

# Marco Brambilla



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# Main Achievements

**Research focus:** model driven software development methods, languages and tools. Special emphasis on modeling Web-based systems (UIs, Web services, BPM, search, crowdsourcing).

**Publication record:** (see list at: <http://dbgroup.como.polimi.it/brambilla/pubs>)

- more than **200 research papers**, including 11 journal articles (4 ACM transactions, plus 1 in print).

3 international research books: on WebML (Morgan Kaufman USA 2002, 580+ citations), on MDSE( Morgan Claypool USA 2012, adopted by 50 universities), and on WebIR (Springer 2013). Plus 1 in print: on IFML (Morgan Kauffmann USA 2014).

- published in: ACM TOIT (2 papers), TOSEM, TWEB (plus 1 in print). **WWW conf.(4 papers)**, ICWE..
- **overall 2173 citations and H-index = 22** according to Google. More than **125 different co-authors**.
- 1 conference best paper award, 2 workshop best paper awards; GSE-IBM Award of Excellence 2013.

## Patents:

- Co-author of one registered patent (IT and US) on multi-domain search.
- Co-author of one patent pending in the US crowdsourcing systems for information retrieval.

## International visibility:

- one of the most recognized experts in the Web engineering discipline.
- leader of the standardization activity on **IFML (Interaction Flow Modeling Language)**, evolution of WebML) at the OMG. IFML now adopted as a standard after 3 years of work.
- more than 20 invited seminars and speeches in academia, events and industry worldwide.
- intensive dissemination through a blog on MDE ([www.modeldrivenstar.org](http://www.modeldrivenstar.org)) and active presence on twitter (1500+ followers) and in online communities related to IT topics (BPM, MDE, UML, ...).
- the toolsuite WebRatio now used by more than 17,000 students and researchers throughout the world.

## Abroad experiences:

- visiting researcher at **Cisco Systems** (San José, CA, USA) in 2001.
- visiting scholar at **UCSD** (University of California, San Diego, CA, USA) in 2004.
- planned visiting professorship at **Université Paris Dauphine - CNRS** in 2014.

## Spinoff activities:

- shareholder of the **spin-off WebRatio** ([www.webratio.com](http://www.webratio.com)).
- Board member (pro-bono) of the new **startup Sweetag**, starting December 2013.
- Winner of **2013 Polihub Switch2Product** challenge and Camera di Commercio call “**Incubatore d’impresa**”.

## Community service:

- Associate Editor of the SIGMOD Record since 2012. Organizer of 2 summer schools.
- Program Chair of ICWE 2012 in Berlin. Track chair and steering committee liaison for ICWE 2014.
- Program Chair of 7 workshops; organizers of various journal special issues, including VLDB-Journal.
- PC member or reviewer of tens of conferences, journals and workshops (see detailed list in the full CV).
- Evaluator and reviewer of research projects at EU, national (IT, NE, CH), and local level.

## Funding and Project Management:

- technical director and deputy scientific director for Politecnico or WebRatio research units in 5 large-scale research projects (EU STREP, IP, SME). Managed more than 50 students and 20 personnel.
- participated as research associate to 5 other EU projects
- personally attracted funds for Politecnico from EU, local govt. and industry (total of around 550K EU).
- Currently: **coordinator and scientific director of the FP7 SME Program project AutoMobile**, on model-driven mobile application development, funded for **IMLN EU** (500K EU to Politecnico).

## University service:

- Co-advisor of 3 Ph.D. students. Main advisor of 1 Ph.D. student.
- Advisor of more than 60 B.Sc. and M.Sc. students. Professor of more than 10 different courses.
- Member of Como campus committees for M.Sc. students selection, activities in high schools, study plan,..

# CV Highlights

## SHORT BIO

I got my M.Sc. in Computer Science & Engineering at Politecnico di Milano in 2001 (100/100 cum laude) and my Ph.D. in Information Engineering (outstanding work, mark A) in October 2005, with a thesis on modeling of service- and workflow- based web applications (advisor prof. Piero Fraternali). Since the starting of my career, my scientific profile has been focused on **model driven software development methods, languages and tools**.

I have been visiting researcher at **Cisco Systems** (San José, CA, USA) in 2001. The purpose of my stay was to validate the WebML methodology and language in a large scale industrial.

I have been visiting researcher at **UCSD** (University of California, San Diego, CA, USA) in 2004, where I worked with prof. Vianu, Deutsch, Papakonstantinou. There, I had the opportunity of exploring the world of venture capitals and research exploitation in the US.

I have worked within several **European research projects**, as well as with several companies for research exploitation and technology transfer (including Acer, UniCredit, local govt. agencies, and many SMEs).

I'm **shareholder of the spin-off WebRatio** ([www.webratio.com](http://www.webratio.com)) and I'm interacting with several US companies for consultancy, standardization, and R&D activities. I'm in the board of the startup Sweetag, hosted at the ComoNext technology park in Lomazzo (Como, Italy).

I have worked on various mainstream research topics in my research group and I also had the opportunity of opening new research lines of my own. Within these research lines, I have dealt with several major companies, including Cisco, Microsoft-FAST, Yahoo! Research (Ricardo Baeza Yates), Google Research (Alon Halevy, Andrei Broder, Ed Chi), XEROX (Gregorio Convertino), HP Research (Claudio Bartolini, Fabio Casati) for joint research activities. All those opportunities shaped my attitude towards pushing for strong relations between theoretical research and industrial application.

I'm involved in intensive publication, dissemination and research exploitation activities, as demonstrated by: more than 200 research papers (11 on journals, 3 authored research books, 4 curated research books, several teaching books); a blog ([www.modeldrivenstar.org](http://www.modeldrivenstar.org)) for general public on MDE, and active presence in online communities related to various research and industrial IT application (e.g., on BPM, MDE, Social Enterprise, Databases, and so on); participation and management of several research projects at international level; and involvement with WebRatio, OMG, and industrial innovation projects. Since 2012 I'm associate editor of the SIGMOD Record.

## MAIN RESEARCH CONTRIBUTIONS

### 1. Web Modeling Language (WebML) and Interaction Flow Modeling Language (IFML)

I'm one of the co-inventors of WebML (Web Modeling Language), which is currently recognized as the international de facto standard for the conceptual modeling of Web application and is going to become an official OMG standard under the name of IFML (I'm currently leading the standardization activity). This work led to several scientific publications and also to a monograph published by Morgan Kaufmann in 2002, the cornerstone of the Web Engineering discipline, with currently 583 citations. The contribution to the field is also demonstrated by the widespread adoption of the associated tool WebRatio, now used by more than 17,000 students and researchers throughout the world for learning and research purposes. WebML has been the basis for the standard IFML, recently adopted by OMG. I have been the main promoter and coordinator of the IFML standardization activity for the last 3 years.

## 2. Model-driven Engineering

My subsequent investigations continued within the field of MDE (Model Driven Engineering), and consisted in the study of new software modeling approaches. My most recent publication is the book *Model Driven Software Engineering in Practice* (Morgan & Claypool, USA, 2012, co-authored with two well-known European researchers in the MDE field: Jordi Cabot from EMN, France, and Manuel Wimmer from TUW, Austria) that aims to become the reference book for MDD / MDE (currently **adopted by some 50 universities** worldwide). I have published several papers and demonstrated and validated various prototype tools in this field.

