Systems: A Human-Centered Approach (The Springer International Series in Engineering and Computer Science) by Rajiv Khosla, Ishwar K. Sethi and Ernesto Damiani (Dec 3, 2010)
- Human-Centered e-Business (Elsevier) by Rajiv Khosla, Ernesto Damiani and William Grosky (Apr 1, 2003)
- Open Source Systems Security Certification (The Springer International Series in Advanced Open Source Applications) by Ernesto Damiani, Claudio Agostino Ardagna and Nabil El Ioini (Nov 21, 2008).
- Multimedia Techniques for Device and Ambient Intelligence (Springer) by Ernesto Damiani and Jechang Jeong, eds. (Jun 15, 2009)
- Web 2.0: The Business Model (Springer) by Miltiadis D. Lytras, Ernesto Damiani and Patricia Ordóñez de Pablos (Nov 11, 2008)

Keynote/Invited Presentations (partial list)
- Breaking Big Data Silos: Opportunities and Threats (AICCSA 2015)
- Cloud Assurance: The Notion and the Issues (AICCSA 2013)
- Toward certifiably secure services (NCC 2011)
- Risk-aware Collaborative Processes (ENASE 2009)
- Toward WS-Certificate (SWS 2008)
- Process Discovery by Means of Machine Learning Techniques (DBA 2006)
- Privacy-Aware Identity Management (WOSIS 2005)

- Exploiting Location-based and Video Information in Negotiated Access Control Policies (ICISS 2005)
- Fuzzy Techniques for Trust Management; Ernesto Damiani (Fuzzy Days 2007)
- Representing and Validating Digital Business Processes (WEBIST 2007)
- Semantics-Aware Access Control (IFIP Dbsec 2004)

Project leadership and funding

In 2000, Ernesto Damiani was granted a research contract from Siemens Telecommunications (now Nokia Siemens) in the framework of a Italian-german research project, Pitagora, led by Siemens Telecommunications.

The project was centered on the innovative idea of securely managing large quantities of 3G telephone network data, making them available to external applications and services. Results led to a European patent (EP 1765031) and to a number of joint publications.

The experience gained in advanced software development issues in Pitagora – and especially in agile development - allowed Ernesto to start the successful Agile Methodologies for Software Production (MAPS) project, funded by the Italian Ministry for University and Research (MIUR).

In the same timeframe, Ernesto Damiani put together a consortium around the idea of developing techniques for controlling the amount of knowledge shared in collaborative, knowledge-intensive business processes, starting the project Knowledge-based innovation for the web infrastructure (KIWI) funded by the Italian MIUR where Ernesto served as Principal Investigator for the period 2002-2005.

The ideas outlined above on managing large-scale collaborative processes led to another successful project, Towards Evolving Knowledge-based interNetworked Enterprise (TEKNE). The activities carried out in the project deal with metrics to estimate non-functional properties of business process designs and of process executions, based on the notion of semantics-aware service logs.

At the European level, Ernesto Damiani has served as Principal Investigator (PI) or research unit leader of the funded projects listed below. All projects were funded by the European Commission after highly competitive evaluation:

- Secure Supply Chain Management (SecureSCM) project. Grant agreement no.: FP7-213531, EC contribution Euro 343,162 for the period 2008-2011.
- Services Assurance and Certification (ASSERT4SOA – STREP FP7) – PI – GA n. 257351 total project funding 4 MEuros – EC contribution (to Ernesto's group at SESAR) 422,120.00 € - 2010-2013.
- Certification models for Cloud services (CUMULUS – STREP FP7) – research unit leader – GA n. 318580 – total project funding 3.8 MEuros, EC contribution (to Ernesto's group at SESAR) 353,300.00 € - 2012-2015.
- Competence and Human Resource Services (ARISTOTELE – IP FP7) – research unit leader – GA n. 257886 – total project funding 6 Meuros, EC contribution (to Ernesto's group at SESAR) 409.100,00 € - 2010-2013. • S
- Secure Computation Models for the Cloud (PRACTICE – IP FP7) – research unit leader – total project funding 8 MEuro – EC contribution (to Ernesto's group at SESAR) 294.550,00 € - 2013-2016.

Recent national projects include:

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- Security Horizons (Italian PRIN project) - research unit leader – Project n. 2010XSEMLC. 2013-2016 – total project funding: 400 Keuros, Italian MIUR contribution (to Ernesto's group at SESAR) 75,000.00 €.
- Business Intelligence Technologies for Processes in Avionics (KITE.it – Industria 2015) – PI – Project n. MI01_00173 – total project funding 3 MEuros Italian MISE contribution (to Ernesto's group at SESAR) 378,629.26 € - 2011-2015.

Furthermore, Ernesto Damiani has been PI in a number of industry-sponsored research contracts, including:

- Sponsored Research Agreement with ENGISUD SpA for industrial research and precompetitive development within the Eureka project called "ITEA-Agile: Agile Software Development of Embedded System". The company contribution was 225 KEuros for the period 2008 to 2010.
- CARD contract with Cisco Systems on secure network protocols. CISCO contribution was 210 KEuros for the period 2006- 2008.
- Other company grants sponsored by Telecom Italia, Engineering Ingegneria Informatica and others.