## 3. Exploratory, multidomain and crowdsourced search

My recent research focus has shifted towards information management and advanced Web search, spanning multi-domain and exploratory search too (work done within Pharos, Cubrik and SeCo projects). These activities already produced some early results and relevant publications on: exploratory search paradigms (WWW Conf. 2010, VLDB Journal), crowdsourcing systems for information seeking (WWW 2012) and their evolution towards reactive systems (WWW 2013).

## PUBLICATIONS AND VISIBILITY

**Publications.** Google Scholar is recording a production of 170 papers, starting from 2001, with 2173 citations and H-index=22. The complete list is available at: <http://dbgroup.como.polimi.it/brambilla/pubs>. I have co-authored papers with around 125 different co-authors.

**Patents.** I am co-author of one registered patent (IT and US) on multi-domain search and I recently filed another US Patent (pending) on crowdsourcing systems for information retrieval.

My researches make me a recognized **prominent contributor to the fields of Web Engineering and MDE**, as demonstrated also by my publication record, including two monograph books (the top one counting more than 550 citations) and many papers in high-impact venues like: *Modeling of web services* (published in ACM TOIT, 112 citations); *Modeling of business processes and associated web applications* (ACM TOSEM, 165 citations); *Modeling of semantic web applications* (ACM TOIT, 40 citations; ISWC 2006, 56 citations); *Modeling of exception handling in web applications* (WWW 2005, 60 citations). I've given more than 20 invited talks at universities, research institutions, and international events all over the world.

Working side by side with experienced investigators (Wolfgang Nejdl, Fabio Casati, Georg Gottlob, Alon Halevy and many others) let me grow both as a scientist and a research team leader.

## FUNDING AND PROJECT MANAGEMENT

I have been technical director and deputy scientific director for the Politecnico or WebRatio research units in 5 large-scale research projects. Within these project, I've managed budgets for a total amount of more than 4.2 MLN EU. I have managed more than 50 students and 20 personnel (including post-docs, temporary contracts, and others). I also participated as research associate to 5 other EU projects and I have personally attracted funds for Politecnico from EU Agencies, local government and industries for consultancy, technology transfer, teaching and research activities. I am currently scientific director of the FP7 SME Program project called *AutoMobile*, on model-driven mobile application development, funded for 1MLN EU contribution.

## RESEARCH COMMUNITY SERVICE

I have been Program Chair of ICWE 2012 (International Conference of Web Engineering) in Berlin; I am track chair and steering committee liason for ICWE 2013. I am associate editor of SIGMOD Record, and I recently edited a special issue of the VLDB Journal on Crowdsourcing and Structured Web Data, as well as a few other special issues. I have been program chair of 7 workshops, and PC member of several conferences and

workshops in the fields of: databases, web, semantic web, modeling, and software engineering. I am reviewer of several top journals.

## STUDENTS SUPERVISION

I have been co-advisor of 3 Ph.D. students, and I am currently advisor of 1 Ph.D. student. I have been advisor of more than 60 B.Sc. and M.Sc. students (partial list at: <http://dbggroup.como.polimi.it/brambilla/completedtheses>).

## PRIZES AND AWARDS

- Best paper: M. Brambilla, N. D'Elia. Exception Handling within Workflow-based Web Applications, 4th International Conference on Web Engineering, ICWE 2004, Munich, Germany.
- Best paper: M. Brambilla, et al. Flexible Specification of Semantic Services using Web Engineering Methods and Tools. In Int. Workshop on Semantic Web Enabled Software Engineering (SWESE 2006), ISWC 2006, Athens, GA, USA, November 2006, pp. 1-14.
- Best paper: M. Brambilla, P. Fraternali, M. Tisi. A Metamodel Transformation Framework for the Migration of WebML Models to MDA. 4th Int. Workshop on Model-Driven Web Engineering (MDWE 2008). N. Koch, G.-J. Houben, A. Vallecillo (Eds.). CEUR-WS, volume 389, pages 91-105.
- IBM Faculty Award and Best solution at the Semantic Web Service Challenge: Swe-et approach on Web Modeling-based Approach to Automating Web Services Mediation, Choreography and Discovery, 2006-7.
- GSE and IBM Great Prize for Research Excellence Award 2013 for a M.Sc. thesis (student Ekaterina Shabunina) on correlation of social content sentiment mining and stock market fluctuations.

## SELECTED PUBLICATIONS

### Research Monographs

- S. Ceri, P. Fraternali, A. Bongio, M. Brambilla, S. Comai, M. Matera: *Designing Data-Intensive Web Applications*, Morgan-Kaufmann Publishers, San Francisco, ISBN 1-55860-843-5, M-K Series in Data Management Systems edited by Jim Gray, foreword by Adam Bosworth, 590 pages.
- M. Brambilla, J. Cabot, M. Wimmer: *Model Driven Software Engineering in Practice*. Morgan & Claypool, USA, September 2012, foreword by Richard Soley (OMG), 184 pages. ISBN 978-1608458820.
- S. Ceri, A. Bozzon, M. Brambilla, E. Della Valle, P. Fraternali, S. Quarteroni: *Web Information Retrieval. Data-centric systems and applications*, Springer 2013, ISBN 978-3-642-39313-6, 300 pages.

### Selected Journal Articles

- I. Manolescu, M. Brambilla, S. Ceri, S. Comai, P. Fraternali: Model-driven design and deployment of service-enabled web applications. *ACM Trans. Internet Technology (TOIT)*. 5(3), pp. 439-479 (2005).
- M. Brambilla, S. Ceri, P. Fraternali, I. Manolescu: Process modeling in Web applications. *ACM Trans. Softw. Eng. Methodol (TOSEM)*. 15(4), pp. 360-409 (2006).
- M. Brambilla, I. Celino, S. Ceri, D. Cerizza, E. Della Valle, F. M. Facca: Model-Driven Design and Development of Semantic Web Service Applications, *ACM Trans. on Internet Technology (TOIT)*. 8(1), pp.3:1 - 3:31 (2007).

- S. Quarteroni, M. Brambilla, S. Ceri: A bottom-up, knowledge-aware approach to integrating and querying web data services. *ACM Trans. on the Web (TWEB)*, October 2013, 7(4), pp. 19:1-19:33.
- A. Bozzon, M. Brambilla, S. Ceri, D. Mazza: Exploratory search framework for Web data sources. *VLDB Journal* 22(5): 641-663 (2013).
- M. Brambilla, J. Cabot and S. Comai: Extending Conceptual Schemas with Business Process Information. *Advances in Software Engineering*, Vol. 2010, Hindawi Publishing, Article ID 525121, 22 pages.
- K. Belhajjame, M. Brambilla: Ontological Description and Similarity-Based Discovery of Business Process Models. *Int.l Journal of Information System Modeling and Design (IJISMD)*, IGI, 2(2), 2011, pp. 47-66.
- Alessandro Bozzon, Marco Brambilla, Stefano Ceri, and Silvia Quarteroni: A Framework for Integrating, Exploring, and Searching Location-Based Web Data. *IEEE Internet Computing*, 15(6), 2011, pp. 24-31.
- M. Brambilla: From Requirements to Implementation of Ad-hoc Social Web Applications: an Empirical Pattern-Based Approach. *IET Software*, 6(2), 2012, pp.114-126.

### **Selected Contributions to Conferences**

- A. Bozzon, M. Brambilla, S. Ceri: Reactive CrowdSourcing. Intl. conference on World Wide Web (WWW 2013). ACM.
- A. Bozzon, M. Brambilla, S. Ceri, M. Silvestri, G. Vesci: Choosing the Right Crowd: Expert Finding in Social Networks. 16th International Conference on Extending Database Technology (EDBT 2013).
- A. Bozzon, M. Brambilla, S. Ceri: Answering search queries with CrowdSearcher. Intl. conference on World Wide Web (WWW 2012). ACM, pp. 1009-1018.
- M. Brambilla, S. Ceppi, N. Gatti, E. Gerding: A revenue sharing mechanism for federated search and advertising. Intl. Conference on World Wide Web (WWW 2012). ACM, pp. 465-466.
- A. Bozzon, M. Brambilla, S. Ceri, P. Fraternali. Liquid query: multi-domain exploratory search on the web. WWW 2010: Int.l Conference on World Wide Web. ACM, pp. 161-170.
- M. Brambilla, S. Ceri, S. Comai, C. Tziviskou. Exception Handling in Workflow-Driven Web Applications. WWW 2005 Int. Conference on World Wide Web. ACM, pp. 170-179.
- A. Bozzon, M. Brambilla, P. Fraternali. Searching Repositories of Web Application Models. 10th Int. Conf. on Web Engineering (ICWE2010), Vienna, Austria. Springer LNCS, Vol. 6189, pp.1-15.
- M. Brambilla, I. Celino, S. Ceri, D. Cerizza, E. Della Valle, F. Facca. A Software Engineering Approach to Design and Development of Semantic Web Service Applications. International Semantic Web Conference (ISWC2006), Athens, USA, November 2006, Springer LNCS 4273, pp. 172-186.
- M. Brambilla, A. Deutsch, L. Sui, V. Vianu. The Role of Visual Tools in a Web Application Design and Verification Framework: A Visual Notation for LTL Formulae. 5th International Conference on Web Engineering (ICWE2005), Springer LNCS, vol.3579, pp. 557-568.

## **Upcoming publications**

Although not officially published yet, the following publications have been already accepted and are scheduled to be printed in 2014:

- M. Brambilla, P. Fraternali: Interaction Flow Modeling Language - Modeling the front end of software systems. In print with Morgan-Kauffman, 2014, about 250 pages.
- B. Bislimovska, A. Bozzon, M. Brambilla, P. Fraternali. Content search over model repositories. Accepted for publication on ACM Transactions on the Web (TWEB), 2014.

# Research Interests

Marco Brambilla's research interests include **theoretical, experimental and methodological aspects related to model driven approaches to software development**. In his research activities, he has extensively applied and validated MDE into a variety of fields: Web modeling methodologies, design patterns, conceptual design of data-intensive Web applications, workflow-based Web applications, service oriented architectures and applications, business process modeling (BPM), Semantic Web application modeling, Human Computation, Crowdsourcing, and Information Seeking, Social Networking-based Web application design, advanced Web search interfaces, Web architectures for embedded and HMI systems interfaced with home automation and industrial automation, simplified interfaces for disabled people.

A short description of the each research activity is reported below.

## MODELS AND METHODS FOR DESIGNING WEB APPLICATIONS

Starting from his M.Sc. thesis, Marco Brambilla has dealt with the definition of a method for developing data-intensive Web applications. This method is based on the conceptual model WebML and a suite of software tools that support developers in the design and development of Web applications. Marco Brambilla contributed to the project by studying the user interaction primitives and methodological issues related to the development process of applications.

## SPECIFICATION OF WEB APPLICATIONS BASED ON BUSINESS PROCESSES

This aspect, addressed within the European project WebSI, focused on the definition of a formal methodology for development of Web applications based on business processes, typically specified by workflow and business process models. Based on consolidated results in the area of traditional information systems, the research extended the WebML formalism with new modeling features that allow integration with business process notations (e.g., BPMN) and support the representation of workflow specification within Web interactions. The research also studied the problems of implementation of these primitives and developed a prototype for modeling and automatic generation of these applications, also addressing the management of exceptions and failures peculiar to the Internet platform. In order to check any deficiencies in the expressive power of primitive studied, the research has included the implementation of real applications. The results have been currently transferred to the commercial toolsuite WebRatio.

## SPECIFICATION OF WEB SERVICES AND INTEGRATION WITH TRADITIONAL WEB APPLICATIONS

This research line addressed the modeling of interactions between Web applications through Web services and their integration within enterprise SOAs. The study led to the definition of a set of WebML primitives for the invocation of remote services and for the publishing services to be exposed to third parties. The activity has included the development of software tools to support the proposed model and the transfer of the results into the commercial toolsuite WebRatio.

## FORMAL VERIFICATION OF PROPERTIES OF INTERNET APPLICATION THROUGH LINEAR-TIME TEMPORAL LOGIC

The research work on this topic has started at University of California, San Diego during the 2004 visit and is continuing within some master student thesis works and the collaboration with UCSD. The work currently includes the study of the expressive power of WebML and the comparison with other models for formal specification for Web applications, with particular attention to the Wave model, defined by the research team of UCSD in order to implement formal verification tools of the properties. The work included the formalization of meta-models (according to MDA / MOF) of WebML, and the study of the transformation between the two



models, in order to develop a process for developing Web applications that exploit the advantages of both approaches. The proposal is being implemented through a series of prototypes.

#### STUDY OF NEW MODELS AND INTERFACES FOR DEPLOYING WEB APPLICATIONS

This research, carried out in collaboration with University of California, San Diego, aimed at defining appropriate abstractions for programming Web applications structured according to the MVC architecture-2 (or Model 2). The goal was to provide a uniform programming for access to all types of available data sources, by means of a conceptual model for the visual description of MVC controller architectures. The activity also comprised analysis of implemented Web applications and extraction of workflow information.

#### DESIGN OF INTERNET ARCHITECTURES FOR HMI AND EMBEDDED SYSTEMS

This research project, managed and coordinated by Marco Brambilla, was conducted in collaboration with the company ESA Elettronica SpA consist in the analysis, design, and prototyping of a new generation of HMI (Human Machine Interface) applications for industrial automation, building automation, and home automation. These applications are characterized by remotization, multichannel access, mobility, personalization and adaptivity to the context. The value added of the industrial innovation is the introduction of architectures based on Internet technology within the HMI field.

#### MODELING OF SEMANTIC WEB APPLICATIONS

The research in this area has been launched recently as natural evolution and extension of the study of patterns of Web services and Web applications. The activity consists in the study of a variant of the model WebML for Web applications, proposing an extension in order to represent data sources and primitives for managing and querying ontological data sources. In particular, the work addresses the definition of a relational metamodel of WSMO, of a set of WebML primitives, and of a design methodology for developing semantic web applications, with particular attention to the definition of mediators between semantic web services. This activity achieved the IBM Faculty Award and is published in several papers.

#### MDA MODELING OF WORKFLOW CONSTRAINTS AND TRANSFORMATIONS BETWEEN MODELS

This research, conducted in collaboration with a research group of the Open University of Catalunya, Barcelona, and with Ecole des Mines de Nantes, consists in the translation of workflow models in conceptual models according to MDA , considering the domain model and the constraints on data integrity.

#### STUDY OF ADVANCED INTERFACES FOR WEB APPLICATIONS

This activity consists in the study of modern interfaces for rich user interaction on the Web (AJAX, HTML 5 and CSS, etc.) and in developing design abstractions appropriate for this class of applications. A set of development tools is under development too, in collaboration with researchers at University of Extremadura, Spain.

#### WEB DATA MANAGEMENT AND ADVANCED SEARCH INTERFACES

Marco Brambilla's interest in Web data management developed within the Search Computing project, and focused on multi-domain Web data management, i.e. data- and information-retrieval that spans over multiple semantic fields of interest. The research focused on several topics, including *architectural and methodological* aspects of multi-domain data management; *result diversification* for multi-domain search, application of semantic-based and natural language processing techniques to *automatic classification of Web sources* and Web Data access APIs, and *Human-Computer interaction for Multi-domain information seeking*.

Within the latter topic, Marco Brambilla has been the main proposer of the “Liquid Query” paradigm, an original interaction paradigm focused on distinctive multi-domain data management characteristics, such as exploratory retrieval, ranking, data visualization, and result layout presentation. The research activity produced several publications in national and international books, conferences and journals, and it also addressed problems of data visualization, and result layout presentation. The project comprised relevant implementation and demonstration efforts, where I have been responsible for the coordination of the activities of several research assistants, PhD students, and master thesis students. The implemented systems have been widely demonstrated in the main Web and data management conferences, including SIGMOD, WWW, ICWE, and ICSOC.

The knowledge and experience gained during the project lead to an authored book on Web information retrieval, currently in writing and planned for publication by the end of 2013.

## HUMAN COMPUTATION AND CROWDSOURCING

Marco Brambilla is currently involved in *CrowdSearch*, a recently started research track that aims to define the foundational theory for hybrid human and automatic information seeking systems, by studying the theoretical models and the technical means to achieve this integration. The *CrowdSearch* research falls into the broader field of “Human Computation” (more precisely, “Crowdsourcing”). It consists in a novel multi-domain search paradigm that embodies crowds as first-class sources for the information seeking process by filling the gap between generalized search systems, which operate upon world-wide information – including facts and recommendations as crawled and indexed by computerized systems with social systems, capable of interacting with real people, in real time, to capture their opinions, suggestions, and emotions.

The research is currently ongoing. So far, it produced a prototypal system currently under development (see <http://crowdsearcher.search-computing.org>). The effectiveness of the paradigm is currently tested in the field of multimedia search within the CuBRIK project, where the socially-enacted search interaction is adopted for the indexing and the querying processes.

## MODEL DRIVEN ENGINEERING FOR WEB SEARCH

Marco Brambilla worked at the definition of a formal model and a methodology for the specification of “Search-based” Web applications, i.e., data-centric applications that integrates data- and information-retrieval systems by means of complex back-end (specialized in content provisioning, annotation, indexing, and distributed query execution) and front-end (dedicated to query expression and result presentation) processes. This work explored the usage of MDE and model transformations to structure the life-cycle of search-based applications, considered as process- and data-intensive applications. This research was funded by the PHAROS and CuBRIK projects. The CuBRIK project is now ongoing.

## SEARCH ON MODEL REPOSITORIES

Recently, Marco Brambilla worked at a research line related to the application of information retrieval techniques to model repositories management, with special attention to the problem of efficient model artifacts retrieval at the purpose of fostering model reuse in the enterprise.

## MODEL-DRIVEN DEVELOPMENT OF SOCIAL NETWORKING BASED APPLICATIONS

Marco Brambilla worked on a method that starts from a classification of typical social requirements and maps them to model-driven design best practices both in terms of static and dynamic models. In this context, he developed a taxonomy of social requirements, a set of UML design patterns for addressing them, and an extension of the WebML notation (a Domain Specific Language designed to model Web applications), comprising a set of modeling concepts and design patterns describing the user interfaces and interactions with the social

platforms. The work extended the WebML notation by adding a set of components (called units in WebML parlance) that encapsulate the logic of the interaction with the social platforms. These units work as wrappers of the social platform APIs and hide the underlying complexity from the developer, reducing the cost of designing new applications. This work is covered by the BPM4People project.

# Teaching Vision and Goals

As shown by my teaching track record, I have a strong commitment to teaching, especially in topics related to Databases, Web Technologies, Web Engineering, Software Engineering, Model-driven Engineering, and Web Data Management.

I think that effective teaching of modern computer science requires three main ingredients:

- solid theoretical background
- practical, hands-on experience and experimentation on real or realistic implementations
- clear methodological guidelines.

That's why my teaching method consists of project-oriented learning and continuous interactions. Students in my courses (even at undergraduate level) are requested to give presentations, submit personal assignments and group works. I think that effective learning in computer science entails both personal work and group work. I actually managed to introduce this practices at Politecnico, which was instead more keen to traditional teaching and verification methods.

In my courses I always commit a lot of resources to personal interaction with students, and interactive validation of examinations and project works, as I believe that this is one of the most effective ways of transferring knowledge.

These active learning methods can take additional time, but they proved to be better suited to cater for the different theoretical, technical, and cultural background of a multi-cultural class, allowing students to feel more motivated and confident with their abilities, while encouraging them to expand their body of knowledge to complete the assigned task. In addition, creative and collaborative learning methods prepare students for working in quickly evolving ICT landscape. Offering concrete research problems during courses can arouse students curiosity into scientific careers, motivating them to pursue thesis within the research group, and, sometimes, to join a PhD program. In several occasions I worked one-on-one with students on individual research projects that later contributed to published articles and/or decided to prepare their thesis work under my supervision.

Having observed the benefits of this teaching model, I intend to include such methods in my classes whenever possible and I aim at transferring to the students the enthusiasm that is needed to engage students in being passionate for the field and their future professional activities.

I have extensive teaching experience in English-speaking, multi-cultural environment, thanks to courses I gave at the M.Sc. program of Politecnico di Milano, as well as at other universities abroad (France, Poland, Latin America).

# Position and Education

## RECORD OF EMPLOYMENT

2005 – now

Assistant Professor with Tenure (Ricercatore a tempo indeterminato) at Politecnico di Milano, Dipartimento di Elettronica, Informazione e Bioingegneria and at Polo Regionale di Como. Member of the Web and Databases group, led by profs. Ceri and Fraternali.

2004 – now

Consultant and scientific advisor at WebRatio Srl, spinoff of Politecnico di Milano whose aim is promotion and commercial exploitation of the WebML language (I'm also shareholder of the company).

2005 – now

Professor of courses: Software Engineering, Advanced Software Engineering, Computer Engineering and Architectures, Information Systems (for students of the Business Management track).

2002 – 2011

Teaching Assistant at Politecnico di Milano for courses: Databases, Advanced Databases, Computer Programming, Algorithms and Data Structures, Web Technologies, Advanced Web Technologies.

2001

Post-master temporary research position at Politecnico di Milano.

2008-2012

IT Consultant for Model Driven system and process re-engineering in UniCredit Leasing.

2008

IT Consultant for Microsoft USA on analysis of behaviour of Web browsers.

2000 – 2005

Teacher at industrial training courses for customers of WebRatio Srl.

## EDUCATION

- Ph.D. in Information Technology at Politecnico di Milano. 2005. Grade: A (excellent).  
Title: *Model Driven Integration of Data-centric Web Applications with Workflows and Web Services*  
Advisor: *Prof. Piero Fraternali*  
International Reviewer: *Prof. Yannis Papakonstantinou (UCSD, USA)*  
The Ph.D. thesis extended the model-driven approach based on WebML, with new primitives for high-level modeling of Web services interactions and workflow enactment within Web applications, with particular attention to distribution, exception handling, platform independent modeling and code generation.
- M.Sc. in Computer Science Engineering at Politecnico di Milano. 2001. Grade: 110/110 cum laude.  
Thesis title: *Methodology and Advanced Applications of the WebML Language*.  
Advisor: *Prof. Piero Fraternali*  
The master thesis work focused on a framework for designing and developing data-intensive Web sites; the thesis includes also the results of an internship in Cisco Systems (CA, USA) for the design of two pilot Web sites (Cisco.com, Cisco intranet).

## VISITING EXPERIENCES

- Visiting researcher at Cisco Systems, San José, CA, USA. (2000 - 2001).
- Visiting researcher at University of California, San Diego (UCSD), CA, USA (2004).

## SCHOLARSHIPS

- Three-year scholarship for Ph.D. studies of the Italian Ministry of Education, University and Research (2001-2004). Ranked second place in the Information Engineering Ph.D. school.
- Bourse awarded by the Association of Small Enterprises (API), Lecco, Italy (2000).

## Awards

1. **Best paper:** M. Brambilla, N. D'Elia. Exception Handling within Workflow-based Web Applications, 4th International Conference on Web Engineering, ICWE 2004, Munich, Germany.
2. **Best paper:** M. Brambilla, et al. Flexible Specification of Semantic Services using Web Engineering Methods and Tools. In Int. Workshop on Semantic Web Enabled Software Engineering (SWESE 2006), ISWC 2006, Athens, GA, USA, November 2006, pp. 1-14.
3. **Best paper:** M. Brambilla, P. Fraternali, M. Tisi. A Metamodel Transformation Framework for the Migration of WebML Models to MDA. 4th Int. Workshop on Model-Driven Web Engineering (MDWE 2008). N. Koch, G.-J. Houben, A. Vallecillo (Eds.). CEUR-WS, volume 389, pages 91-105.
4. **IBM Faculty Award and Best solution** at the Semantic Web Service Challenge: Swe-et approach on Web Modeling-based Approach to Automating Web Services Mediation, Choreography and Discovery, 2006-2007.
5. **GSE and IBM Great Prize for Research Excellence** Award 2013 for a M.Sc. thesis (student Ekaterina Shabunina) on correlation of social content sentiment mining and stock market fluctuations.

## Patents

1. S. Ceri, D. Braga, M. Brambilla, A. Campi, E. Della Valle, P. Fraternali, D. Martinenghi, M. Tagliasacchi. *Method for extracting, merging and ranking search engine results*. Patented in Italy and USA.
2. S. Ceri, M. Brambilla, A. Bozzon. *Crowdsearcher: A platform for crowdsourcing search results*. Patent pending in USA.

# Teaching activities

## PROFESSORSHIPS - COURSES AT POLITECNICO DI MILANO

2013-2014

- Course *Ingegneria del software* [Software Engineering] (7 Credits)
- Course *Prova finale di laurea* [Final Examination - Graduation project] (3 Credits)
- Course *Advanced software engineering* (In English, 5 Credits)
- Interdisciplinary Course *Cross-boundary processes (Lake Poli School, Como)* (Project works with companies, 5 Credits)

2012-2013

- Course *Ingegneria del software* [Software Engineering] (7 Credits)
- Course *Prova finale di laurea* [Final Examination - Graduation project] (3 Credits)
- Course *Advanced software engineering* (In English, 5 Credits)

2011-2012

- Course *Ingegneria del software* [Software Engineering] (10 Credits)

2010-2011

- Course *Ingegneria del software* [Software Engineering] (10 Credits)

2009-2010

- Course *Ingegneria del software* [Software Engineering] (10 Credits)

2008-2009

- Course *Ingegneria del software* [Software Engineering] B (5 Credits)
- Course *Progettazione con tecniche dell'Ingegneria del software* [Software Engineering Project] (5 Credits)

2007-2008

- Course *Informatica II (architetture HW e SW)* [Computer Engineering and Architectures] (10 credits)
- Course *Tecnologie per i Sistemi Informativi* (10 Credits), B.Sc. Track on Business Management.

2006-2007

- Course *Informatica II (architetture HW e SW)* [Computer Engineering and Architectures] (10 Credits)
- Course *Tecnologie per i Sistemi Informativi* [Information Systems Technologies] (10 Credits), B.Sc. Track on Business Management.

2005-2006

- Course *Tecnologie per i Sistemi Informativi* [Information Systems Technologies] (10 Credits), B.Sc. Track on Business Management.
- Course *Progetto di basi di dati* [Database Project] (2,5 Credits)

2004-2005

- Course *Progetto di basi di dati* [Database Project] (2,5 Credits)

2003-2004

- Course *Progetto di basi di dati* [Database Project] (2,5 Credits)



## TEACHING ASSISTANT IN COURSES AT POLITECNICO DI MILANO

2011-2012

- Course *Advanced Databases* (in English), exercise classes

2010-2011

- Course *Advanced Databases* (in English), exercise classes

2009-2010

- Course *Advanced Databases* (in English), exercise classes

2008-2009

- Course *Advanced Databases* (in English), exercise classes

2007-2008

- Course *Advanced Databases* (in English), exercise classes

2006-2007

- Course *Advanced Databases* (in English), exercise classes

2005-2006

- Course *Advanced Databases* (in English), exercise classes
- Course *Tecnologie Informatiche per il Web* [Web Technologies], exercise classes
- Course *Tecnologie per i Sistemi Informativi* [Information Systems Technologies], B.Sc. Track on Business Management, exercise classes

2004-2005

- Course *Basi di Dati* [Databases], exercise classes
- Course *Basi di Dati Avanzate* [Advanced Databases], exercise classes
- Course *Informatica 3 (algoritmi e strutture dati)* [Algorithms and Data Structures], exercise classes
- Course *Basi di Dati* [Databases], computer laboratory
- Course *Tecnologie Informatiche per il Web* [Web Technologies], exercise classes
- Course *Sistemi informativi avanzati* [Advanced Information Systems], exercise classes

2003-2004

- Course *Basi di Dati* [Databases], exercise classes
- Course *Basi di Dati Avanzate* [Advanced Databases], exercise classes
- Course *Informatica 3 (algoritmi e strutture dati)* [Algorithms and Data Structures], exercise classes
- Course *Basi di Dati* [Databases], computer laboratory

2002-2003

- Course *Basi di Dati* [Databases], exercise classes

- Course Basi di Dati [Databases], computer laboratory
- Course Informatica 1 [Computer Programming], exercise classes

2001-2002

- Course Basi di Dati [Databases], exercise classes
- Course Basi di Dati [Databases], computer laboratory
- Course Informatica 1 [Computer Programming], exercise classes

#### OTHER ACADEMIC TEACHING ACTIVITIES

- 2012: Classes on Search and Crowdsourcing for the post-graduation Master Course on Centralized Systems at Cefriel
- 2007: Classes on Building automation and Web for the post-graduation Master Course on Interior Domotics Design at Politecnico di Milano, Design Faculty
- 2005: Recording of 5 classes (in English) on *Advanced Databases* for the joint M.Sc. program between Politecnico di Milano and University of Chicago
- a.a. 2003-04: Tutoring for the course Sistemi informativi, Online Graduation Program, Politecnico di Milano
- 2003: Preparation of teaching materials and recording of online classes for courses of Information Systems (with Prof. P. Fraternali) and Advanced Databases (with prof. S. Ceri) for Online Graduation Program, Politecnico di Milano
- 2003: Classes on Web Technologies for the post-graduation Master Course on Information Technology at Cefriel
- 2002: Classes on Web Application Design and Development for the post-graduation Master Course MEB at MIP (Business School of Politecnico di Milano)
- 2001: Classes on Web Application Design and Development for the post-graduation Master Course on Technologies for the Net Economy at Politecnico di Milano, Cremona

#### INDUSTRIAL TEACHING ACTIVITIES

- 2012: Course on Model driven methods and SOA architectures at UniCredit Leasing SpA
- 2006: Course on Database design at IwBank
- 2005: Courses on Web application design for WebRatio S.r.l. at MIP (Milano) and at DataConsult (Pordenone)
- 2004: Courses on Web application design for college teachers, Como Province
- 2004: Student tutoring on Databases and Information Systems (EU FSE project)
- 2003: Basic computer science courses for general public (EU FSE project and Regione Lombardia)

## UNIVERSITY SERVICE

Marco Brambilla is a dedicated contributor to the activities and development of the Como Campus of Politecnico di Milano. He has been active in commissions and committees within Politecnico, dealing with the following aspects:

- undergrad and postgrad students admission committee
- undergrad and postgrad students admission committee
- commission for the update of the teaching strategy and tracks in Como Campus
- commission for the improvement of the class scheduling in Como Campus
- scientific committee for the Lake Poli School initiative, a multi-disciplinary school for postgrad students located in Como
- promotion and dissemination activities about the Como Campus at colleges and other schools

## SUMMER SCHOOLS

Marco Brambilla has been organizer and scientific coordinator of the following summer schools:

- Social BPM Summer School, June 17-20, 2012.  
<http://socialbpmschool.webratio.com>
- Pharos Summer school on Multimedia Information Retrieval, June 22-26, 2009.

## STUDENTS SUPERVISION

Marco Brambilla has been co-advisor of 3 Ph.D. students, and I am currently advisor of 1 Ph.D. student.

### PhD Students Co-Advisor

- PHD.1. *Bojana Bislimovska*. 2011 - 2013, "Content-Based Information Retrieval for Model Repositories"
- PHD.2. *Carmen Vaca*. 2011 - 2013, "Social Network Influence Analysis"
- PHD.3. *Christina Tziviskou* 2005 - 2008, "Development Methodologies for Semantic Web Applications"

### PhD Students Advisor

- PHD.1. *Andrea Mauri*. 2012 - now, "Model-driven development of Crowdsourcing and Social Web Applications"

Marco Brambilla has been advisor of more than 60 B.Sc. and M.Sc. students. A partial list of the thesis works developed under his supervision is available at:

<http://dbgroup.como.polimi.it/brambilla/completedtheses>.

# Professional and Research Projects Activities

## NATIONAL AND INTERNATIONAL RESEARCH PROJECTS

- Cooper (05-08). EU project on architecture and methodology for the implementation of collaborative Web applications. Funding: 200K Euro ca. Managed people: 4 students.
- ESA MyHMI (05-07). Italian project on software models and architectures for embedded low-performance industrial and home devices. Funding: 600K Euro ca. Managed people: 12 studs., 3 personnel.
- Pharos (08-10). EU project on framework of federated search engines for audiovisual content and enterprise search. Funding: 500K Euro ca. Managed people: 10 studs., 4 personnel.
- SeCo (08-13). EU project on rank-aware composition of multi-domain search services; exploratory search. Funding: 2.500K Euro ca. Managed people: 18 studs., 5 personnel.
- BPM4People (11-13). EU project on methods and tools for Social Business Process Mgmt. and social enterprise. Funding: 1.000K Euro ca. Managed people: 8 studs., 6 personnel.
- I have participated also to the following projects: Cisco.com applied research (2001), W3I3 EU project (2001) WebSI EU project (2001-2004), Cooper EU project (2005-2008), Cubrik EU project (2011-2014), MODAcloud EU project (2012-2015).
- I have also personally attracted funds for Politecnico from EU, local government and industries for consultancy, technology transfer, teaching and research activities.

## Scientific Community Service

Marco Brambilla is member of ISWE (International Society of Web Engineering) and is steering committee member of ICWE (International Conference on Web Engineering).

## REVIEW AND EVALUATION OF RESEARCH PROJECTS

Marco Brambilla has collaborated with several institutions as reviewer of project results and as evaluator for project proposals during the selection phase of open calls for projects.

- 2013: Reviewer of research and innovation projects for Provincia di Trento
- 2012: Reviewer of research and innovation projects for Provincia di Trento
- 2011: Reviewer for European Commission. STREP projects of 7FP
- 2011: Evaluator of research proposals *FIRB - Futuro* (Italian Ministry of University and Research)
- 2010: Reviewer per European Commission. STREP projects del 7FP
- 2010: Evaluator of research proposals for European Commission. STREP projects del 7FP
- 2010: Evaluator of research proposals for NWO (Netherlands Organisation for Scientific Research)
- 2010: Evaluator of research proposals for PRIN program (Italian Ministry of University and Research)
- 2009: Reviewer of European Commission. STREP projects of 7FP
- 2009: Evaluator of research proposals for NWO (Netherlands Organisation for Scientific Research)
- 2009: Evaluator of research proposals for Provincia di Trento

## CONFERENCES ORGANIZATION

- ICWE (International Conference on Web Engineering) 2013: Track chair and steering committee liason
- ICWE (International Conference on Web Engineering) 2012: Program Committee chair
- ICWE (International Conference on Web Engineering) 2007: Organization chair

## BOARD OF INTERNATIONAL JOURNALS

- Associate editor di SIGMOD Record (ACM)

## REVIEWER OF INTERNATIONAL JOURNALS

- DKE Journal on Data and Knowledge Engineering Journal (Elsevier Science) (2003-2010)
- Journal on Software and System Modeling (SOSYM) (2011-2013)
- ACM Transactions on the Web (2008-2013)
- IEEE Transactions on Systems, Man, and Cybernetics (2010)
- ACM Internet Computing (2008)
- IET Software (2007-2011)
- IEEE Transactions on Software Engineering (2007)
- Elsevier SCP (2006)
- Journal of Web Engineering (2006-2012)

## WORKSHOP ORGANIZATION

- International Workshop on Adaptive and Self-Managing Enterprise Applications (ASMEA 2005): publication chair
- CrowdSearch workshop at WWW 2012
- Model-driven Web Engineering workshop (MDWE 2012) at ICWE 2012
- Very Large Data Search workshop (VLDS 2012) at VLDB 2012
- CloudMDE workshop at ECMFA 2012
- Model-driven Web Engineering workshop (MDWE 2011) at ICWE 2011
- Workshop on Search, Exploration and Navigation of Web Sources (ExploreWeb 2011) at ICWE 2011
- Very Large Data Search workshop (VLDS 2011) at VLDB 2011
- IEEE Workshop on Communicating Business Process and Software Models (CPSM 2013) at ICSM 2013

## PROGRAM COMMITTEE MEMBERSHIP

- WWW2014: PC member
- SAC2014: PC member
- ECMFA 2013: PC member
- ECMFA 2014: PC member
- ICWE 2014: Track chair, PC member, steering committee liason
- ESWC 2014: PC member
- LWDM 2014: PC member
- CPSM 2013: chair
- EDOC 2013: PC member
- ESWC 2013: PC member
- ICWE 2013: PC member
- ICWE 2013 Demo and Poster: PC member
- LWDM2013: PC member
- MobiWIS 2013: PC member
- RCIS 2013: PC member
- WWW2013: PC member
- BPMN 2012: PC member
- BPMS2'12: PC member
- CrowdSearch2012: chair, proceedings manager
- ECMFA-2012: PC member
- EDOC 2012: PC member
- MDWE2012: chair, author
- SeRSy2012: PC member
- SOHUMAN 2012: PC member
- SUITE 2012: PC member
- SWESE 2012: PC member
- VLDS2012: chair, proceedings manager
- VORTE 2012: PC member
- WWW2012: PC member
- XM 2012: PC member
- BPMN 2011: author

- DATAVIEW 2011: PC member, author
- ECLIPSE IT 2011: PC member
- ExploreWeb2011: chair, author, proceedings manager
- ICMT 2011: PC member
- ICWE 2011: PC member
- MDA4ServiceCloud-2010: PC member
- MDWE2011: chair, proceedings manager
- MoSE 2011: PC member
- SPIM 2011: PC member
- SWESE 2011: PC member
- VLDS2011: chair, proceedings manager
- VORTE 2011: PC member
- WeRE 2011: PC member
- Eclipse-IT 2010: PC member
- EclipseIT09: PC member
- ICWE2010: track chair
- SWESE: PC member
- WeRE2010: PC member
- ICWE 2009: PC member
- SLE 2009: PC member
- VORTE 2009: PC member
- WWW2009: PC member
- ICWE 2008: PC member
- SeMMA2008: PC member
- SLE2008: PC member
- SWSC-ISWC2008: PC member
- WWW2008: PC member
- SAC 2009 (ACM Symposium on Applied Computing, Web Technologies Track),
- SWSC 2008 (Workshop on Evaluation of Ontology-based tools and Semantic Web Service Challenge 2008 @ ISWC)
- WWW 2008 (World Wide Web Conference)
- ICWE 2008 (International Conference on Web Engineering),

- SLE 2008 (Conference on Software Languages Engineering),
- AEWSE 2008 (International Workshop on Adaptation and Evolution in Web Systems Engineering),
- SeMMA 2008 (International Workshop on Semantic Metadata Management and Applications),
- IEEE CEC/EEE 2007 (Conference on E-Commerce Technology and Enterprise Computing, E-Commerce and E-Services),
- ICWE 2007 (International Conference on Web Engineering),
- VORTE 2007 (International Workshop on Vocabularies, Ontologies, and Rules for the Enterprise),
- ICSOC 2005 (International Conference on Service Oriented Computing),
- SEBD 2005 (Italian Symposium on Advanced Database Systems),
- IEEE EEE/CEC 2006 (Conference on E-Commerce Technology and Enterprise Computing, E-Commerce and E-Services),
- VLDB 2006 PhD Symposium (Very Large Databases).

#### EXTERNAL REFEREE OR REVIEWER

- Sigmod Record
- TWEB (ACM Transaction on the Web)
- IJWET (International Journal of Web Engineering and Technology)
- WWW2012 (World Wide Web Conference)
- ICWE2012 (International Conference on Web Engineering)
- ISWC2011 (International Semantic Web Conference)
- ICWE2011 (International Conference on Web Engineering)
- WWW2011 (World Wide Web Conference)
- WWW 2010 (World Wide Web Conference)
- WebDB 2010 (International Workshop on the Web and Databases)
- WWW 2009 (World Wide Web Conference)
- ICWE 2010 (International Conference on Web Engineering)
- ICWE 2009 (International Conference on Web Engineering)
- SAC 2009 (Annual ACM Symposium on Applied Computing)
- WWW 2008 (World Wide Web Conference)
- ICWE 2008 (International Conference on Web Engineering)
- MED 2008 (16th Med.Conference on Control and Automation)
- VLDB 2008 (Very Large Databases)
- ICWE 2007 (International Conference on Web Engineering)



- ICWS 2007 (International Conference on Web Services)
- IEEE ICDCS 2007 (Int.l Conference on Distributed Computing Systems)
- WISE 2006 (Web Information Systems Engineering)
- VLDB 2006 (Very Large Databases)
- ER 2006 (ER-Conceptual Modeling)
- Sigmod 2006 (ACM Conference of Special Interest Group on Management Of Data)
- WMR 2006 (International Workshop on. Web Maintenance and Reengineering)
- IEEE SCC 2005 (International Conference on Services Computing)
- SAC 2005 (IEEE Symposium on Applied Computing)
- XMLsymposium 2004, and others

# Invited Talks

*2013:*

- Invited talk "Exploratory Search and Social Network Based Crowdsourcing" at L'Aquila University, March 2013.
- Invited talk "Modeling the front end of software applications with IFML" at Florida Atlantic University (FAU), September 2013.
- Invited talk "Mobile, BPM e Cloud tramite MDD: una leva tecnologica per il business" at SMAU 2013, Milano, 23 Oct. 2013.
- Invited talk "The standardization process: challenges and benefits. The IFML experience in OMG" at MUMIA EU COST Action meeting, Thessaloniki, November 2013.
- Invited talk "Modeling the front end of software applications with IFML" at Università di Genova, December 2013.

*2012:*

- Invited talk "Exploratory Search upon Semantically Described Web Data Sources: Service registration and methodology" at SSW Workshop at VLDB Conf., Istanbul, August 2012.
- Invited talk "Web Data Management through Crowdsourcing upon Social Networks" at SSW Workshop at ASONAM conference, Istanbul, August 2012.
- Invited talk "BPM e CLOUD: la partnership ideale" at SMAU 2012, Milano, 17 Oct. 2012.

*2011:*

- Invited talk "Social BPM: prospettive e impatto sull'organizzazione" at SMAU 2011, Milano, 19 Oct 2011.
- Invited talk "Modellazione concettuale: l'esperienza di WebML e WebRatio" at Università di Genova, December 2011.

*2010:*

- Invited talk "Social network management per gli enti pubblici" at Fondazione Cariplo, Milano.
- Invited seminar "WebML and model-driven development of BP-based Web applications" at Ecole des Mines de Nantes, Nantes, France, May 2010.
- Invited talk "Le sfide e i trend innovativi del BPM (Business Process Management) al servizio dell'azienda" at SMAU 2010, Milano, 20 Oct. 2010.

*2009:*

- Invited talk "Engineering search computing applications: vision and challenges" at Conference ACM ESEC/FSE, Amsterdam.

2005:

- Invited seminar "Exception handling within workflow-based Web applications", 4 No. 2005 at University of California, San Diego (USA), Department of Computer Science & Engineering.

2004:

- Invited seminar "Modeling and implementation of workflow-based and Web services enabled Web applications", 5 Apr. 2004 at University of California, San Diego (USA), Department of Computer Science & Engineering.
- Invited seminar "WebML: a modeling language for data-intensive Web applications", 29 Mar. 2004 at University of California, San Diego (USA), Department of Computer Science & Engineering.
- Invited seminar "Modellazione concettuale di applicazioni Web data-intensive", 6 Feb. 2004 at Dipartimento di Informatica e Sistemistica dell'Universit La Sapienza di Roma.
- Invited talk "Modeling and implementation of workflow-based Web applications", 17 Oct. 2003 at Harvard Medical School, Childrens' Hospital, Boston (USA).

2002:

- Invited seminar "Conceptual modeling of Web applications", Aug. 2002, EDBT Summer School, Cargese (France).

## TUTORIALS

- "Engineering Web Search Applications" at the Tenth International Conference on Web Engineering - ICWE 2010 (July 2010, Vienna, Austria). [url: <http://icwe2010.webengineering.org/Conference/tutorials.aspx#T2>]

# Publications (selection)

## Books

- [1] L. Baresi, MARCO BRAMBILLA, C. Cappiello, and P. Plebani. *EUCIP: Esercitazioni*. Tecniche Nuove, ITA, 2005.
- [2] G. Bigini, MARCO BRAMBILLA, C. Cappiello, P. Plebani, and F. Rizzo. *Eucip - EUCIP - Guida alla certificazione per il professionista IT*. Tecniche Nuove, 2007.
- [3] MARCO BRAMBILLA, J. Cabot, and M. Wimmer. *Model-Driven Software Engineering in Practice*, volume 1. Morgan & Claypool Publishers, USA, 2012.
- [4] MARCO BRAMBILLA, Cinzia Cappiello, Pierluigi Plebani, and Glauco Bigini. *EUCIP Core Level Guida alla certificazione per il professionista ICT*. tecniche nuove, 2012.
- [5] MARCO BRAMBILLA and E. Mendes, editors. *7th International Conference on Web Engineering. Workshop Proceedings*. Politecnico di Milano, MILANO – ITA, 2007.
- [6] S. Ceri and MARCO BRAMBILLA, editors. *Search Computing Challenges and Directions*. SPRINGER, 2010.
- [7] S. Ceri, P. Fraternali, A. Bongio, MARCO BRAMBILLA, S. Comai, and M. Matera. *Designing Data-Intensive Web Applications*. Morgan Kaufmann, San Francisco, 2002.
- [8] S. Ceri, P. Fraternali, A. Bongio, MARCO BRAMBILLA, S. Comai, and M. Matera. *Progettazione di dati e applicazioni per il Web*. McGraw-Hill, 2003.
- [9] Stefano Ceri, Alessandro Bozzon, MARCO BRAMBILLA, Emanuele Della Valle, and Piero Fraternali. *Web Information Retrieval. Data-centric systems and applications*. Springer, 2013.

## Journal Articles

- [10] Khalid Belhajjame and MARCO BRAMBILLA. Ontological description and similarity-based discovery of business process models. *INTERNATIONAL JOURNAL OF INFORMATION SYSTEM MODELING AND DESIGN*, 2:47–66, 2011.
- [11] Alessandro Bozzon, MARCO BRAMBILLA, Stefano Ceri, and Davide Mazza. Exploratory search framework for web data sources. *VLDB Journal*, 22(5):641–663, 2013.
- [12] Alessandro Bozzon, MARCO BRAMBILLA, Stefano Ceri, and Silvia Quarteroni. A framework for integrating, exploring, and searching location-based web data. *IEEE INTERNET COMPUTING*, 15:24–31, 2011.
- [13] MARCO BRAMBILLA. From requirements to implementation of ad-hoc social web applications: an empirical pattern-based approach. *IET SOFTWARE*, 6:114–126, 2012.
- [14] MARCO BRAMBILLA, JORDI CABOT, and Sara Comai. Extending conceptual schemas with business process information. *Advances in Software Engineering*, 2010:1–22, 2010.
- [15] MARCO BRAMBILLA, I. Celino, S. Ceri, D. Cerizza, E. Della Valle, and F. Facca. Model-driven design and development of semantic web service applications. *ACM Transactions on Internet Technology*, 8:1–29, 2007.

- [16] MARCO BRAMBILLA, S. Ceri, S. Comai, and P. Fraternali. A case tool for modelling and automatically generating web service-enabled applications. *International Journal of Web Engineering and Technology*, 2(4):354–372, 2006.
- [17] MARCO BRAMBILLA, S. Ceri, S. Comai, P. Fraternali, and I. Manolescu. Model-driven specification of web services composition and integration with data-intensive web applications. *IEEE Data Engineering Bulletin*, 25:53–59, 2002.
- [18] MARCO BRAMBILLA, S. Ceri, S. Comai, P. Fraternali, and I. Manolescu. Specification and design of workflow-driven hypertexts. *JOURNAL OF WEB ENGINEERING*, 1:163–182, 2003.
- [19] MARCO BRAMBILLA, S. Ceri, S. Comai, P. Fraternali, and I. Manolescu. Model-driven design and deployment of service-enabled web applications. *ACM Transactions on Internet Technology*, 5:439–479, 2005.
- [20] MARCO BRAMBILLA, S. Ceri, P. Fraternali, and I. Manolescu. Process modeling in web applications. *ACM Transactions on Software Engineering and Methodology*, 15 (4):360–409, 2006.
- [21] MARCO BRAMBILLA, Stefano Ceri, Irene Celino, Dario Cerizza, E. Della Valle, F. M. Facca, Andrea Turati, and Christina Tziviskou. Experiences in the design of semantic services using web engineering methods and tools. *Journal on Data Semantics*, 11:1–31, 2008.
- [22] MARCO BRAMBILLA and C. Tziviskou. Fundamentals of exception handling within workflow-based web applications. *Journal of Web Engineerng*, 4:38–56, 2005.
- [23] S. Ceri, A. Abid, M. Abu Helou, A. Bozzon, D. Braga, MARCO BRAMBILLA, A. Campi, F. Corcoglioniti, E. Della Valle, D. Eynard, P. Fraternali, M. Grossniklaus, D. Martinenghi, S. Ronchi, M. Tagliasacchi, and S. Vadacca. Search computing: an approach for managing complex search queries. *IEEE Internet Computing*, 14:14–22, 2010.
- [24] S. Ceri, C. Bolchini, D. Braga, MARCO BRAMBILLA, A. Campi, S. Comai, P. Fraternali, P.L. Lanzi, M. Masseroli, M. Matera, M. Negri, G. Pelagatti, G. Pozzi, E. Quintarelli, F. Schreiber, and L. Tanca. Data and web management research at politecnico di milano. *SIGMOD Record*, 36:43–48, 2007.
- [25] Piero Fraternali, MARCO BRAMBILLA, and Alessandro Bozzon. Pharos: la piattaforma europea per la ricerca nei contenuti audio visuali. *Computerworld Italia*, pages 10–11, 2009.

## Book Chapters

- [26] A. Aral, I. Z. Akin, and MARCO BRAMBILLA. *Search Computing - Broadening Web Search*, chapter Mobile Multi-domain Search over Structured Web Data, pages 98–110. Springer, Heidelberg, 2012.
- [27] D. Bianchini, MARCO BRAMBILLA, A. Campi, C. Cappiello, S. Ceri, M. Comuzzi, V. De Antonellis, B. Pernici, and P. Plebani. *Evolving Towards the Internetnetworked Enterprise - Technological and Organizational Perspectives*, chapter Model-based service-oriented architectures for Internetnetworked Enterprises, pages 61–96. Springer, 2010.
- [28] A. Bozzon, MARCO BRAMBILLA, S. Ceri, and A. Mauri. *Search Computing - Broadening Web Search*, chapter Extending Search to Crowds: A Model-Driven Approach, pages 207–222. Springer, Heidelberg, 2012.
- [29] Alessandro Bozzon, MARCO BRAMBILLA, Stefano Ceri, Piero Fraternali, and Ioana Manolescu. *Search Computing Challenges and Directions*, chapter Liquid Queries and Liquid Results in Search Computing, pages 244–267. SPRINGER, 2010.

- [30] MARCO BRAMBILLA and Stefano Butti. *BPMN 2.0 Handbook*, chapter Multi-faceted BPM, pages 73–84. Future Strategies inc., 2010. chapter 5.
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